BIS QUARTERLY REVIEW

March 1999

INTERNATIONAL BANKING AND FINANCIAL MARKET DEVELOPMENTS

BANK FOR INTERNATIONAL SETTLEMENTS
Monetary and Economic Department
Basle, Switzerland

Copies of publications are available from:

Bank for International Settlements
Information, Press & Library Services
CH-4002 Basle, Switzerland

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This publication is available on the BIS website at www.bis.org.

ISSN 1012-9979

Also published in French, German and Italian.

C O N T E N T S*

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I

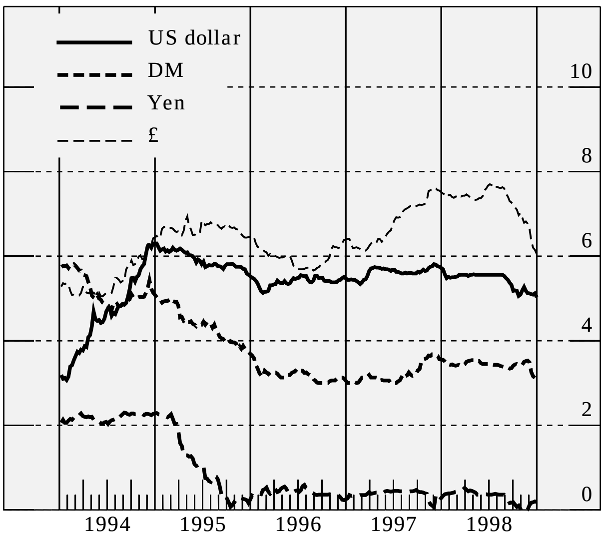
Overview of recent international banking and financial market developments

Global financial markets suffered from extremely volatile conditions in *the fourth quarter of 1998.* The flight to safety and liquidity which developed in the wake of the Russian debt moratorium in August reached a climax in October. Benchmark yields and equity prices retreated, while credit spreads widened markedly. Massive deleveraging and, in the process, the near-collapse of a major hedge fund added to price swings and further contributed to a drying-up of liquidity in a wide range of markets and instruments. In particular, the unwinding of a large volume of carry trade positions may have been partly responsible for the largest daily gain displayed by the yen against the dollar since the abandonment of the fixed exchange-rate regime in 1971. In November, tensions eased somewhat, following cuts in US official interest rates, the approval of an IMF-led support package for Brazil and

International short and long-term interest rates

Weekly averages, in percentages

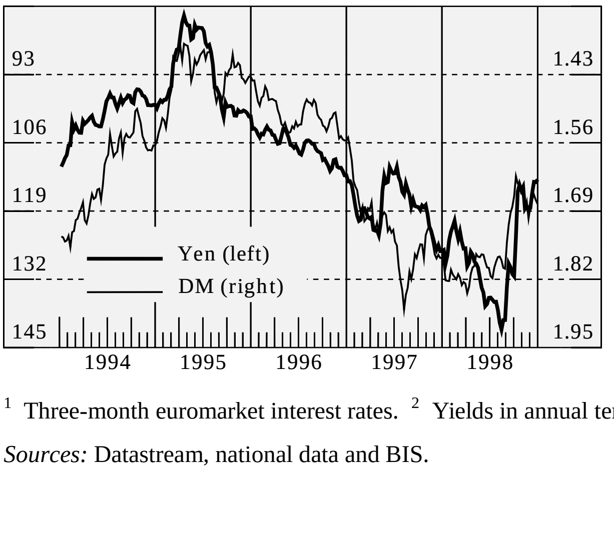
Short-term rates[1]



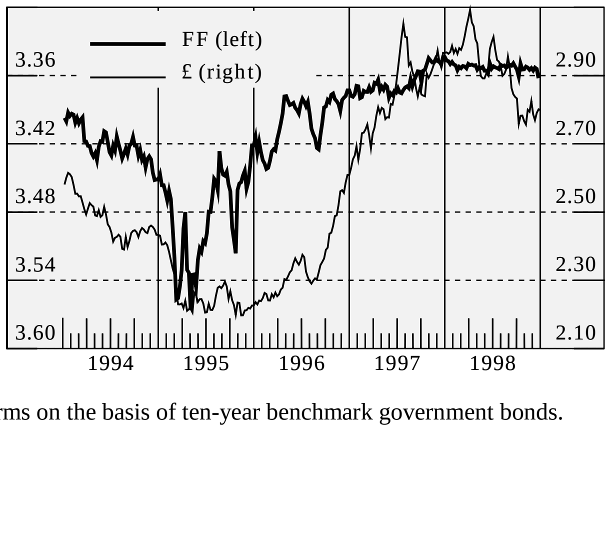
Long-term rates[2]

Bilateral exchange rates

Vis-à-vis the US dollar



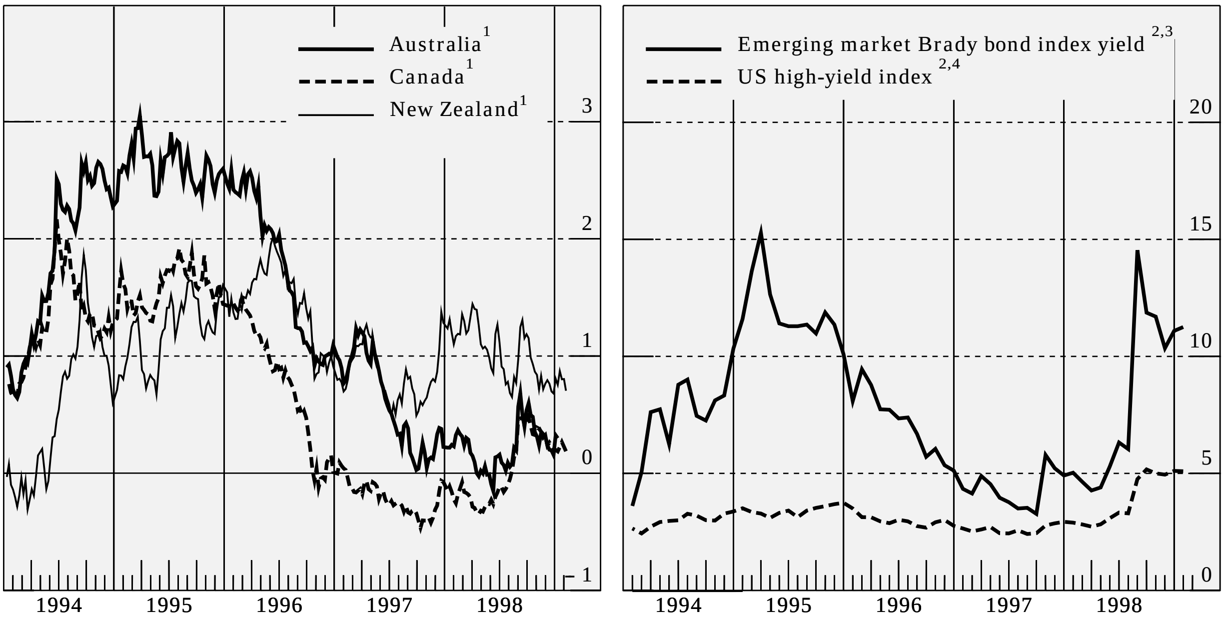
Vis-à-vis the Deutsche mark



[1] Three-month euromarket interest rates. [2] Yields in annual terms on the basis of ten-year benchmark government bonds.

Sources: Datastream, national data and BIS.

Yield differentials vis-à-vis US long-term benchmarks



[1] Weekly averages, in percentage points. Ten-year yield less the US ten-year Treasury yield. [2] End-month data, in percentage points. [3] Yield stripped of collateral backing less the US 30-year Treasury yield. [4] Sub-investment-grade corporate bond yield less the US 30-year Treasury yield.

Sources: Datastream, JP Morgan, Merrill Lynch, national data and BIS.

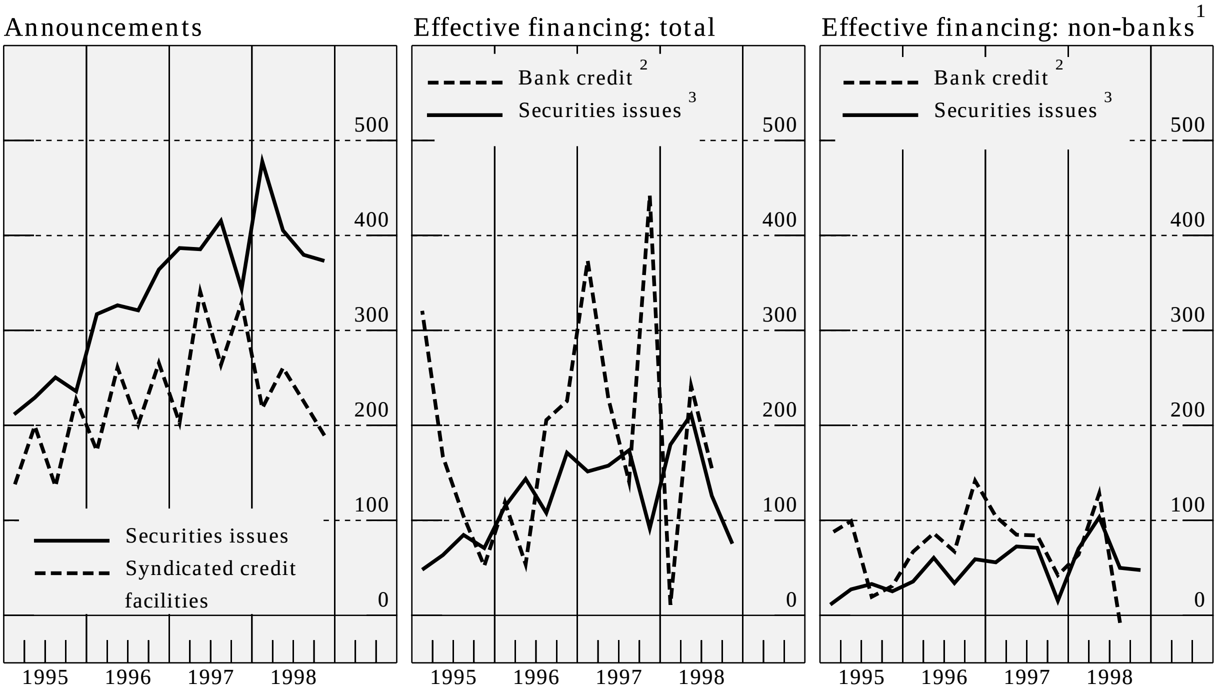
improved economic and financial prospects in Asia. However, continuing high volatility in most market segments suggests that concerns about market and counterparty risks remained pervasive. Indeed, credit spreads in bond markets widened again at the beginning of December on fears surrounding the financial situation in Brazil. This contrasted with the continuing euphoria in equity markets in Europe and the United States, despite repeated official warnings of a growing disconnection between price levels and fundamentals.

Developments in the international securities market during the quarter reflected the above-mentioned concerns. Although gross issuance of bonds was of the same order of magnitude of that of the previous quarter, a record volume of maturing debt meant that net financing fell to its lowest level in three years. International investment funds shifted further towards highly rated public sector entities and supranational borrowers, and there was an absolute decline in exposure to developing country entities. Financial institutions were also hard hit, with swap spreads over government bond yields remaining high throughout the period (see the graph on page 29). Counterparty and liquidity risk issues were also very much to the fore in the derivatives industry, where the withdrawal of leveraged players and the paring-down of positions ahead of the introduction of the euro seem to have led to a sharp deceleration of activity in November and December.

The less favourable environment faced by non-prime borrowers was equally apparent in the sector for syndicated loan facilities. While the amount of syndications fell to well below total gross issuance of international securities, pricing conditions tightened for most categories of borrowers. At the same time, detailed international banking data now available for *the third quarter of 1998* underline the depth and scope of the adjustments which took place during this episode of global turbulence. Although the international interbank market seems to have performed relatively well in its key function of redistributing liquidity worldwide, signs of strains were apparent. Firstly, there was a sharp cutback in exposure to emerging market economies, with the turnaround vis-à-vis Brazil and Russia illustrating the abrupt reassessment of their creditworthiness. Secondly, more stringent collateral requirements meant that new lending to non-bank customers in major financial centres slowed to a trickle. In particular, credit lines to entities in the United States and a few Caribbean centres, where

Activity in international bank credit and securities markets

In billions of US dollars



[1] Excluding non-bank financial institutions. [2] Exchange-rate-adjusted changes in gross international bank claims. [3] Gross issues minus repayments.

Sources: Bank of England, Euroclear, Euromoney, International Financing Review (IFR), International Securities Market Association (ISMA), national data and BIS.

some major hedge funds are located, were not renewed. Thirdly, non-bank depositors displayed a strong preference for placing funds with banks perceived to be less exposed to the financial upheaval.

The fact that most major equity indices returned to near-peak levels in December suggests that the systemic repercussions of the upheaval were contained. In addition, and partly in response to calls by the Group of Seven countries for measures to address immediate and longer-term weaknesses in the international financial system,[1] some proposals for reform were considered. It is now widely acknowledged that financial accounts should be opened in a careful and well-sequenced manner. Furthermore, the risks posed by highly leveraged institutions are currently under study by various groups at the BIS, including the Basle Committee on Banking Supervision.[2] Mention may also be made of the report released in November by the Euro-currency Standing Committee on enhanced disclosure of the authorities' foreign currency liquidity position.[3] This report is part of a series of

[1] In October, the G-7 leaders called for global action to ward off market contagion, to promote greater openness in the financial operations of individual countries, international institutions and companies, to enhance national financial and regulatory systems and cooperation between national authorities, and to ensure an orderly and cooperative resolution of future crises. They also emphasised the need to strengthen the prudential regulation of financial institutions in industrial countries in order to promote sustainable capital flows, to examine the operations of highly leveraged and offshore institutions, and to strengthen financial systems in emerging markets through the enforcing of international standards.

[2] See "Banks' Interactions with Highly Leveraged Institutions" and "Sound Practices for Banks' Interactions with Highly Leveraged Institutions", Basle Committee on Banking Supervision, Basle, January 1999.

[3] See "Enhancing the Transparency of the Authorities' Foreign Currency Liquidity Position", Euro-currency Standing Committee, Basle, November 1998.

Estimated net financing in international markets[1]

In billions of US dollars

Components of net international financing	1996	1997		1998				Stocks at end-Sept. 1998
	Year	Year	Q4	Q1	Q2	Q3	Q4	
Total international[2] bank claims[3]	604.1	1,184.8	442.1	11.2	241.6	155.0	..	10,935.2
minus: interbank redepositing	184.1	719.8	377.1	– 53.8	121.6	100.0	..	5,375.2
A = Net international bank claims[3]	**420.0**	**465.0**	**65.0**	**65.0**	**120.0**	**55.0**	**..**	**5,560.0**
B = Net money market instruments	**41.1**	**19.8**	**– 2.4**	**10.7**	**1.4**	**7.8**	**– 12.5**	**205.6**
Total completed bond and note issues	860.4	1,016.1	231.9	294.0	301.3	243.4	244.1	
minus: redemptions and repurchases	364.2	461.5	137.9	125.0	91.4	125.3	156.1	
C = Net bond and note financing	**496.3**	**554.6**	**94.0**	**169.0**	**209.9**	**118.1**	**88.0**	**3,881.8**
D = Total international financing[4]	**957.4**	**1,039.5**	**156.6**	**244.7**	**331.3**	**180.9**	**..**	**9,647.4**
minus: double-counting[5]	187.4	159.5	16.6	79.7	91.3	20.9	..	1,447.4
E = Total net international financing	**770.0**	**880.0**	**140.0**	**165.0**	**240.0**	**160.0**	**..**	**8,200.0**

[1] Changes in amounts outstanding excluding exchange rate valuation effects for banking data and euronote placements; flow data for bond financing. [2] Cross-border claims in all currencies plus local claims in foreign currency. [3] Including holdings of securities. [4] A + B + C. [5] International bonds purchased or issued by the reporting banks, to the extent that they are taken into account in item A.

initiatives designed to improve transparency on the official side.[4] Meanwhile, the authorities have started to examine issues surrounding appropriate disclosure and supervisory standards. Market participants themselves recognise that current risk management systems have not been adequate in identifying the risks and potential losses stemming from the recent turbulence. As a result, they have begun to review previous assumptions concerning liquidity, credit risk and the correlation between markets, and to put greater emphasis on stress testing as well as on fundamental analysis.

The various proposals aimed at ensuring an orderly and cooperative resolution of future crises, which would in particular involve the private sector, are of more immediate concern. Events in Russia reversed the bias towards excessive risk-taking. However, by causing a massive unwinding of positions in a broad range of markets and instruments, they created the risk of a systemic failure, prompting official action aimed at restoring market confidence. This has heightened the dilemma faced by the authorities in letting private players bear the cost of their own investment decisions, while preserving the stability of the system as a whole. The improved management of future crises will depend on the resolution of this dilemma.

[4] These include the report on transparency and accountability released by a group of industrial and emerging market economies (the Willard Group), planned steps by the IMF to strengthen the Special Data Dissemination Standard (SDDS), improvements in the quality and timeliness of BIS international banking statistics and a new joint publication on external debt by international institutions.

II

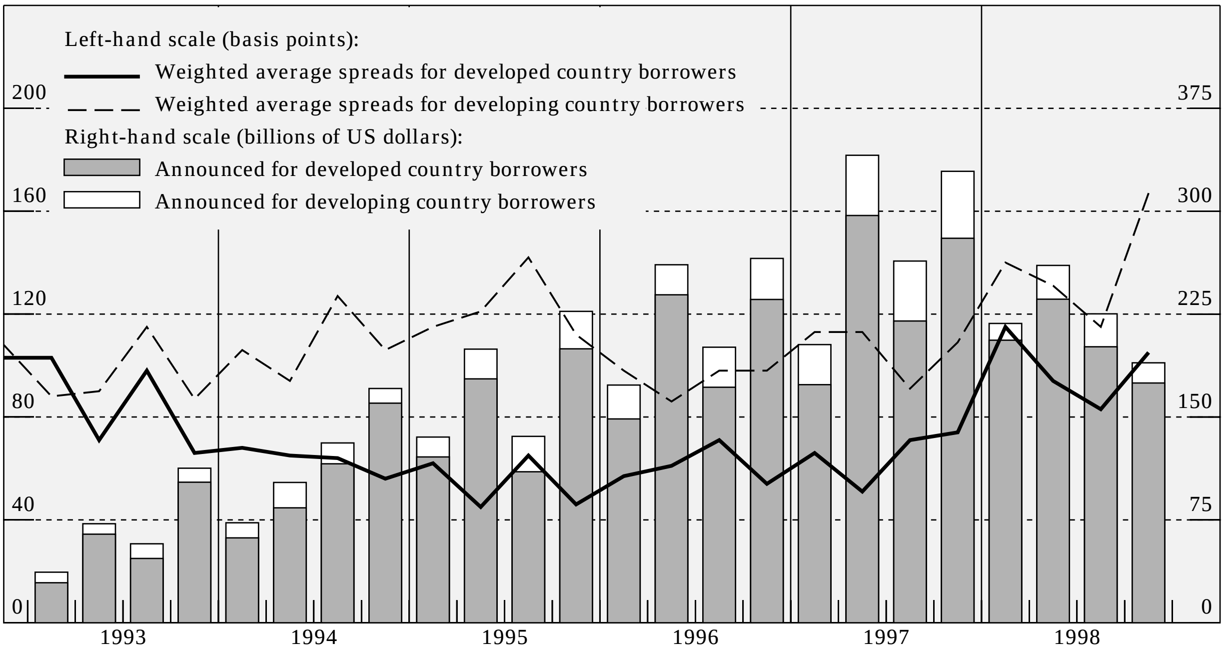
The international banking market

Overview

The persistence of strains in international financial markets during the *fourth quarter of 1998* is clearly reflected in the data for syndicated loan facilities. Despite a recovery in deals related to mergers and acquisitions in Europe and the United States in the latter part of the period, total announcements were, at $190 billion, 16% below those of the third quarter. In particular, there was a near-halving of facilities arranged for emerging market names. The average maturity of loans (excluding those at less than one year) fell to less than four years, while pricing conditions tightened for virtually all non-prime borrowers, pushing the weighted average spread charged to emerging market signatures to a new peak. Several factors contributed to this widening of spreads in the period under review. One, of course, was banks' reconsideration of their credit risk assessment procedures after the Russian crisis. Another was the introduction of greater flexibility in the setting of prices between announcement and completion of facilities (so-called "market flex" pricing). A third factor was the growing presence of institutional investors, which, while compensating for the reduced presence of certain banking groups, brought further convergence with pricing practices existing in bond markets. Finally, the upsurge in secondary market trading, together with pressures on some banks to clean their books before year-end, added to the upward pressures on spreads in the primary market.

Detailed international banking data for the *third quarter of 1998* underlined the dramatic adjustments which took place in this period of renewed market turbulence. Thus, banks retreated massively from emerging market economies and sharply cut back new loans to non-bank customers in the

Announced facilities in the international syndicated credit market and weighted average spreads*



* Spreads over Libor on US dollar credits.

Sources: Euromoney and BIS.

Weighted average spreads for announced international syndicated credits

Spreads over Libor in percentages for syndicated credits in US dollars and ECUs

Year	Developed countries: public sector	Developing countries: public sector	Developed countries: corporate sector	Developing countries: corporate sector	Developed countries: financial institutions	Developing countries: financial institutions
1992	0.10	1.12	1.15	1.13	0.75	1.05
1993	0.10	1.06	0.83	1.06	0.57	0.85
1994	0.15	0.88	0.66	1.23	0.49	0.82
1995	0.08	1.92	0.57	1.29	0.38	0.73
1996	0.19	0.82	0.65	1.05	0.39	0.69
1997	0.20	0.60	0.69	1.14	0.46	0.94
1998	0.09	1.36	1.07	1.43	0.67	1.02

Note: Financial institutions comprise bank and non-bank financial institutions. Public sector comprises central governments, central banks and state agencies.

industrialised world. The depth and scope of the decline in banks' outstanding claims on developing countries ($35 billion, including Eastern Europe) underline the scale of the credit squeeze faced by these countries following the Russian debt moratorium on 17 August (see the section on business with countries outside the reporting area). At the same time, stagnation in lending to non-bank customers inside the reporting area is consistent with reports of significant deleveraging towards the end of the third quarter, which entailed substantial repayments of bank credit. Some reporting banks were also net sellers of foreign securities in the third quarter of 1998, following significant purchases in the earlier part of the year.

In contrast, interbank lending within the BIS reporting area remained buoyant in the period under review (+$191 billion). Moreover, reporting banks relied heavily on their own internal networks in accommodating shifts in liquidity worldwide. Firstly, the reappearance of a significant premium on Japanese banks' interbank liabilities (see the graph on page 8) led to substantial transfers of funds between their domestic and foreign establishments. Secondly, the flight by investors to liquidity and safety meant greater differentiation in the placement of deposits among various banking groups, which added to the need for interbank recycling. Thirdly, the funding problems of Japanese banks may have boosted yen business on European markets, which also benefited from the reversal of investment strategies associated with "yen carry" transactions.[5] Finally, interbank activity was boosted in the third quarter by balance-sheet adjustments associated with the forthcoming introduction of the euro, which seems to have favoured the Deutsche mark at the expense of other EMU currencies.

In sum, the international interbank market performed its natural role of accommodating the changing behaviour of investors relatively well in this period of upheaval. This offset the continuing pullback of Japanese banks and the indirect impact of the turmoil on banks with actual or perceived links to the countries most affected by the turbulence (such as German banks in the case of Russia). In view of the abrupt turnaround in credit flows to Brazil and Russia, internationally active commercial banks seem to have been caught by surprise by the drying-up of market liquidity in a wide range of currencies and debt instruments. While banks have in recent years considerably broadened the range of their activities, becoming for instance increasingly active in securities trading, their systems for evaluating and managing credit risk have generally lagged developments in the area of market risk. Even when

[5] As a substitute for dollar borrowing, Japanese banks raised funds in yen, which they immediately sold for dollars on the spot market to foreign banks, while simultaneously entering into forward sales of dollars. Awash with yen funds, foreign banks were in November reported to have purchased Japanese Treasury bills at nil or negative rates. Losses on such positions were more than offset by the earnings made on the spot/forward trades or on the negative rates "offered" to depositors in yen. See also Part V of this commentary.

Main features of the international claims of BIS reporting banks[1]

In billions of US dollars

Components	1996	1997			1998			Stocks at end-Sept. 1998
	Year	Year	Q3	Q4	Q1	Q2	Q3	
Claims on outside-area countries	**141.4**	**98.6**	**25.8**	**– 2.9**	**– 4.9**	**– 4.3**	**– 26.0**	**1,185.0**
Claims on inside-area countries	**446.2**	**1,095.0**	**148.7**	**457.2**	**15.8**	**246.3**	**202.0**	**9,534.6**
Claims on non-banks	302.2	242.4	77.4	26.0	49.9	110.5	10.7	2,989.5
Banks' borrowing for local onlending[2]	– 40.1	132.8	25.5	54.1	19.8	14.2	91.3	1,169.9
Interbank redepositing	184.1	719.8	45.8	377.1	– 53.8	121.6	100.0	5,375.2
Unallocated	**16.4**	**– 8.8**	**– 33.6**	**– 12.2**	**0.3**	**– 0.5**	**– 21.0**	**215.6**
Gross international bank claims	**604.1**	**1,184.8**	**140.8**	**442.1**	**11.2**	**241.6**	**155.0**	**10,935.2**
Net international bank claims[3]	**420.0**	**465.0**	**95.0**	**65.0**	**65.0**	**120.0**	**55.0**	**5,560.0**
Memorandum item: Syndicated credits[4]	**900.9**	**1,136.3**	**263.7**	**329.1**	**218.1**	**260.5**	**225.2**	

[1] Changes in amounts outstanding excluding exchange rate valuation effects. [2] Estimates of international borrowing by reporting banks, either directly in domestic currency or in foreign currency, for the purpose of local onlending in domestic currency (see also notes to Table 1 of the statistical annex). [3] Defined as total international claims of reporting banks minus interbank redepositing. [4] Announced new facilities.

this has not been the case, internal models have often failed to cope with the abrupt swings which took place in correlation, volatility and liquidity. Finally, the deterioration in the value of collateral assets, coming as it did on top of the weakening in the quality of counterparties, may have acted as a further incentive to retreat, in both cash and derivatives markets. Indeed, while collateralisation may have initially contributed to delaying the drying-up of liquidity, it may have amplified the subsequent turnaround and the associated reduction in banks' credit exposure.

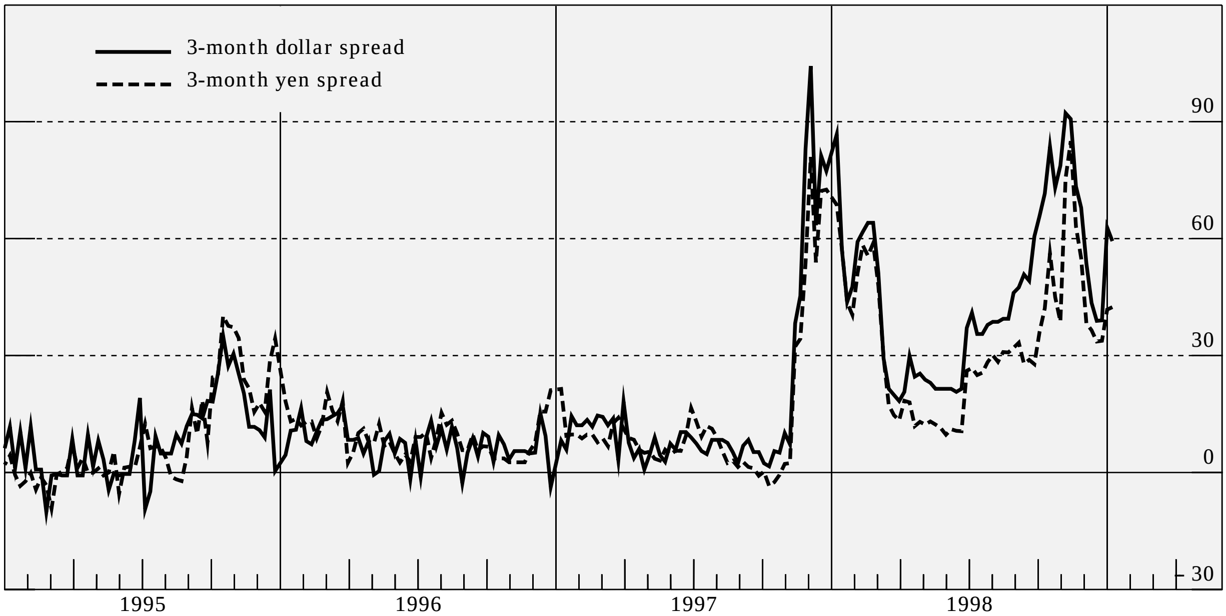
Business with countries inside the reporting area

Interbank flows of funds between reporting centres in the third quarter of 1998 underlined the extent of the adjustments which took place in international trading and investment positions. Japanese and some continental European banking groups made extensive use of the depth of the London and New York markets to redistribute funds between their offices worldwide. Heightened concerns about credit and liquidity risks meant that international transactions tended to concentrate in such financial centres. The most striking development in this respect was the strong build-up of yen-denominated balances in Europe. Some shift of intermediation away from the Japanese banking system may have added to the supply of yen funds stemming from the reversal of carry trade strategies on the international market. In contrast to the general buoyancy of interbank activity, there was a sharp cutback in business booked through banks in the Hong Kong Special Administrative Region (SAR) of China. Although the drop in the external liabilities of banks located in this centre was comparable to that recorded in the first quarter of the year, it encompassed a broader range of local intermediaries (Annex Table 2A).[6] The withdrawal of interbank credit lines from Hong Kong SAR may have added to the tendency for reporting banks to refocus their business within Europe, with some adjustment of positions in favour of the Deutsche mark.

[6] In the past, Japanese banks extensively used their Hong Kong offices as a turntable for rechannelling funds into the Japanese economy. The massive pullback by this group of banks in the first quarter of 1998 was most strongly felt in Hong Kong.

US dollar and yen spreads of Tibor over Libor

Weekly data, in basis points



Sources: Reuters and BIS.

Meanwhile, the increase in reporting banks' claims on the non-bank sector located inside the reporting area in the third quarter of 1998, at $11 billion, paled in comparison to that recorded in the preceding quarter ($111 billion) and in the same period of 1997 ($77 billion). Moreover, this small rise masked a $8 billion decline in outstanding cross-border loans (Annex Table 7B), more than offset by securities purchases. While credit lines to Japanese customers continued to be cut,[7] lending flows to non-bank entities located in the United States shifted from an average of about $27 billion of new loans in the first half of the year to $7 billion of repayments, with some repayments also being made by non-banks located in the Caribbean offshore centres. Such a swing in business with centres which are host to a number of hedge funds suggests a reversal of leveraged transactions. This retrenchment was less evident in Europe, where cross-border lending continued, albeit at a reduced pace. At the same time, reporting banks reduced their purchases of foreign securities issued by non-banks located in industrial countries. They even globally reduced their holdings of German paper, possibly as a result of the unwinding of collateralised borrowing.

The liabilities side of banks' international balance sheets was also affected by the drastic adjustments which took place in investment portfolios during this period. In the face of a massive withdrawal of foreign exchange reserves by some countries (see the next section), reporting banks sought alternative sources of funding. They seem to have been successful in attracting new direct deposits from non-bank investors located in the reporting area. The total volume of new cross-border deposits in all currencies and local deposits in foreign currencies by such entities amounted to $56 billion (against $40 billion in the second quarter). However, non-bank funds tended to shift in favour of banking groups perceived to be stronger. Thus, international banking data broken down by nationality of ownership of reporting institutions show that non-bank depositors displayed a strong preference for depositing with Swiss and Dutch banks (Annex Table 8). The recycling of funds into the global financial system by these favoured groups of banks may have contributed to alleviating concerns about the strength of some financial institutions.

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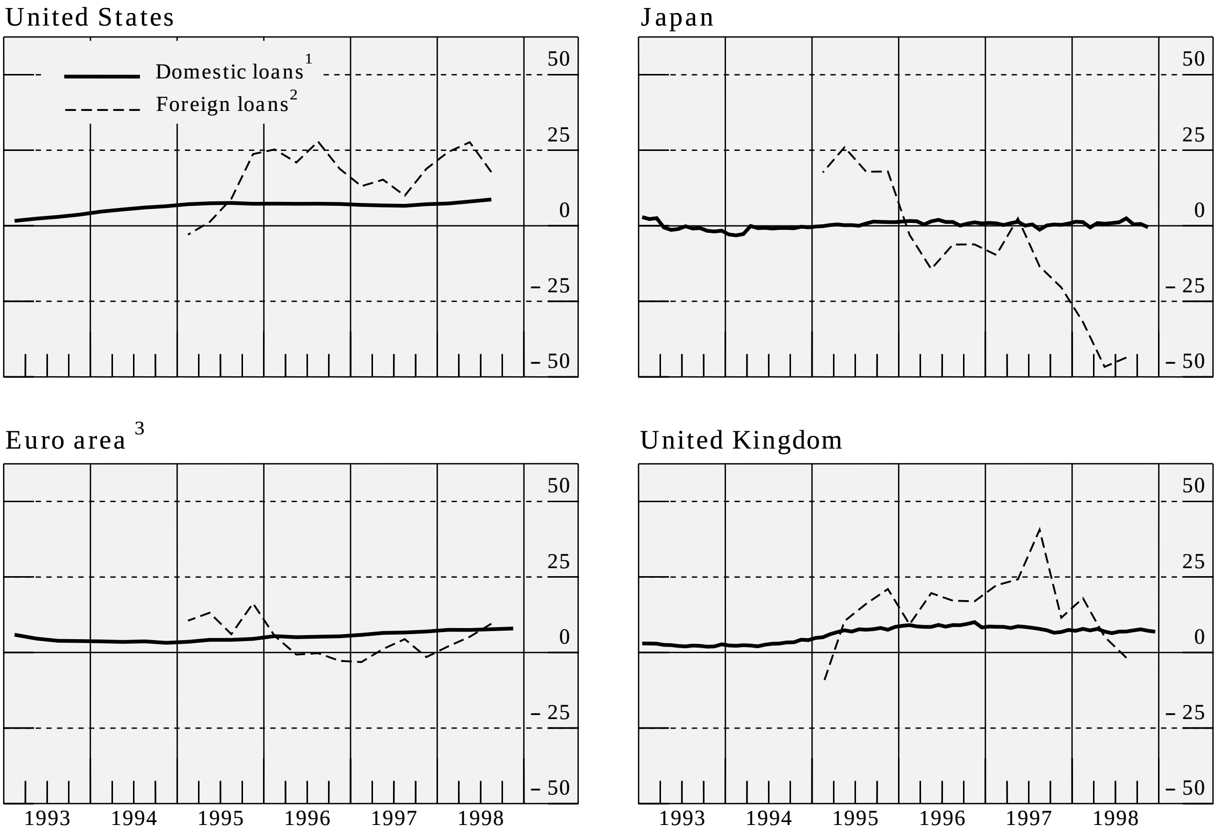
[7] However, the whole of the decline was accounted for by Japanese banks located in Hong Kong.

Loans to non-banks

Annual percentage changes



[1] Credit to the private sector only. [2] Credit to domestic non-banks by banks located outside the country (excluding securities). [3] Excluding Luxembourg and Portugal.

Sources: National data and BIS.

Business with countries outside the reporting area

Available data provide evidence of an international credit squeeze for most emerging market borrowers in the third quarter of 1998. Reporting banks' claims on Asian countries declined for the fifth consecutive quarter (by $23 billion), bringing the outstanding exposure to the region at end-September back to its end-1995 level. At the same time, banks began to retreat from Eastern Europe and Latin America, with credit flows to Russia and Brazil being particularly affected.

The most pronounced swing was recorded in Eastern Europe. Reporting banks' outstanding claims on the region shifted from a $5 billion increase in the second quarter to a $10 billion fall. All of this decline was accounted for by claims on Russia (Annex Table 6A). However, in view of the freeze imposed in August by the Russian Government on part of the country's debt, the apparent pullback by reporting banks was due more to a reassessment of the accounting value of outstanding claims than to non-renewal of maturing credit.[8] For instance, about 40% of the reported decline in total claims on

[8] The measures announced by the Russian Government on 17 August included a widening of the rouble's trading band against the dollar, the suspension of repayments of Treasury bills and the introduction of a 90-day moratorium on the repayment of private sector foreign debt. These measures caused a great deal of confusion among foreign creditors. Sharp declines in the price of Russian debt caused heavy losses at several hedge funds and in the proprietary trading operations of some banks, with panic sales accentuating the demand and supply disequilibrium. A restructuring scheme approved by the Government in December 1998 was met by opposition from creditor banks. Discussions were also taking place on a new repayment structure for more than $30 billion of Soviet-era debt originally restructured in December 1997.

Banks' business with countries outside the reporting area*

In billions of US dollars

Country groups	1996	1997			1998			Stocks at end-Sept. 1998
	Year	Year	Q3	Q4	Q1	Q2	Q3	
Total assets	**141.4**	**98.6**	**25.8**	**– 2.9**	**– 4.9**	**– 4.3**	**–26.0**	**1,185.0**
Developed countries	22.8	25.2	7.8	4.4	9.5	2.3	8.8	234.4
Eastern Europe	10.8	18.5	8.3	2.7	6.3	4.6	–10.4	108.9
Developing countries	107.9	54.9	9.7	– 9.9	–20.7	–11.2	–24.4	841.7
Latin America	28.5	34.1	10.7	9.9	12.7	2.1	– 8.1	314.2
Middle East	– 0.1	10.5	0.3	7.2	– 0.8	6.2	7.4	95.6
Africa	– 0.4	2.6	0.7	0.3	0.9	– 1.5	– 0.3	58.6
Asia	79.8	7.6	– 2.0	–27.4	–33.5	–18.0	–23.4	373.2
Total liabilities	**101.8**	**77.2**	**8.4**	**8.9**	**27.9**	**0.8**	**–18.8**	**1,066.7**
Developed countries	23.2	18.3	5.1	– 1.5	– 0.7	5.8	– 3.7	202.6
Eastern Europe	2.9	9.4	4.3	– 3.3	– 2.8	2.8	– 8.1	49.2
Developing countries	75.8	49.4	– 1.0	13.7	31.4	– 7.8	– 7.0	814.9
Latin America	26.9	23.4	1.1	– 2.8	16.1	– 8.9	–20.0	238.3
Middle East	17.1	– 5.9	– 5.6	0.2	6.0	– 3.6	18.5	234.3
Africa	2.9	7.2	2.1	– 1.0	1.4	– 0.2	– 2.0	54.9
Asia	28.9	24.8	1.5	17.3	7.9	5.0	– 3.6	287.4

* Changes in amounts outstanding excluding exchange rate valuation effects.

Russia can be estimated to represent changes in the dollar price of defaulted Treasury bills and bonds denominated in roubles.

The repercussions of developments in Russia on international banking flows to other emerging market economies were particularly severe for Brazil, which accounted for virtually all of the $8 billion reduction in outstanding claims on Latin America. Brazil's vulnerability to a new round of risk reassessment in the international market had been exacerbated by its rapid accumulation of short-term debt and, in the period under review, by uncertainty surrounding the policy stance before the October elections and discussions concerning the IMF-led support package. The series of measures adopted by the authorities in August to protect the country's foreign exchange reserves did not prevent international banks from scaling back their credit lines. This, together with some evidence of capital flight, resulted in significant drops in the country's official reserves.

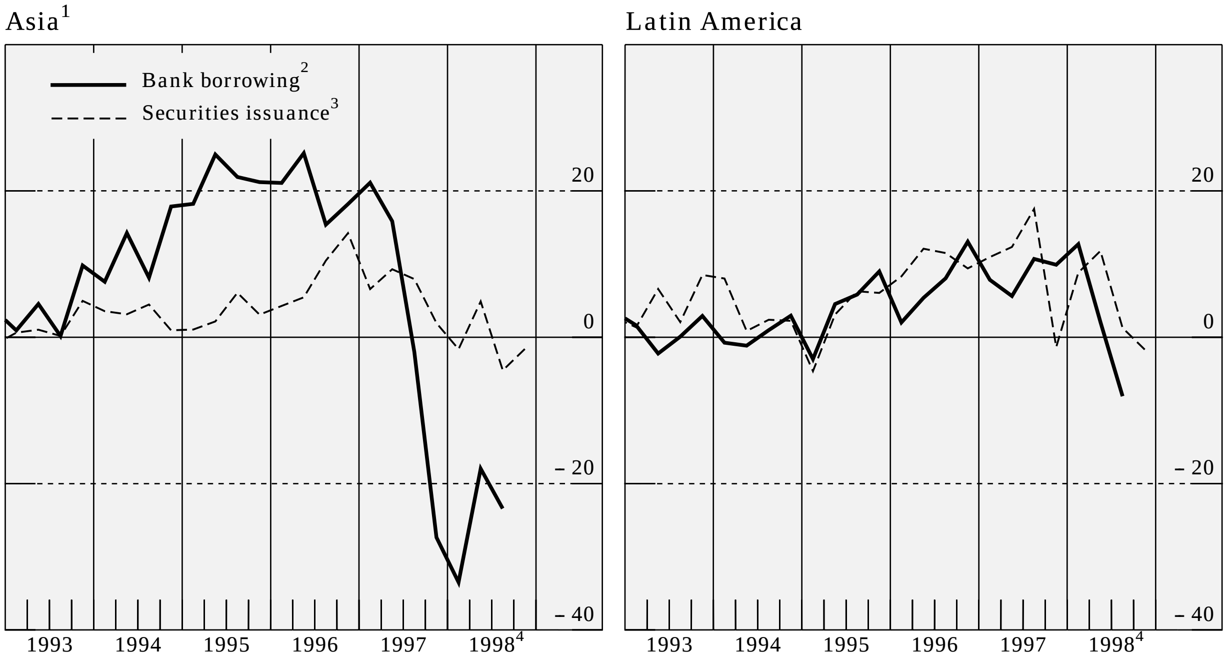
Brazil's financing difficulties were shared by Mexico, albeit to a much smaller degree. This reflected more the country's dependence on oil revenues than concerns about domestic policies. Thus, reporting banks' claims on the country were pared by $1 billion. Differences in liquidity pressures between the two countries were illustrated by the maturity composition of their external debt obligations, since 63% of Brazilian debt to foreign banks at mid-1998 was falling due within the following 12 months, compared with 45% for Mexico.[9] Meanwhile, a favourable perception by investors of Argentina's fundamentals helped the country maintain access to the international banking market in the third quarter of 1998 ($1.2 billion), albeit at considerably higher spreads than before.

Outside Eastern Europe and Latin America, two countries appear to have been particularly affected by the Russian crisis in the third quarter. One was South Africa, where exchange rate pressures were associated with a $1 billion withdrawal of foreign bank credit. The other was Turkey, although measures designed to check capital outflows (including higher interest rates) and funding from the Middle East limited the reduction in reporting banks' claims on the country to $0.4 billion in the

[9] See the BIS half-yearly consolidated international banking statistics for end-June 1998 published on 30 November 1998 and reproduced in Annex Tables 9.

International bank and securities financing in Asia and Latin America

In billions of US dollars



[1] Excluding Hong Kong, Japan and Singapore. [2] Exchange-rate-adjusted changes in BIS reporting banks' claims vis-à-vis Asian and Latin American countries. [3] Net issues of international money market instruments, bonds and notes. [4] Data on bank borrowing are not yet available for the fourth quarter of 1998.

Sources: Bank of England, Euroclear, Euromoney, IFR, ISMA, national data and BIS.

period under review (against an increase of $3.6 billion in the second quarter). At the same time, notwithstanding the cumulative impact of direct contagion and of the fall in oil prices, international banking funds continued to flow to the Middle East. New lending to Saudi Arabia and the United Arab Emirates amounted to $2.8 billion and $1.2 billion respectively, supported by their high credit standing.

In Asia, reporting banks reduced their exposure to all major borrowing countries, including the Philippines and Taiwan, which had hitherto been less affected by the upheaval in the region (Annex Table 6A). The most dramatic fall was recorded by China ($6.3 billion), followed by Thailand ($4.8 billion) and Korea ($4.7 billion). With downward pressures on the Chinese currency being associated with increased demand for foreign currencies by local residents, the country's authorities introduced in the course of the quarter a series of measures to tighten foreign exchange controls and limit residents' foreign borrowing. In particular, stringent foreign exchange restrictions introduced in September banned local governments from offering guarantees to foreign-funded projects without central government approval. This raised questions concerning informal support to the debt of International Trust and Investment Corporations (ITICs), which have been extensively used by provincial and municipal authorities to finance investments in local infrastructure and corporate activities.[10]

Information is not yet available to determine which of the major banking groups were responsible for the retreat from Asia in the period under review. However, the BIS half-yearly consolidated

[10] The decision by The People's Bank of China to close Guangdong International Trust and Investment Corporation (GITIC), which defaulted on its debt payments on 5 October 1998, was seen as an important sign that the authorities were taking concrete steps to reform the financial sector. However, it created uncertainty concerning the financial situation of other ITICs, with worries over payment suspension leading to a tightening of credit to such entities. Market estimates put ITICs' outstanding debt to foreign banks at about $10 billion.

international banking statistics for end-June 1998 (Annex Tables 9) show that the downturn was widespread among reporting banks in the first half of the year. This left the share of Japanese banks at end-June stable at around 30% of the reported claims on the region, followed by banks from Germany (13%), France (11%), the United Kingdom (9%) and the United States (7%). The consolidated statistics also point to a significant decline in the weight of the short-term category in Asian banking debt in the first half of 1998 (from 60% at end-1997 to 53% at mid-year), albeit with considerable differences across countries. While reflecting a cut in interbank lines and trade credit in all instances, the lengthening of maturity was also the result of debt restructuring agreements between Korea and Thailand and their creditor banks. The combined impact of these developments was to reduce the share of short-term debt to 45% in Korea, but only to 59% in Thailand. Meanwhile, domestic financial restructuring continues in these two countries,[11] with foreign banks being increasingly active in acquiring local institutions.

Indeed, in view of the significant improvement in the financial indicators of these two countries and others in the region, questions can be raised about the link between the continuing decline in banking exposure to Asian countries in the third quarter of 1998 and the repercussions of the Russian crisis.[12] While the latter may have raised the vulnerability of certain countries, reduced lending activity in Asia also stems from the fact that the stability or improvement in financial indicators has yet to be accompanied by a recovery in the real economy. One concern is the cost of financial and corporate restructuring. Another is the fact that stagnation in the local economies, combined with recession in Japan and expectations of slower growth in the United States and Europe, will exacerbate the debt overhang.

Structural and regulatory developments

In October, the Basle Committee on Banking Supervision issued for consultation a paper concerning sound practices in the areas of loan valuation, loss provisioning and credit risk disclosure.[13] This paper complements the Basle Core Principles, which outline the minimum requirements for effective supervisory systems. Various international bodies have called for progress in accounting and disclosure practices for banks' lending and related credit risks, since their treatment can significantly affect the accuracy of reporting and capital calculations. The paper notes that weak or inadequate loan loss provisioning practices and poor transparency are major sources of risk to individual banks and the banking system as a whole. It will serve as a basic framework for supervisory evaluation of banks' policies and practices in the area.

In the same month, the Basle Committee released new guidelines concerning the type of securities that banks should be allowed to use in meeting their capital adequacy requirements.[14] The Committee noted that some banks had issued a range of innovative capital instruments (such as preferred shares with step-up coupons) with the aim of raising Tier 1 capital in a more cost-effective way.[15] Having

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11 A comprehensive plan for financial restructuring was announced by the Thai Government in August. It will be administered by the newly established Financial Restructuring Advisory Committee and provides for capital injection, liquidity support and incentives for foreign participation in the local banking system.

12 It is significant that the Russian crisis did not lead to heavy pressures on the Korean won or the Thai baht. The sizable appreciation of both currencies from the over-depreciated levels seen in January 1998 was sustained, while nominal interest rates were almost back to their pre-crisis levels. These developments, in turn, gave the authorities greater freedom in addressing the more fundamental issues of restructuring their financial systems and their economies.

13 See "Sound Practices for Loan Accounting, Credit Risk Disclosure and Related Matters", Basle Committee on Banking Supervision, Basle, October 1998.

14 See "Instruments Eligible for Inclusion in Tier 1 Capital", Basle Committee on Banking Supervision, Basle, October 1998.

15 Such securities offer issuing banks a number of benefits: the ability to deduct interest payments from taxes; avoidance of the dilution of shareholders' equity; ease of sale in periods of financial market volatility; and lower required return on capital than for common equity.

observed these developments, the Committee decided to limit acceptance of these instruments for inclusion in core capital through the introduction of stringent conditions and the imposition of a limitation on their use to 15% of Tier 1 capital. At the same time, it reaffirmed that common shareholders' funds should be the predominant element of capital since they enable banks to absorb losses on an ongoing basis and conserve capital during times of stress.

III

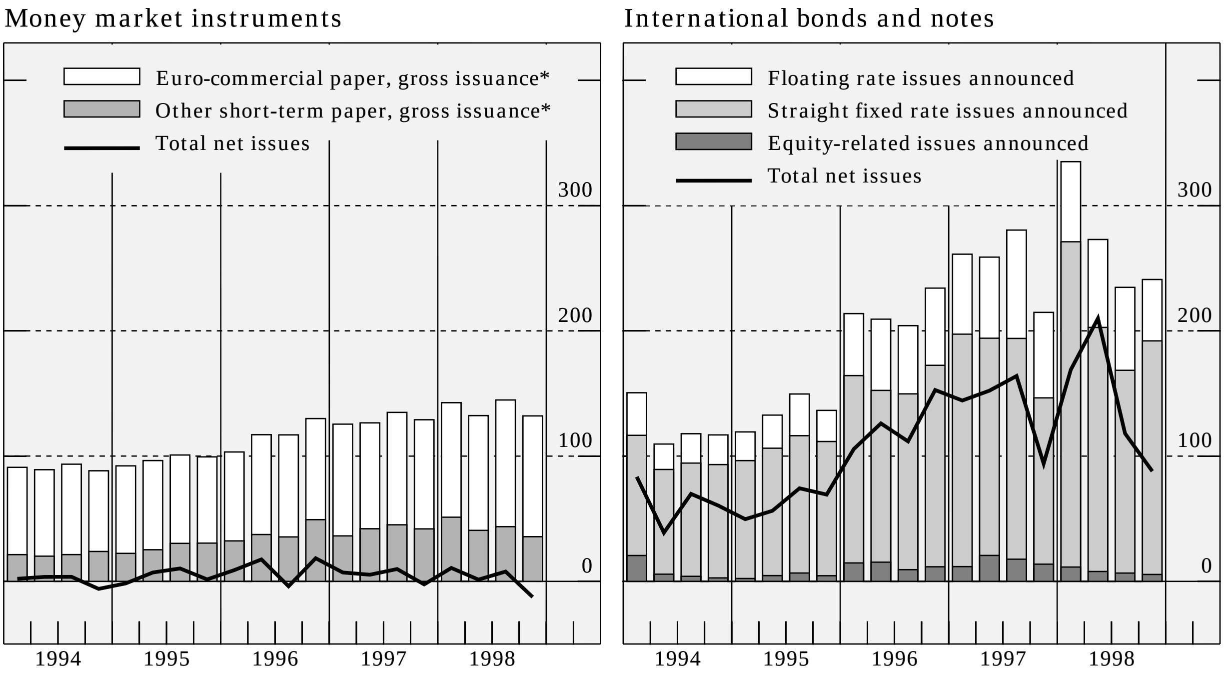
The international securities markets

Overview

In spite of the global turbulence, announcements of international bonds and medium-term notes rebounded slightly in the fourth quarter of 1998. At the same time, the further increase in repayments of international bonds and notes, combined with the drying-up of activity in money market instruments, led to a sharp contraction in total net issuance (from $126 billion to $75 billion, its lowest level in three years). Market conditions remained unsettled for much of the period. The early part of the quarter was characterised by a flight to quality as the Russian crisis and the LTCM debacle prompted investors to withdraw from equities, complex structures and low-rated bonds, and shift to the most liquid benchmarks. The broad-based change in risk appetite and the spiral of deleveraging that followed pushed market volatility to new highs,[16] prompting dealers to pare down market-making.

The international debt securities markets

In billions of US dollars



* Excludes issues redeemed in the same quarter.

Sources: Bank of England, Euroclear, Euromoney, IFR, ISMA and BIS.

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[16] The sharp price swings seen in the major debt markets have been attributed to the reversal of yen carry transactions. Strong downward pressures in the US Treasury market and the sharp appreciation of the yen in the exchange market were associated with heavy selling of dollar-denominated securities by leveraged investors and the parallel repayment of short-term yen-denominated loans. Having expected the yen to remain weak because of the depressed state of the Japanese economy, market operators were caught by surprise by the reversal of the yen, leading to a sharp increase in the volatility of the yen/dollar exchange rate. Such large flow-driven movements illustrate the extent to which leverage was underestimated by market participants (for supporting evidence, see Part V of this commentary).

Main features of international debt securities issues[1]

In billions of US dollars

Instruments, currencies, nationality and type of issuer	1997 Year	1998 Year	1997 Q4	1998 Q1	1998 Q2	1998 Q3	1998 Q4	Stocks at end-Dec. 1998
Total net issues	**574.5**	**592.4**	**91.6**	**179.7**	**211.3**	**125.9**	**75.4**	**4,233.6**
Money market instruments[2]	19.8	7.4	– 2.4	10.7	1.4	7.8	– 12.5	194.5
Bonds and notes[2]	554.6	584.9	94.0	169.0	209.9	118.1	88.0	4,039.2
Developed countries	450.0	486.6	82.9	144.8	166.5	113.2	62.1	3,425.4
Europe[3]	*258.4*	*250.9*	*52.2*	*93.5*	*89.1*	*60.3*	*8.0*	*2,001.2*
Japan	*– 0.7*	*– 24.0*	*– 9.0*	*– 6.6*	*– 9.7*	*– 5.1*	*– 2.7*	*315.3*
United States	*177.6*	*234.0*	*44.0*	*48.9*	*79.0*	*51.8*	*54.3*	*797.2*
Canada	*10.1*	*20.6*	*– 0.8*	*5.9*	*7.1*	*3.7*	*3.9*	*206.2*
Offshore centres	14.6	8.4	0.2	1.9	4.3	1.8	0.4	57.9
Other countries	89.3	37.2	5.1	8.8	27.9	2.3	– 1.8	374.2
International institutions	20.7	60.2	3.4	24.2	12.6	8.6	14.8	376.1
US dollar	333.1	340.3	57.9	103.0	123.9	65.5	47.8	1,902.8
Yen	34.1	– 33.3	– 1.2	– 7.7	– 9.3	– 6.0	– 10.3	485.8
Euro area currencies	139.2	203.6	33.8	61.9	67.7	55.5	18.4	1,157.8
Other currencies	68.1	81.7	1.1	22.5	28.9	10.8	19.5	687.2
Financial institutions[4]	359.7	321.4	76.2	109.5	108.1	75.9	27.9	1,978.4
Public sector[5]	89.1	190.0	– 4.9	53.9	62.5	35.9	37.7	1,281.8
Corporate issuers	125.7	81.0	20.3	16.4	40.7	14.1	9.9	973.4

[1] Flow data for international bonds; for money market instruments and notes, changes in amounts outstanding excluding exchange rate valuation effects. [2] Excluding notes issued by non-residents in the domestic market. [3] Excluding Eastern Europe. [4] Commercial banks and other financial institutions. [5] Governments, state agencies and international institutions.

Sources: Bank of England, Euroclear, Euromoney, IFR, ISMA and BIS.

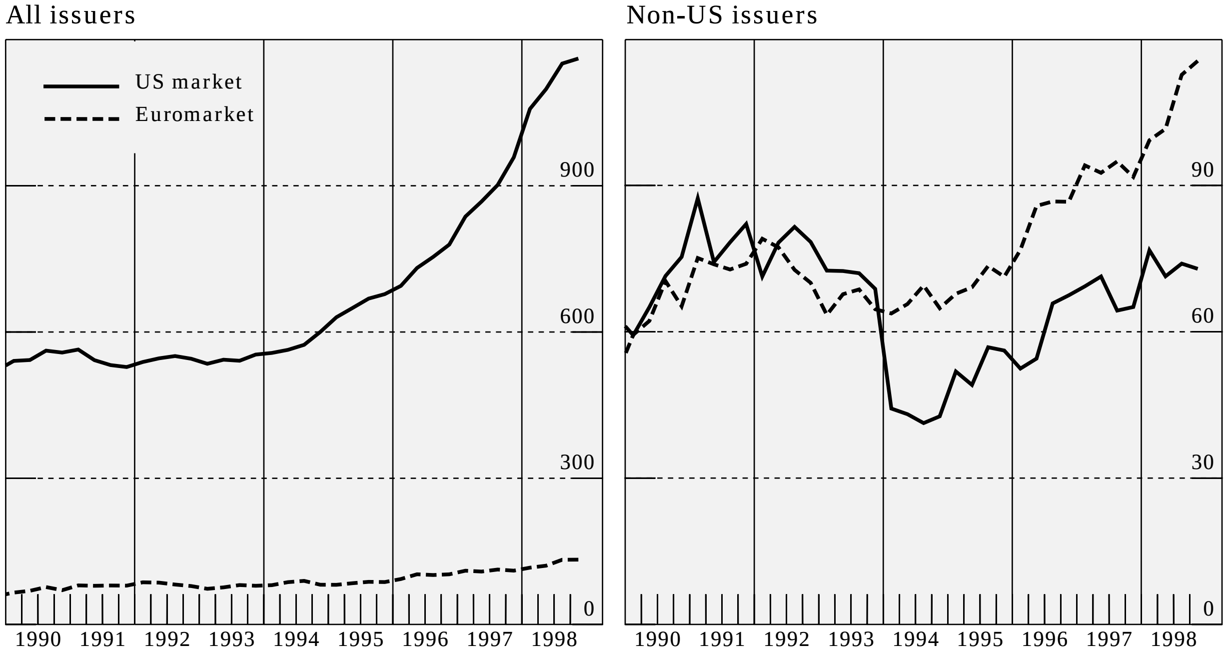
This led observers to express concerns about a global credit crunch.[17] The round of interest rate cuts in North America brought a measure of calm and breathed new life into secondary and primary markets in November. However, despite the surprise reduction in European official rates in December, there was continued anxiety regarding the health of the Japanese financial sector, the sustainability of Brazil’s exchange rate policy and the valuation of global equity markets. Credit tiering declined somewhat (see the graphs on pages 2 and 29), but remained significant.

Recent events have raised a number of important issues relating to secular trends. For example, financial flows appear to have become more volatile in recent years, as a result of the larger volume of cash market transactions and the ease with which positions can be reversed. Some observers have noted that capital market financing was more rapidly affected by changes in market sentiment, arguing that securities investors have looser relationships with borrowers and are more strongly influenced by daily price movements (due to the marking to market of their assets and liabilities) than commercial banks. The recent crisis appears to have shown that commercial banks reacted more slowly to the emergence of financial difficulties in developing countries than some other groups of intermediaries (see Chapter V of the 68th BIS Annual Report). However, evidence on this point is not totally clear-cut given that commercial banks may include in their reported data positions that are managed on behalf of customers. Moreover, it is increasingly difficult to distinguish between the behaviour of

[17] Some analysts surmised that such a crunch would have had a stronger impact in North America, where capital markets play an important role, than in Europe.

Commercial paper outstanding

In billions of US dollars



Sources: Federal Reserve Board, Euroclear and BIS.

various classes of intermediary since the largest players have all embraced the use of modern risk management technology. The use of similar risk management systems, data sets and investment biases may explain why investors have suffered from a sharp increase in the correlation of assets in downturns.

Money market instruments

Net issuance of euro-commercial paper (ECP) and other short-term euronotes underwent an unprecedented contraction in the fourth quarter of 1998 (by $13 billion, to $195 billion). While part of the reduction in activity was related to the increase in issuing costs faced by financial and non-financial private sector entities, particularly in the US dollar and yen segments, some of the decrease also reflected heavy repayments by Brazilian banks and by one highly rated European sovereign borrower. As in the previous quarter, there was growing evidence that borrowers were positioning themselves to benefit from the creation of a pan-European market for short-term paper. For example, the European Investment Bank announced that it was consolidating its various issuance facilities into a global programme, while Finland and a German state agency announced the launch of large ECP programmes that will complement their current money market operations.

Longer-term international securities

In the longer-term segment of the international securities markets, the slight increase in the gross volume of issues (to $241 billion) was accompanied by a further substantial increase in repayments (to $156 billion), leading to a second consecutive reduction in net financing (to $88 billion). The rise in announcements occurred exclusively in the straight fixed rate segment, offsetting reduced activity in the floating rate and equity-related compartments. Similarly, the increase in financing by supranational entities and corporate borrowers largely compensated for the drop in issuance by the financial sector. The premium given on liquidity was reflected in the continuing large average size of new transactions. Lastly, with $30.5 billion worth of issues, primary market activity in international equities was robust. The gyrations seen in global equity markets did not prevent several recently privatised telecommunications entities from bringing large primary offerings.

Main features of the international bond and note markets

In billions of US dollars

Instruments, currencies and type of issuer	1997	1998	1997	1998			
	Year	Year	Q4	Q1	Q2	Q3	Q4
Announced issues	**1,015.3**	**1,083.8**	**214.7**	**335.1**	**273.0**	**234.7**	**241.0**
Floating rate issues	283.3	249.4	68.2	63.9	70.2	66.2	49.0
Straight fixed rate issues	668.0	802.9	132.8	259.7	194.8	161.9	186.5
Equity-related issues[1]	63.9	31.5	13.7	11.5	7.9	6.6	5.5
US dollar	517.4	534.6	109.4	154.6	143.6	115.3	121.1
Yen	129.8	69.2	26.6	19.7	12.8	17.2	19.5
Euro area currencies	221.3	301.4	51.8	105.2	76.8	65.6	53.8
Other currencies	146.8	178.5	26.9	55.5	39.8	36.6	46.6
Financial institutions[2]	538.5	525.3	118.2	168.6	134.6	117.5	104.7
Public sector[3]	225.2	355.5	41.2	109.2	77.2	80.2	89.0
Corporate issuers	251.6	202.9	55.3	57.3	61.3	37.0	47.3
Completed issues	**1,016.1**	**1,082.7**	**231.9**	**294.0**	**301.3**	**243.4**	**244.1**
Repayments	**461.5**	**497.8**	**137.9**	**125.0**	**91.4**	**125.3**	**156.1**

[1] Convertible bonds and bonds with equity warrants. [2] Commercial banks and other financial institutions. [3] Governments, state agencies and international institutions.

Sources: Bank of England, Euroclear, Euromoney, IFR, ISMA and BIS.

For 1998 as a whole, gross issuance of debt securities decelerated sharply, with announcements rising by 7% (to $1,084 billion). While declining government issuance in the industrial world and the trend rise in repayments of international securities provided underlying support to business, primary markets were affected in the second half of the year by the unfavourable conditions. The introduction of the euro and the creation of a large pan-European capital market could well lead to a renewed expansion of activity.[18]

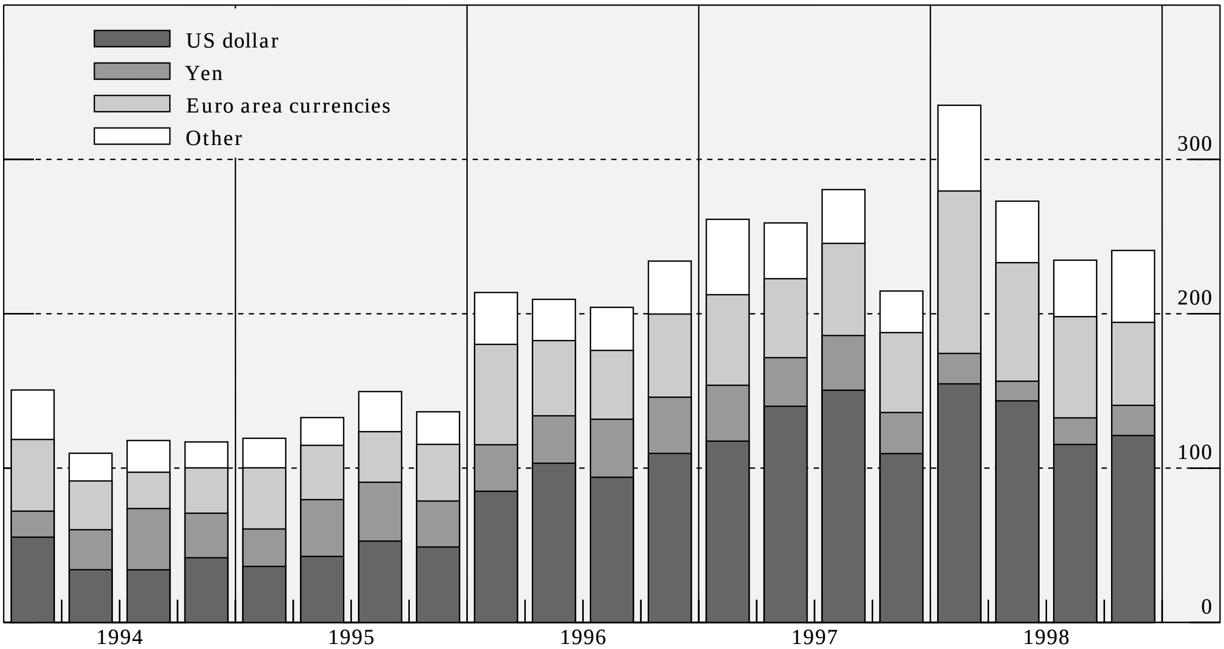
The unprecedented degree of volatility accentuated the concentration of international bond underwriting in 1998, with the 20 largest intermediaries seeing their share rise notably (to 85% from 74% see the graph on page 19). Underwriters based in the United States maintained their lead, using the strength of their balance sheets to win mandates for large supranational and public sector issues. European-based dealers capitalised on the forthcoming introduction of the single European currency to make new gains in market share. The introduction of the euro will create significant business opportunities for investment banks in areas such as asset management, portfolio restructuring, merger and acquisition financing, asset-backed securities and high-yield issuance. It is also likely to lead to some consolidation of business. While US investment banks have actively developed activities in areas in which they have a comparative advantage (such as asset-backed securities and high-yield issuance), some large European banks have scaled back their ambition of becoming global players to refocus on European markets.[19] In contrast, the sharp slowdown of activity in Japanese and yen-denominated business negatively affected the standing of Japanese intermediaries, with a further decline in market share.

[18] The introduction of the euro has already led to some harmonisation of trading conventions in the area of securities and derivatives. However, it will probably take time before euro area capital markets achieve a degree of integration comparable to that of US markets in view of existing differences in credit quality, taxation and issuing procedures.

[19] However, the recent mergers of banks in Europe aim at improving their international standing.

Announced international bond and note issuance by currency

In billions of US dollars



Sources: Bank of England, Euroclear, Euromoney, IFR, ISMA and BIS.

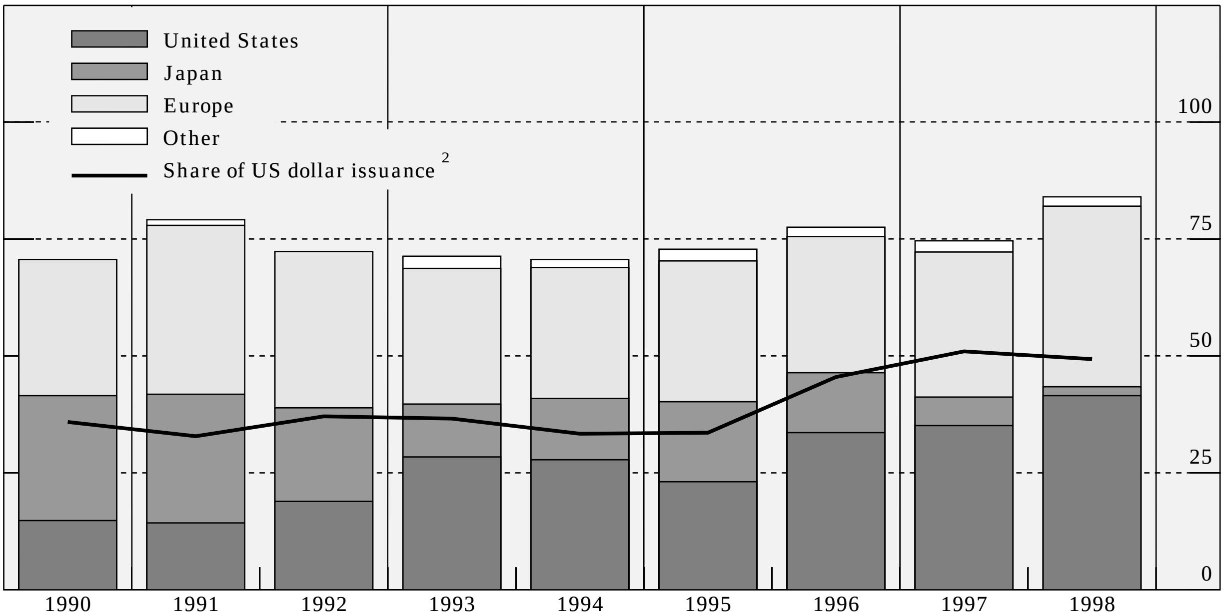
Type and nationality of issuers. The prevailing conditions meant that access to funds tended to be restricted to the very best signatures. Public sector agencies from the major industrial countries continued to make heavy use of the market, while supranational entities took advantage of the flight to quality to step up their funding operations. With liquidity at a premium, such borrowers were able to launch several large issues, maintaining the average transaction size at a high level (see the graph on page 22). However, in the unsettled conditions, underwriters often encouraged borrowers to bring fungible additions to outstanding securities rather than stand-alone transactions.[20] Moreover, terms were less advantageous than in calmer periods. As in the third quarter, financial institutions, which have accounted for the bulk of international securities issuance in recent years, met with a less favourable reception owing to the concerns created by their exposure to Russia and leveraged investment funds. Activity by the non-financial private sector was slightly higher relative to the previous quarter, but it remained substantially lower than in the first half of the year.

Meanwhile, the shift of investors away from lower-rated credits meant that there was a further reduction in issuance from developing countries. The volume of such issues fell to its lowest level since the first quarter of 1995 (see the graph on page 21), at the height of the Mexican crisis. Fears about conditions in Russia affected activity by Eastern European borrowers, which accounted for much of the contraction. Asian countries were in a somewhat better situation, as reflected in the tentative recovery of their fixed income and equity markets (see the graphs on pages 20 and 23), although this recovery generally did not extend to private sector debt securities. The uncertainty surrounding the financial situation in Brazil also tempered the enthusiasm of investors for securities issued by Latin American and other emerging market names. A few sovereign borrowers (notably Argentina, China, Hungary, Mexico and Turkey) managed to launch sizable issues, but margins were much higher than in the first half of 1998, while maturities remained short. Such borrowers found it significantly more difficult to issue large plain vanilla securities and, as a result, several transactions were either additions to existing securities or included “sweeteners” that enhanced their marketability,

20 Fungible securities are issued with identical terms and are therefore interchangeable.

Share of international bond issues of the top 20 bookrunners[1]

In percentages



1 Includes global, euro, foreign and eligible foreign-targeted domestic bonds, but excludes equity-related transactions.
2 Share of announced US-dollar bonds and notes in total issuance.

Sources: IFR and BIS.

including warrants, collateral backing and official guarantees.[21] Reduced market access has significantly complicated the management of these countries' external debt and forced them to consider a number of alternatives. These include the placement of securities in domestic markets, the arrangement of international private placements and syndicated loans, the structuring of asset-backed securities, the privatisation of public sector assets and greater recourse to bilateral or multilateral assistance.[22]

Currency of issuance. The US dollar and sterling appear to have benefited from the turmoil, with issuance in these two currencies rising by 5% and 56% respectively. Swap spreads in those two currency segments remained at historically wide levels, offering opportunities for highly rated borrowers. The market also continued to see the emergence of a significant volume of euro-denominated securities, as borrowers sought to position themselves ahead of EMU. This occurred against a background of strong confidence in the successful introduction of the euro and reports of growing interest on the part of Asian investors in European currency assets. In contrast, technical and accounting issues related to EMU meant that investors were reluctant to add to their portfolios of traditional European currency assets. In the international yen market, the picture was mixed, with a slight increase in gross issuance but further net repayments. There are a number of reasons for this. Firstly, the deregulation of foreign investment in April apparently accelerated the outflow of funds

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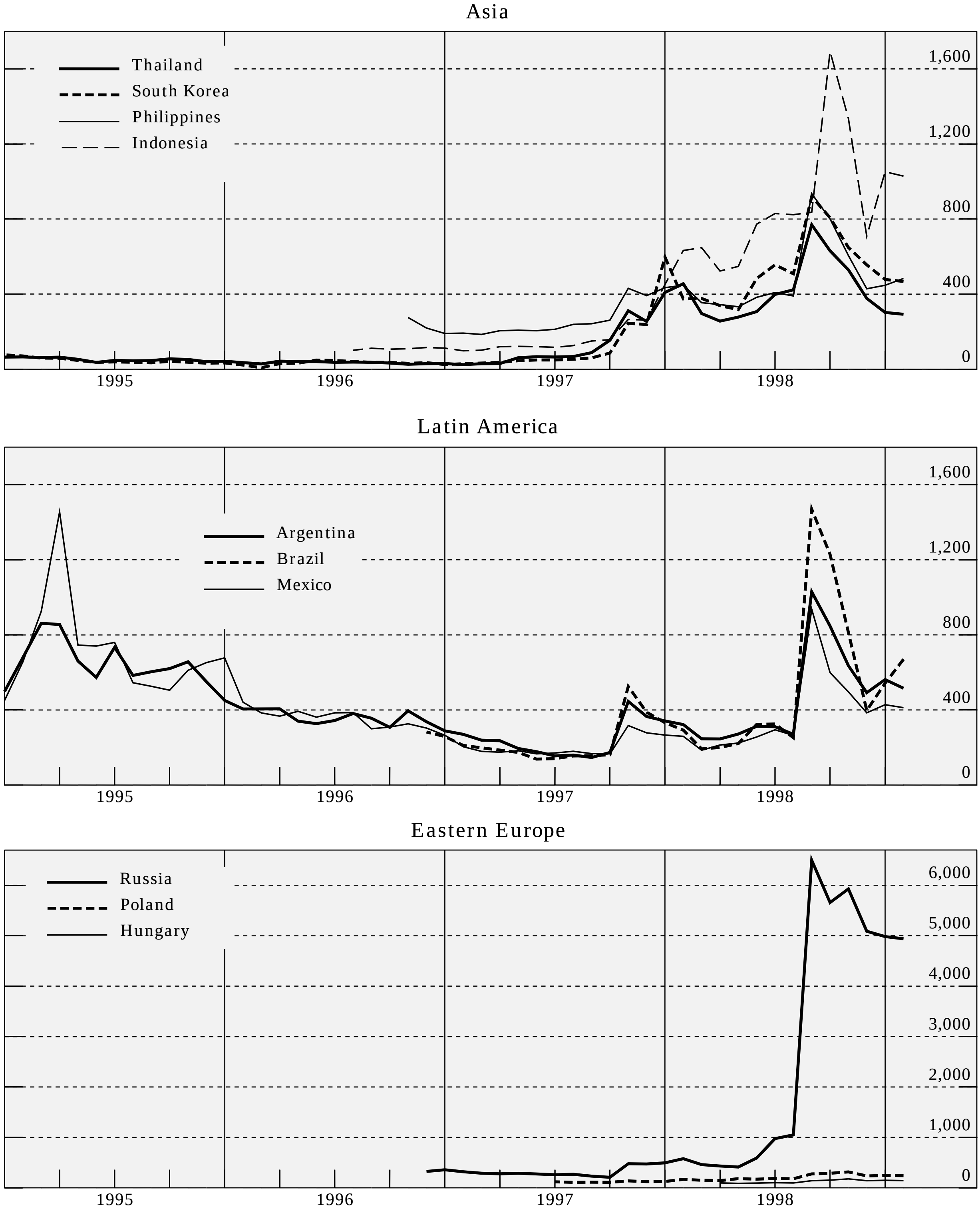
21 For example, one of the Argentine issues encompassed an embedded warrant giving investors the right to buy additional Argentine debt. Meanwhile, the Thai electricity utility conducted one of the few transactions from Asia, a $300 million issue that included a guarantee from the World Bank. This enabled the borrower to achieve significant cost savings relative to the levels implied by secondary market yields on its outstanding dollar securities.

22 Spain, for instance, announced the establishment of a liquidity line for Latin American countries that would be channelled through the IMF, while Japan offered to cooperate with the Asian Development Bank and the World Bank in guaranteeing issues by Asian sovereign borrowers.

Average spread of US dollar sovereign international bonds over ten-year US Treasury notes

In basis points

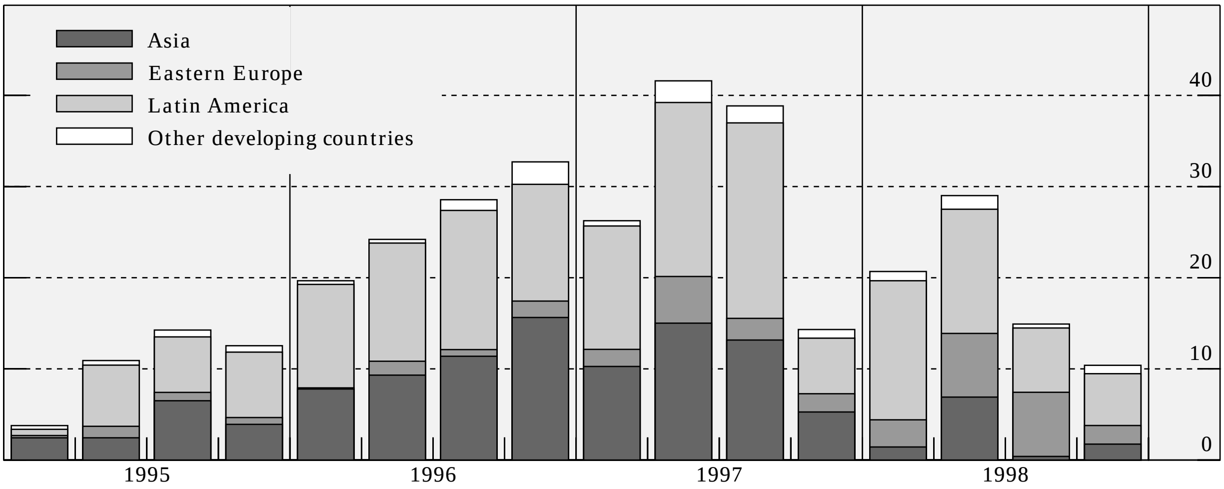


Source: Bloomberg.

into foreign securities, thus undercutting domestic demand for Samurai bonds. Secondly, the strength of the Japanese currency was not sufficient to offset the unwillingness of international investors to accept the low yields available on yen-denominated paper. Thirdly, news of higher issuance of Japanese government bonds and reduced purchases of such securities by governmental investment

International bond and note issuance by emerging market borrowers*

In billions of US dollars



* Announced issues based on the nationality of the borrower.

Sources: Bank of England, Euroclear, Euromoney, IFR, ISMA and BIS.

funds led to a collapse of prices towards the end of the period. Finally, the rapid development of the domestic corporate bond market may have led highly rated Japanese companies (which have dominated such business) to shift away from international issuance.

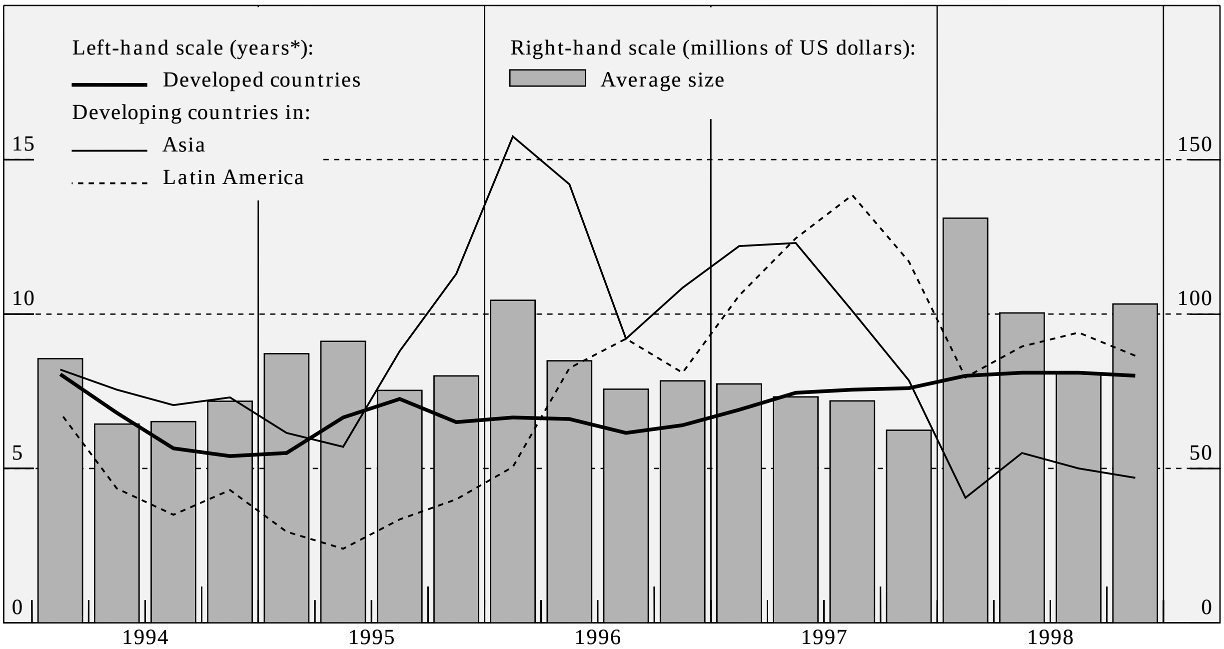
Type of issues. Issuance of *straight fixed rate bonds and notes* rose by 15% in the fourth quarter (to $187 billion). The volatility of bond and swap rates made it particularly difficult to launch fixed rate issues in the early part of the quarter, but activity recovered sharply in November. The expansion resulted largely from more active borrowing by supranationals and highly rated corporate entities (mainly from Europe and the United States). Although heavy repayments by financial institutions provided underlying demand, the drying-up of liquidity in the market for bank liabilities led to a dramatic drop in net funding. Issuance by public sector entities declined slightly, but remained much higher on a gross and net basis than in 1997. US financing agencies, in particular, continued to capitalise on the reduced supply of US Treasury notes and investors' flight to quality to launch a high volume of fixed rate issues ($30 billion), partly under their benchmark issuing programmes (albeit at higher margins than on outstanding issues). Weak demand for complex structures and issues denominated in less liquid or emerging market currencies also led some supranationals to move back to plain vanilla instruments.

There was a further reduction in announcements of *floating rate notes* in the fourth quarter of 1998 (by 26%, to $49 billion). Although the volatility of markets provided underlying demand for defensive instruments, the terms available in the swaps market appear to have reduced the attractiveness of floating rate debt. The global financial crisis also raised doubts about the creditworthiness of financial institutions, the main users of this market segment, thus making it more difficult for them to launch issues. This was illustrated by the smaller size of issues in most currency sectors except the US dollar.

The issuance of *equity-linked bonds* decreased for the sixth consecutive quarter (to $5.5 billion). Although equity markets recovered their poise, the high level of volatility hampered business. Several issues were cancelled in the early part of the quarter, but the market had recovered sufficiently in December to allow one leading German bank to introduce a large exchangeable transaction.[23] Such issues became increasingly popular in 1998 and are expected to remain so in 1999 as European

[23] The ECU/€1.8 billion issue will be exchangeable into the shares of an insurance company in which the bank has an interest.

Average size and maturity of announced straight fixed rate international bonds and notes



* Two-quarter moving average weighted by size.

Sources: Bank of England, Euroclear, Euromoney, IFR, ISMA and BIS.

companies seek to use tax-efficient means of reducing corporate cross-holdings. Despite the recovery of Japanese equity markets from a 12-year low, issuance by Japanese entities dried up completely (as it did in the fourth quarter of 1997). This has caused difficulties for lower-rated Japanese borrowers given the heavy volume of repayments. In the primary market for *international equities*, new issues nearly doubled (to $30.5 billion), with recently privatised European and Japanese telecommunications companies accounting for the bulk of activity.

According to partial data, the volume of business in *mortgage and other asset-backed securities* increased in the fourth quarter of the year (by 15%, to $26 billion). US-based vehicles stepped up their activity, accounting for almost 80% of business. This was in contrast to the liquidity crunch seen in the US domestic ABS market, where intermediaries faced large losses on mortgage loans that had been originated but not yet repackaged into new securities. In spite of the crisis gripping emerging markets, a few borrowers were able to launch issues, including a $1.5 billion multi-tranche arrangement for Pemex. The issuer secured a triple-A rating for one of the tranches through the collateralisation of oil export revenues. Innovative issues included transactions backed by football stadium and broadcasting revenues. The arrival of the euro and the development of new techniques[24] may well lead to the further expansion of that market segment.

Structural and regulatory developments

In October, the French authorities said that they would amend bankruptcy and securities legislation to allow the issuance of mortgage-backed securities. The proposed legislation would permit authorised French banks and credit institutions to set up subsidiaries that could issue bonds secured on mortgages

[24] For example, intermediaries are seeking new ways of reducing regulatory capital charges by actively developing new synthetic issues that are structured on the basis of credit derivatives.

Equity market developments

[1] Weekly averages. Indexed to the average for the first week of 1994. [2] In US dollar terms. Indexed to the month-end observation for December 1993.

Sources: International Finance Corporation (IFC) and BIS.

or loans to the public sector. Such measures would enable French credit institutions to lower their funding costs and compete more effectively in the new euro area.[25]

In December, the UK Government further clarified its views on the proposed European withholding tax on savings by indicating that it would accept it in principle but seek an exemption for the international bond market. The European Commission's draft directive would require EU countries to impose a withholding tax of at least 20% on interest income paid to EU citizens. If collection were not possible, the entity paying the interest would have to provide information to the tax authorities of the citizen's home country. The same month, the Japanese Government announced that non-resident investment in Japanese government bonds will be exempted from withholding tax from September 1999, under certain conditions. This will be followed in 2001 by the abolition of the tax exemption granted to domestic brokers registering bond holdings under the voluntary registration system.[26]

[25] Mention can also be made of the publication in December by the German Securities Supervisory Authority of its compliance guidelines "Organisational Requirements of Investment Service Enterprises".

[26] Currently, there are two mechanisms for the registration of bond ownership in Japan. Under the book-entry system investors register their holdings of government bonds in their own names, while under the voluntary registration system investors record their bonds in the name of a Japanese bank or broker.

IV

Derivatives markets

Overview

Derivatives markets witnessed significant fluctuations in activity during the fourth quarter of 1998. While the global financial crisis fuelled turnover in the early part of the quarter, the withdrawal of leveraged market participants and the paring-down of positions ahead of the introduction of the single European currency subsequently led to a sharp deceleration of transactions. Attention continued to centre on competitive developments in European market-places, with the further strengthening of Eurex's position prompting the creation of defensive alliances and the introduction of new euro-compatible products. At the same time, the announcement of new electronic trading facilities crossing over cash and derivatives markets and the development by exchanges of clearing services for OTC products accentuated the convergence of markets. In trying to counter the loss of their franchises, established exchanges made competing attempts to market themselves as providers of a wider range of financial services. In the OTC market, the financial upheaval and the forthcoming introduction of the euro tempered speculation and led market participants to refocus on transparency as well as liquidity and counterparty risks.[27] Recent events revealed the weakness of value-at-risk methodologies in periods of extreme volatility, forcing participants to seriously reconsider their models and strategies. The partial default by Russia also highlighted a number of deficiencies in the area of credit derivatives.

Exchange-traded instruments

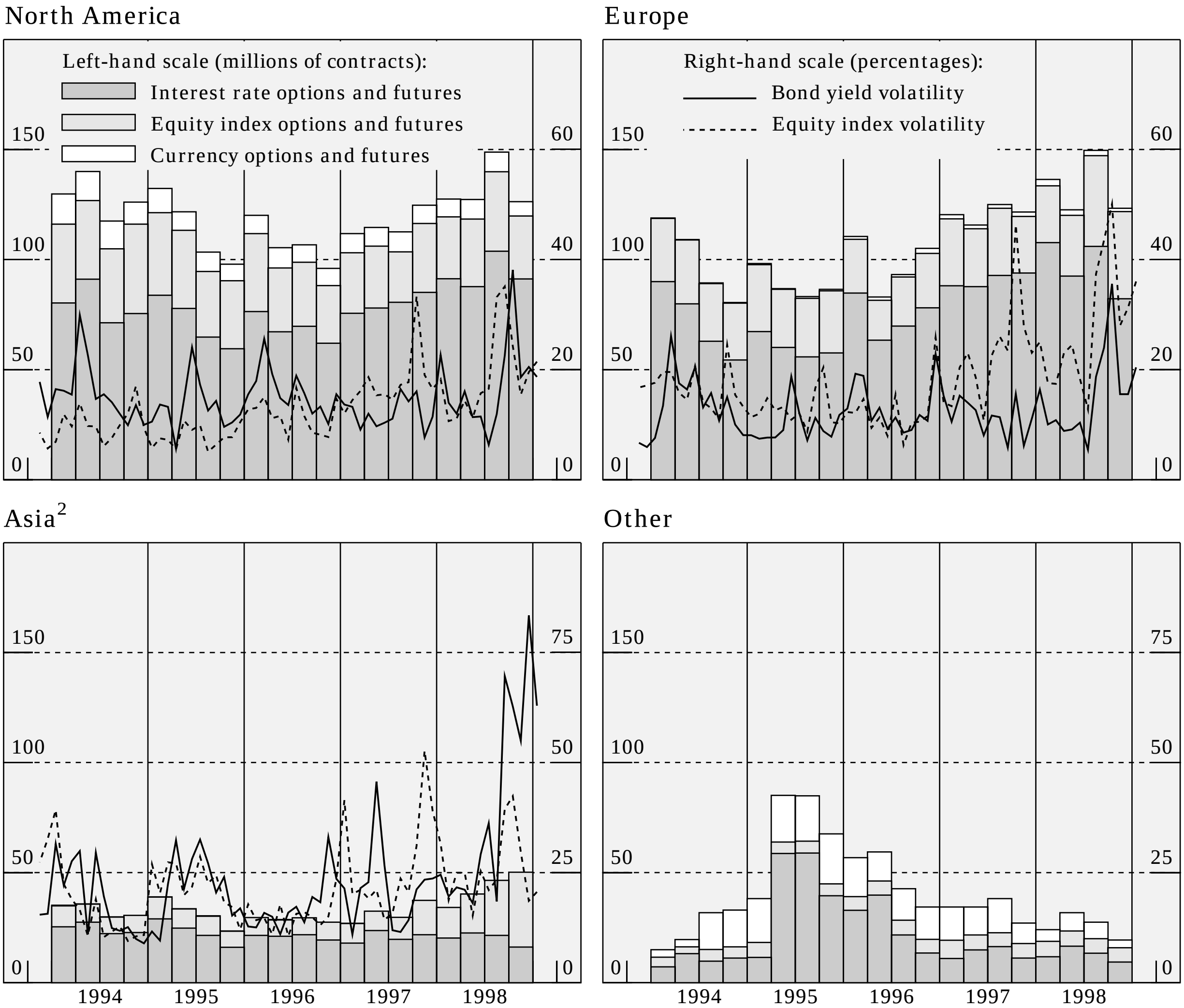
The aggregate turnover of exchange-traded financial derivatives contracts monitored by the BIS declined by an estimated 14% in the fourth quarter of 1998 (to 319 million contracts traded, from a revised figure of 373 million in the third). Although the decline was most pronounced in cross-currency contracts (39%), there was also a significant contraction in interest-rate-related instruments (19%). Activity in equity contracts was more stable (-1%), supported by rapid expansion on some recently-established Asian exchanges. Turnover climbed to near-record levels in the first few days of October, but moderated thereafter. This was attributed to lower uncertainty following the round of official interest rate reductions in the United States and Europe, the arrangement of an IMF package for Brazil and the announcement of financial restructuring programmes in Asia. Reduced trading by highly-leveraged entities and cutbacks in European interest rate and currency exposures in advance of EMU were other contributing factors.

The pattern of activity in Europe confirmed the status of the Bund futures contract on Eurex as third most actively traded instrument in the world after eurodollar and US Treasury bond futures contracts. The lead over other European exchanges widened further, with trading in Bund futures being six times that in MATIF's "notionnel" (the second most active long-term contract in Europe).[28] This development raised concerns that the underlying market may not be sufficiently large to support futures trading in periods of stress. In the area of money market instruments, LIFFE continued to dominate, but there was some evidence of a repositioning in favour of Euribor, used on Eurex and MATIF, at the expense of euro Libor. In North America, trading declined somewhat less than in Europe, with uncertainty about the shape of the yield curve offering support to spread trading. In Japan, activity was subdued, except in December, when the bear market in Japanese fixed income

[27] Such a development could indirectly benefit exchange-traded markets given their strengths in the areas of transparency, liquidity and security.

[28] Steady trading in German interest rate instruments in the face of declining turnover elsewhere in the euro area meant that the share of interest rate instruments denominated in Deutsche marks rose further (see the graph on page 27).

Turnover of derivative financial instruments traded on organised exchanges and bond yield and equity index volatilities[1]



[1] Annualised standard deviation of daily percentage changes in ten-year government bond yields and equity indices of US, German and Japanese markets for North America, Europe and Asia respectively. Data for fourth quarter 1998 are partly estimated. [2] Including Australia and New Zealand.

Sources: Futures Industry Association and BIS.

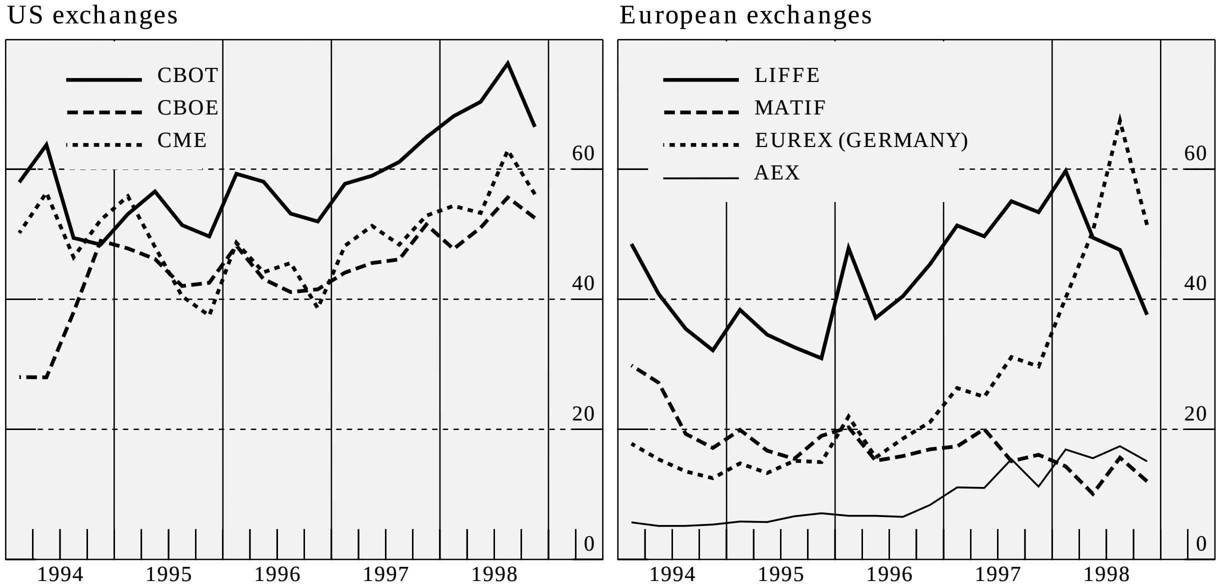
markets spurred hedging demand. The imposition of restrictions on the short selling of shares in October may have negatively affected turnover in Japanese equity instruments.

For the year as a whole, aggregate turnover of exchange-traded financial and non-financial products expanded by 13% (to 2.2 trillion contracts), with financial contracts growing by 11% (to 1.3 trillion units, mainly on equity indices). While the CBOT remained the largest exchange in the world (+16%, to 281 million), Eurex Germany displaced LIFFE as third most active market-place (+87%, to 210 million). The migration of activity in German bond contracts to Eurex had a significantly negative impact on the yearly turnover on LIFFE (-7%, to 194 million) and MATIF (-31%, to 52 million). At the same time, the CME continued to grow at a sustained pace (+13%, to 227 million).

Consolidation ahead of EMU continued to be a driving force. European exchanges reacted to the growing influence of Eurex by forging new alliances, developing services for OTC markets, fine-tuning existing instruments and introducing new euro-compatible products. LIFFE extended the change in strategic direction announced earlier, opening its share ownership to non-members, indicating its willingness to provide a wider range of financial services and emphasising the search for

Derivatives turnover on major US and European exchanges*

In millions of contracts, quarterly data



* Includes all types of derivative instruments traded on exchanges (i.e. including commodity products and options on single equities).

Sources: Futures Industry Association, major exchanges and BIS.

a broad range of alliances.[29] At the same time, it took concrete steps aimed at regaining the initiative, such as the introduction of swap-related contracts (October), the launch of the first phase of its new electronic trading system (November), and the introduction of a contract based on Euribor (December). LIFFE also abandoned plans for the parallel trading of money market contracts in legacy currencies, announcing mandatory conversion of the euromark and eurolira contracts into euro Libor or Euribor (at participants' discretion). MATIF, for its part, pursued its efforts to cover the key points of the euro yield curve by announcing the launch in January of a multi-issuer two-year contract that will come into competition with the Schatz contract traded on Eurex.[30] In December, the exchange switched its Pibor contracts to Euribor, with banks agreeing to supply liquidity through continuous market-making.[31] Concerns have been expressed that the recent proliferation of new euro-denominated contracts may be at the expense of liquidity.

The extent of pressures faced by smaller European exchanges was reflected in the announcement of new alliances. In December, MIF joined Euro-Globex, an electronic trading partnership formed in June 1998 by MATIF, MONEP and MEFF, which allows participants to retain their own trading infrastructures. The members intend to concentrate on the short-term area, hoping that by pooling distribution channels and by negotiating overseas links they will be better able to compete with Eurex

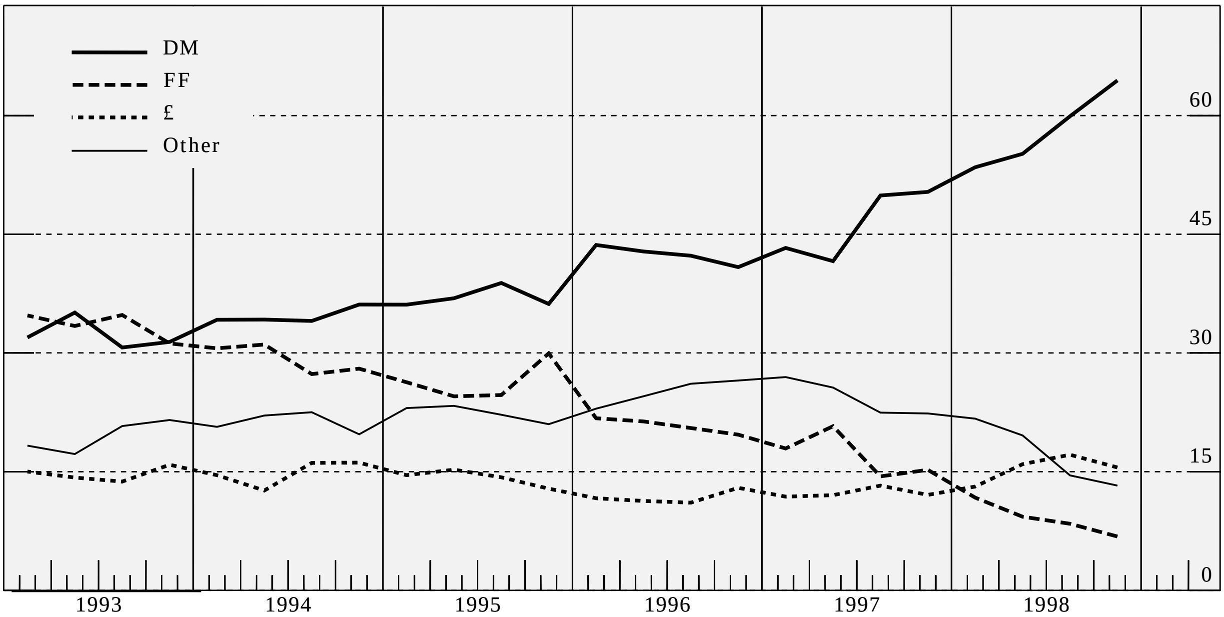
[29] One possibility would be to establish closer ties with the London Clearing House (LCH). The latter is in the process of developing SwapClear, a clearing service for the OTC market, and such an alliance would therefore enable members of LIFFE and of SwapClear to manage their collateral more efficiently and net out their trading margins.

[30] The contract will be based on French and German government bonds. However, the persistence of significant yield differentials between European government bond issues led the exchange to postpone the multi-issuer delivery of its euro five-year and euro notionnel bond contracts.

[31] At the same time, MATIF/SBF extended their clearing activities to the European OTC bond and repo markets through Clearnet, a new service that began operation in October.

Turnover in European interest rate derivatives by currency denomination of the underlying contract*

Percentage shares, quarterly data



* Based on the total number of short and long-term interest rate contracts traded. Data for the fourth quarter 1998 are partly estimated.

Sources: Futures Industry Association and BIS.

and LIFFE.[32] In contrast, HEX announced in October a link with Eurex under which almost all its derivatives trading will be shifted to the latter group.[33] Full implementation of these initiatives would see the emergence of four competing blocs in Europe, centred around Eurex, Euro-Globex, LIFFE and the Nordic Stock Exchange (a Danish/Swedish alliance). It will be interesting to see how they will interact with the various groupings that are being established in the cash markets, particularly since virtually all national stock exchanges have taken over the corresponding derivatives exchanges.[34]

Competition in Europe was also reflected in the struggle to impose new equity benchmarks. Thus, Standard & Poor's launched two Europe-wide indices (Euro and Euro Plus) that occupy the middle ground between existing broad and narrow indices (see the table on the next page). Selection of the appropriate index involves a trade-off for investors. Narrow indices based on stocks with a large market capitalisation offer a less faithful representation of overall market trends, but tend to be preferable for the creation of liquid futures. As in the fixed income market, the merger of European stock exchanges will no doubt lead to a consolidation of indices. Providers of such data have already begun to turn their attention to pan-European sectoral indices, an area that has so far been less developed than in North America.

[32] The Pibor and Mibor contracts traded on MATIF and MEFF RF were consolidated into MATIF's Euribor contract at the end of December. However, MIF listed a separate Euribor futures in January.

[33] Under the agreement, the core derivatives traded by HEX will be listed only on Eurex and will be made available to all Eurex members. Trading revenues will be shared by the two exchanges.

[34] For instance, the stock exchanges in Madrid, Milan and Paris have indicated a desire to join the common platform created by the DB and the LSE (along with those of Amsterdam, Brussels and Zurich). Meanwhile, other satellite groupings have been formed, such as that linking the stock exchanges of the Benelux countries.

European equity indices

Category	Provider				
Europe Broad-based	*FT/S&P* Europe (745 constituents) FTSE Eurotop 300	*MSCI* Europe (593 constituents)	*Dow Jones* Stoxx (645 constituents)		
Euro area Broad-based	*FT/S&P* Emu 351 FTSE Ebloc 300	*MSCI* Emu 335	*Dow Jones* Euro Stoxx 324		
Europe Large capitalisation	*FTSE* Eurotop 100		*Dow Jones* Stoxx 50	*S&P* Euro Plus	
Euro area Large capitalisation	*FTSE* Ebloc 100		*Dow Jones* Euro Stoxx 50	*S&P* Euro	
Sector indices	*FT/S&P* Various indices	*MSCI* Europe & EMU sector indices	*Dow Jones* 19 sector indices	*S&P* 11 Euro & Euro Plus sector indices	*Eurobench* Various indices

Sources: Futures & OTC World and BIS.

With European exchanges having decisively shifted to electronic platforms, several developments confirmed that a similar pattern was emerging in North America. For example, the CBOE, the largest US options exchange, announced plans for a full-fledged screen-based system, while the board of the CME approved the parallel trading of eurodollar futures contracts. However, screen-based systems have so far not been a roaring success in North America. The facilities installed by the CBOT and the CME accounted for less than 1% of activity in 1998, while the new joint ventures recently established by exchanges and wholesale market brokers have seen only modest activity in spite of attractive fee structures and opportunities for cross-margining. This has not dented the enthusiasm for new electronic ventures, as witnessed by the announcement of a number of new facilities in the course of the quarter. Other initiatives included the introduction of euro-related currency contracts by the CME and FINEX. Lastly, Mexico opened a new derivatives exchange in January with a dollar/peso futures contract.

In Asia, Singapore attempted to improve its competitive position relative to Hong Kong and Tokyo by merging its stock and futures markets. However, the exchange’s launch of an index contract based on Hong Kong stocks created some uneasiness in other Asian market-places. Singapore, which has already capitalised on its relaxed rules and margin requirements to achieve an enviable position in Asia, is attempting to become a major centre for equity trading in the region. The HKFE has reacted by offering more favourable terms for trading. In Australia, the ASX and SFE also confirmed their intention to merge.

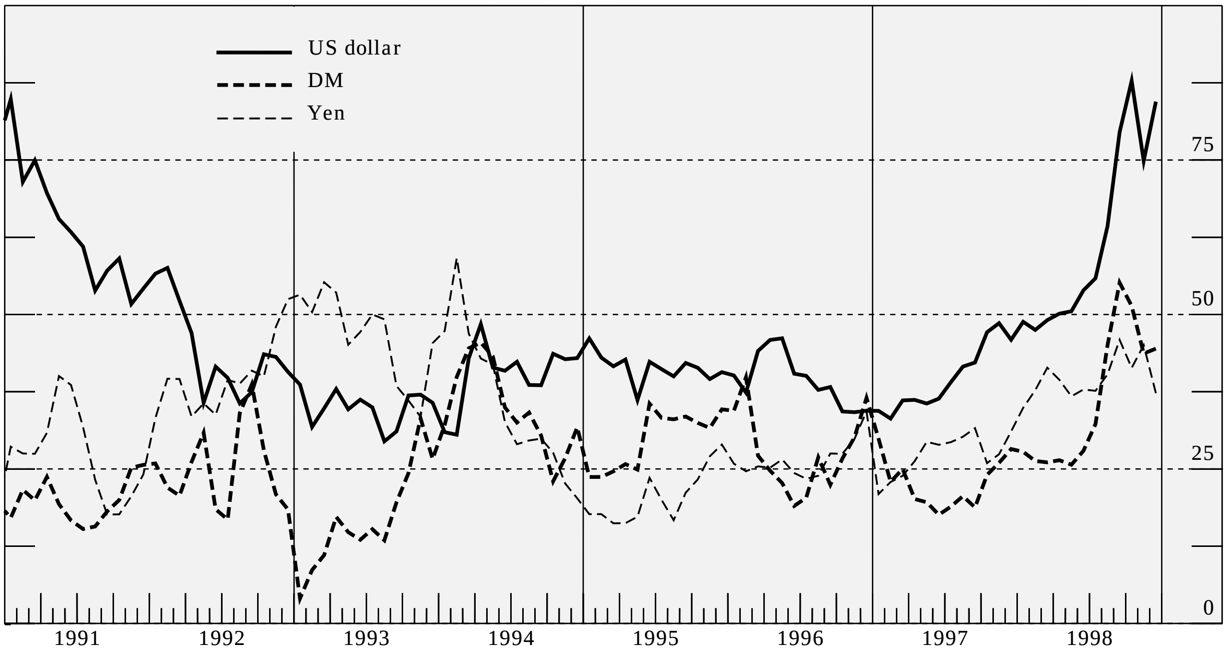
Over-the-counter instruments

The global financial crisis supported activity in the OTC market in the fourth quarter of 1998. Faced with heavy losses, proprietary traders and hedge funds unwound their positions and attempted to shift their exposures through the creation of structured securities. However, this boost to business was temporary as downgrades and defaults intensified risk aversion and led to a sharp cutback in credit lines to non-bank intermediaries. Market participants reconsidered their dependence on value-at-risk calculations, giving greater weight to potential future exposure and liquidity risk factors. A similar reassessment took place in the repurchase market. Intermediaries had granted highly favourable financing terms to leveraged investors and relied heavily on collateral at the expense of credit analysis. A number of financial institutions have since announced changes to their risk management structures that will result in a better integration of market and credit risks.

In the *interest rate swap* market, spreads over the major benchmark rates reached an eight-year high in October owing to concerns about credit risk. Although margins narrowed somewhat in November, the prevailing climate of uncertainty hampered underlying sources of business. The forthcoming

Interest rate swap spreads over ten-year government bond yields

Monthly averages, in basis points



Source: Datastream.

introduction of the single European currency was also reported to have moderated turnover as financial institutions focused on the strategic and accounting implications of this move. However, the drop in long-term sterling interest rates apparently spurred a rash of relative value and convergence trades against German swap rates. The swings in swap margins were also reported to have boosted activity in asset swaps.[35] One of the notable features of the quarter was the unusual evolution of interest rates in the Japanese interbank market. Western-based banks began offering negative rates on yen-denominated deposits, while Japanese banks faced new upward cost pressures on their interbank liabilities (see footnote 5). These developments prompted western banks to reverse outstanding yen-denominated interest rate swaps and led some intermediaries to offer yen interest rate floors. The situation in other Asian countries was more favourable, with the easing of interest rates leading to a resumption of market activity.

In the area of *cross-currency* products, market volatility reached unprecedented highs in the early part of the fourth quarter. In particular, the sharp appreciation of the yen in October, which was exacerbated by the reversal of short yen positions held by leveraged investors, was associated with record volatility in yen-related options. Its persistence thereafter suggested ongoing fears of a further unwinding of outstanding yen carry trades. Activity involving the dollar/mark parity remained fairly calm, but the drop in major equity markets and the unanticipated easing of European official rates were accompanied by bouts of increased volatility. At the same time, business in the market for euro area currencies remained subdued. Despite evidence of strong end-user demand for protection, the sharp swings seen recently in some major currency parities apparently created a great deal of caution among market-makers.[36] In contrast, the appreciation of local currencies and the upward movement in stock prices in some of the Asian emerging market countries allowed a gradual decline of interest rates, leading to a partial resumption of trading in forward contracts and cross-currency swaps.

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35 An asset swap is a swap arranged by the holder of an asset in order to change the nature of the asset's cash flow characteristics.

36 Liquidity in the foreign exchange market has reportedly been negatively affected in recent periods by market consolidation and the withdrawal of Japanese banks.

The upward movement of *equity markets* in November and December was associated with some decline in volatility. However, it remained at fairly high levels in most major markets as the financial turbulence and the unwinding of leveraged positions in long-dated options maintained a climate of uncertainty. Activity in equity warrants plunged from the near-record of the third quarter (by 38%, to $24 billion). In December, the Japanese authorities relaxed the rules governing OTC equity derivatives. With third-party issuers being able to launch warrants and more complex products, market participants foresee the rapid expansion of structured business.

Finally, the market for *credit derivatives* was subject to conflicting influences. On the one hand, concerns about banks' exposure to highly leveraged institutions and emerging market countries created broad interest in instruments offering protection against loan default and exposure to banking sector counterparties.[37] On the other hand, numerous market sources reported that liquidity suffered from uncertainty surrounding the adequacy of loan documentation, as highlighted by disputes between counterparties over hedges arranged on credit exposure to Russia. Buyers of protection faced difficulties in enforcing payment owing to disagreements over the definition of a credit event, the pricing of reference credits (following a related event) and the actual settlement of contracts.[38] Market observers have also raised questions concerning the efficiency of pricing. For example, the prices charged by the various providers of credit protection have failed to reflect differences in their credit standing.

Structural and regulatory developments

In November, the Basle Committee on Banking Supervision and the Technical Committee of the International Organization of Securities Commissions (IOSCO) made public the results of their annual survey of the disclosure by major G-10 banks and securities firms of their trading and derivatives activities. The survey reveals that many leading financial institutions have continued to expand and improve disclosure since the first such exercise in 1995. The most noteworthy improvements in 1998 were: expanded discussion of operational and legal risks; an increase in disclosures of market values and their estimation; more information about counterparty credit quality and concentrations; and enhanced disclosures of market risk information. The two committees noted, however, that further improvement was needed, particularly with respect to risk profiles and management practices.

In December, the International Swaps and Derivatives Association (ISDA) published a practical handbook for professionals engaged in managing collateral for privately negotiated derivatives transactions.[39] The document discusses the structuring of a collateral relationship with counterparties to reflect credit and documentation concerns, explains the operational mechanics of collateral accounts, their valuation and the management of counterparty relationships.[40]

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37 However, the cost of protection for Japanese banks eased somewhat owing to the strengthening of the yen and the launch of the Japanese financial restructuring programme.

38 For example, market participants argued over whether the Indonesian restructuring and the Russian default on domestic debt instruments and banks loans constituted a default.

39 See "ISDA Guidelines for Collateral Practitioners", ISDA, New York, December 1998.

40 In this connection, the LCH announced plans to offer a clearing service for European repo market participants. By acting as a central counterparty, the LCH facility would help banks reduce the amount of regulatory capital they must hold. The new facility, known as RepoClear, would be launched towards the end of 1999, shortly after SwapClear, a similar service for interest rate swaps.

The global OTC derivatives market at end-June 1998

In December, the BIS released for end-June 1998 the first instalment of its semi-annual statistics on open positions in the global OTC derivatives market. This new reporting framework is based on a July 1996 central bank report entitled "Proposals for Improving Global Derivatives Statistics",[1] the implementation of which was approved by the Governors of the central banks of the G-10 countries in January 1997.[2] Its format draws on the Triennial Central Bank Survey of Foreign Exchange and Derivatives Market Activity, whose preliminary global turnover results for April 1998 were released last October. The BIS will publish a more detailed analysis of foreign exchange and derivatives turnover (in April 1998) and amounts outstanding (at end-June 1998) in the spring of 1999.[3] Recent financial events have added urgency to improving transparency in derivatives activity and such regular reporting will help the authorities and market participants to better monitor the global financial system.

The statistics include the *notional amounts* and *gross market values* outstanding of the *worldwide consolidated* OTC derivatives exposure of major banks and dealers in the G-10 countries.[4] They cover the four main categories of market risk: foreign exchange, interest rate, equity and commodity. The notional amount is generally used as a reference to calculate cash flows under individual contracts and thus provides a rough indication of the potential transfer of risk associated with them. It is also used for comparisons of market size between related cash and derivatives markets. Gross market value is defined as the sum (in absolute terms) of the positive market value of all reporters' contracts and the negative market value of reporters' contracts with non-reporters (as a proxy for the positive market value of non-reporters' positions). It measures the replacement cost of all outstanding contracts, showing therefore the transfer of financial wealth which would have taken place if all outstanding contracts had been settled on 30 June 1998. It also provides a measure of market size that is readily comparable across market segments, both off and on-balance-sheet. Finally, the gross positive market value of contracts offers an indication of reporters' aggregate gross credit exposure.[5]

After adjustment for double-counting resulting from positions between reporting institutions, the total estimated *notional amount* of outstanding OTC contracts stood at $70 trillion at end-June 1998.[6] This was 47% higher than the estimate for end-March 1995 within the framework of the triennial survey. However, adjusting for differences in exchange rates and the change from locational to consolidated reporting, the increase between the two dates was about 130%.[7] The most recent data also confirm the continuing predominance of the OTC market over organised exchanges in financial derivatives business.[8] Interest rate instruments remained the largest OTC component (67%, mainly swaps), followed by foreign exchange products (30%, mostly outright forwards and forex swaps)[9] and those based on equities and commodities (with 2% and 1% respectively). Interest rate instruments involve less exposure to market and credit risk than foreign exchange transactions, which generally include the exchange of principal and are therefore highly sensitive to price changes in underlying markets. Of note in this respect is the considerably shorter maturity of currency-related contracts, with 87% expiring within a year, compared with 41% in the interest rate market. A breakdown by type of counterparty shows that the share of business with financial institutions was highest in the interest rate market (87%, compared with 77% in the foreign exchange market). Finally, while the dollar is the counterpart to most foreign exchange transactions (86%), only 31% of interest-rate-related positions are denominated in the US currency. This confirms other evidence of the expansion of the swap market outside the US dollar sector, in particular in European currencies.

At end-June 1998, estimated *gross market values* stood at $2.4 trillion, or 3.5% of the reported notional amounts. It should be stressed, however, that such values exaggerate actual credit exposure, since they exclude netting and other risk-reducing arrangements. Allowing for netting lowers the derivatives-related credit exposure of reporting institutions to $1.2 trillion, or to 11% of on-balance-sheet international banking assets. As could be expected, the ratio of gross market values to notional amounts varies considerably across individual market segments, ranging from less than 1% for FRAs to more than 15% for equity-linked options. Interestingly, the ratio was of the same order of magnitude in the two major individual market segments: outright forwards and forex swaps (3.9%), and interest rate swaps (3.5%). This stands in sharp contrast to the results of the 1995 survey, which had found a considerably higher value of replacement costs for foreign exchange contracts.[10] The regular reporting of gross market values will be valuable in assessing the evolution of risk exposure over time.

[1] Report prepared by a working group of the Euro-currency Standing Committee chaired by Mr. Shinichi Yoshikuni of the Bank of Japan (the Yoshikuni Report). [2] See the BIS Press Communiqué of 27 January 1997: "G-10 approve regular collection of derivatives market statistics". [3] A more detailed currency breakdown will also be provided. In the future, the triennial survey will be used to provide benchmarks and supplementary data to regular reporting (such as turnover, activity by centre and trading by non-regular reporting dealers). [4] The data were collected from 75 large market participants representing nearly 90% of total market activity. [5] Correspondingly, negative market values represent the gross credit exposure of counterparties to reporting dealers. [6] The data released by the BIS differ considerably from those of the International Swaps and Derivatives Association (ISDA), owing to differences in reporting structure and population. [7] Differences between the two reporting systems are explained in footnote 2 to the table on the next page. [8] However, the closing-out or modification of existing OTC positions generally results in the creation of new counterparty relationships, whereas most exchange-traded positions can be unwound through opposite contracts and are in most instances reversed before contract expiry. Moreover, the exclusion of the value of non-financial contracts and options on single equities in the figures reported to the BIS leads to an underestimation of the total size of the exchange-traded derivatives market. [9] These results contrast with turnover data for April 1998 released in October, with the higher turnover posted by foreign exchange products explained by their shorter maturity compared with interest rate products. [10] The difference between the two periods could reflect the more cautious attitude of participants in the face of overall market turbulence and the subdued volatility of currency parities within continental Europe in 1998. In contrast, the increased volatility in underlying markets in late 1994 and early 1995 may have temporarily raised the market value of positions outstanding at end-March 1995.

The global over-the-counter (OTC) derivatives markets[1]

Positions at end-June 1998, in billions of US dollars

	Notional amounts	Gross market values	*Memorandum items: Positions at end-March 1995*[2]	
			Notional amounts[3]	*Gross market values*[3]
A = Foreign exchange contracts	**18,719**	**799**	**13,095**	**1,048**
Outright forwards and forex swaps	12,149	476	8,699	622
Currency swaps	1,947	208	1,957	346
Options	4,623	115	2,379	71
B = Interest rate contracts[4]	**42,368**	**1,160**	**26,645**	**647**
FRAs	5,147	33	4,597	18
Swaps	29,363	1,018	18,283	562
Options	7,858	108	3,548	60
C = Equity-linked contracts	**1,274**	**190**	**579**	**50**
Forwards and swaps	154	20	52	7
Options	1,120	170	527	43
D = Commodity contracts[5]	**451**	**38**	**318**	**28**
Gold	192	10	147	10
Other	259	28	171	18
Forwards and swaps	153	..	120	13
Options	106	..	51	5
E = Estimated gaps in reporting	**7,100**	**240**	**6,893**	**432**
Grand total	**69,912**	**2,427**	**47,530**	**2,205**
Gross credit exposure[6]		**1,203**		..
Memorandum items:				
Credit-linked and other OTC contracts[7]	*98*	*3*	..	..
Exchange-traded contracts[8]	*14,256*		*10,310*	

[1] All figures are adjusted for double-counting. Notional amounts outstanding have been adjusted by halving positions vis-à-vis other reporting dealers. Gross market values have been calculated as the sum of the total gross positive market value of contracts and the absolute value of the gross negative market value of contracts with non-reporting counterparties. [2] In addition to changes in reporting months, differences in the reporting basis (locational reporting in 1995; worldwide consolidated reporting in 1998) and in the number of participating countries (26 in 1995; Group of Ten countries in 1998) mean that the two surveys are not fully comparable. [3] Data for outright forwards and forex swaps are incomplete because they do not include outstanding positions of reporting dealers in the United Kingdom. Data for total foreign exchange and interest rate contracts include "other" products which are not shown separately. [4] Single-currency contracts only. [5] Adjustments for double-counting have been estimated using the results of the 1995 Triennial Central Bank Survey of Foreign Exchange and Derivatives Market Activity. [6] Gross market values after taking into account legally enforceable bilateral netting agreements. [7] Gross market values not adjusted for double-counting. [8] *Sources:* Futures Industry Association and various futures and options exchanges.

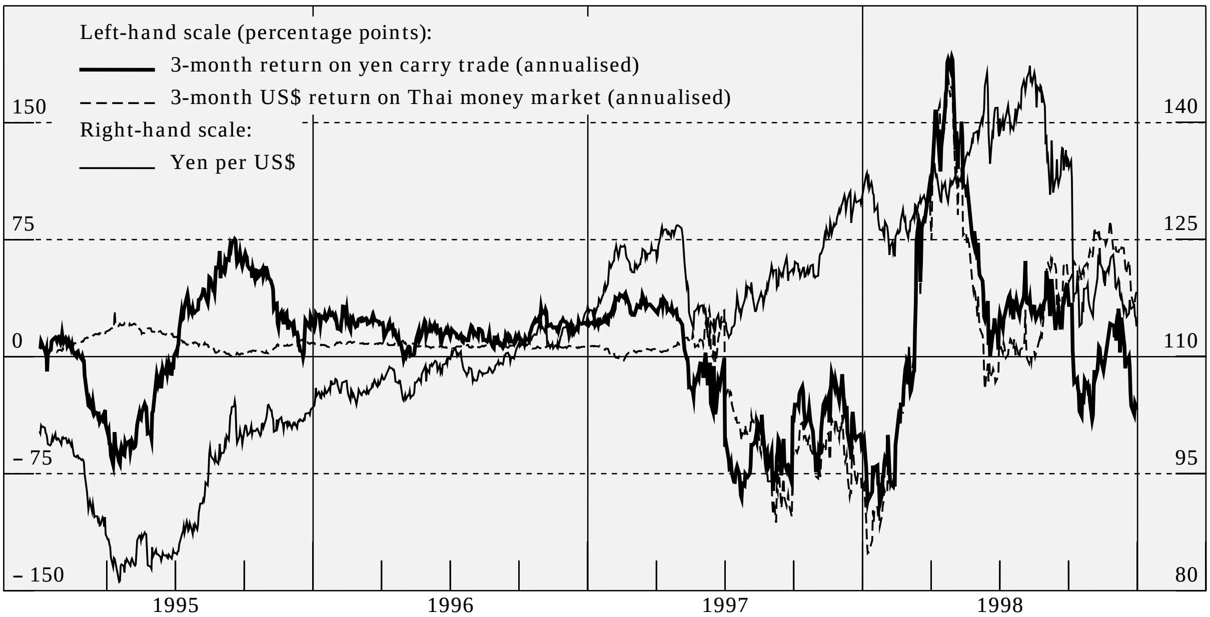
V

The yen carry trade and recent foreign exchange market volatility[41]

Market participants have identified the so-called "yen carry trade" as a significant factor behind the sharp movements of the yen/dollar exchange rate in recent months. This section looks at the main features of such carry trade and explores the channels through which they may have influenced exchange rate volatility.

Carry trades can take many, often complex, forms but have the same underlying principle: to exploit profit opportunities presented by a persistently low cost of funds in one market segment combined with sustained high returns in another. While the term "carry" generally stands for the difference between the income from a security (or portfolio) and the corresponding financing cost, it is convenient to explain the nature of carry trades in the context of futures contracts. The pricing of futures contracts is achieved by reference to an arbitrage portfolio that combines a long position on the security underlying the contract with financing at the risk-free rate.[42] A positive (negative) "carry" implies that the futures price is lower (higher) than the current spot price of the underlying security. While spot and futures prices always converge as the contract approaches maturity, there are instances when the latter tend to persistently over or under-predict the spot price that will eventually prevail at

Profitability of investments in Thai baht and yen/dollar movements



Sources: JP Morgan and BIS calculations.

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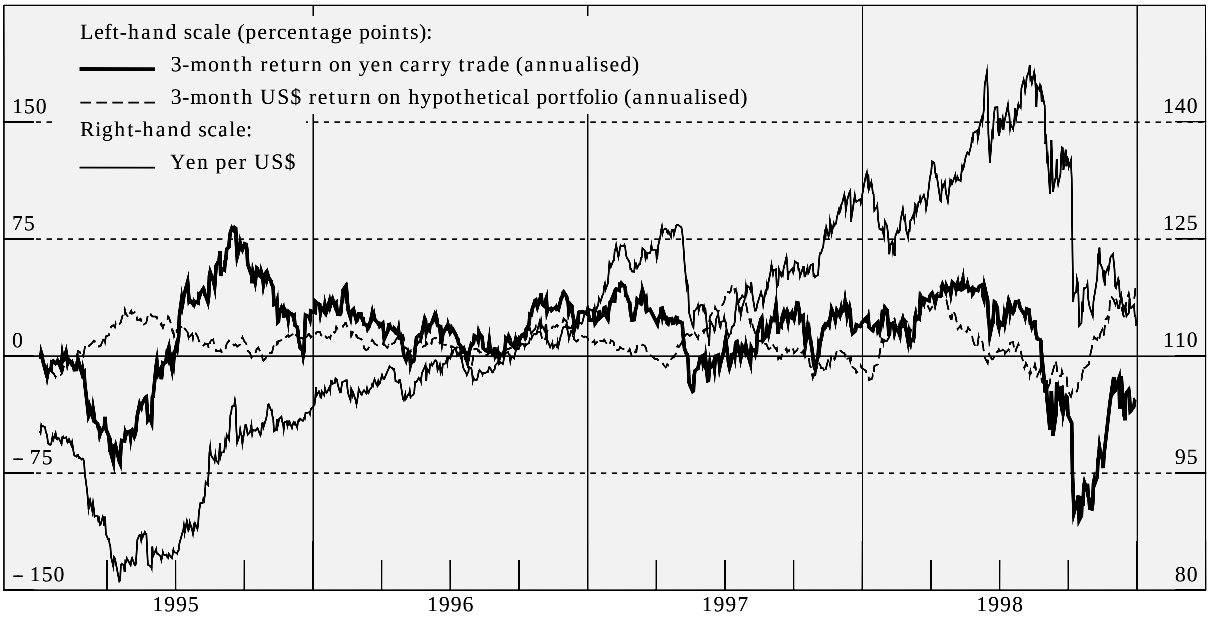
41 This section was contributed by Florence Béranger, Gabriele Galati, Kostas Tsatsaronis and Karsten von Kleist from the Monetary and Economic Department of the BIS.

42 In practice, the relevant financing rate for arbitrageurs is the repo rate, which is slightly higher than the rate on government paper.

Profitability of yen carry trade and yen/dollar movements



Sources: Morgan Stanley, JP Morgan and BIS calculations.

the time of maturity. [43] Carry trade strategies are designed to profit from such persistent one-sided biases by taking the appropriate positions on the two sides of the arbitrage portfolio. These are not, however, pure arbitrage strategies as the funding is in short-term liabilities and the investor assumes duration risk and, in many cases, exchange rate risk as well.

Markets offer several alternatives to outright borrowing in the money market for the practical implementation of carry trades. For example, a speculator can transform borrowings in one currency into a liability exposure in another, by selling the latter in the foreign exchange forward market. Alternatively, a synthetic forward transaction can be implemented through a combination of an outright sale of the currency in the spot market and a swap of the proceeds for the currency of denomination of the assets to be purchased. This roundabout alternative takes advantage of the greater liquidity of the swap markets. Finally, the long position of a trade can be financed by sales of borrowed securities (bonds or equities) denominated in the relevant currency. In this case, of course, the speculator will have to hedge against the additional risk implied by the exposure to other market factors beyond short-term interest rates.

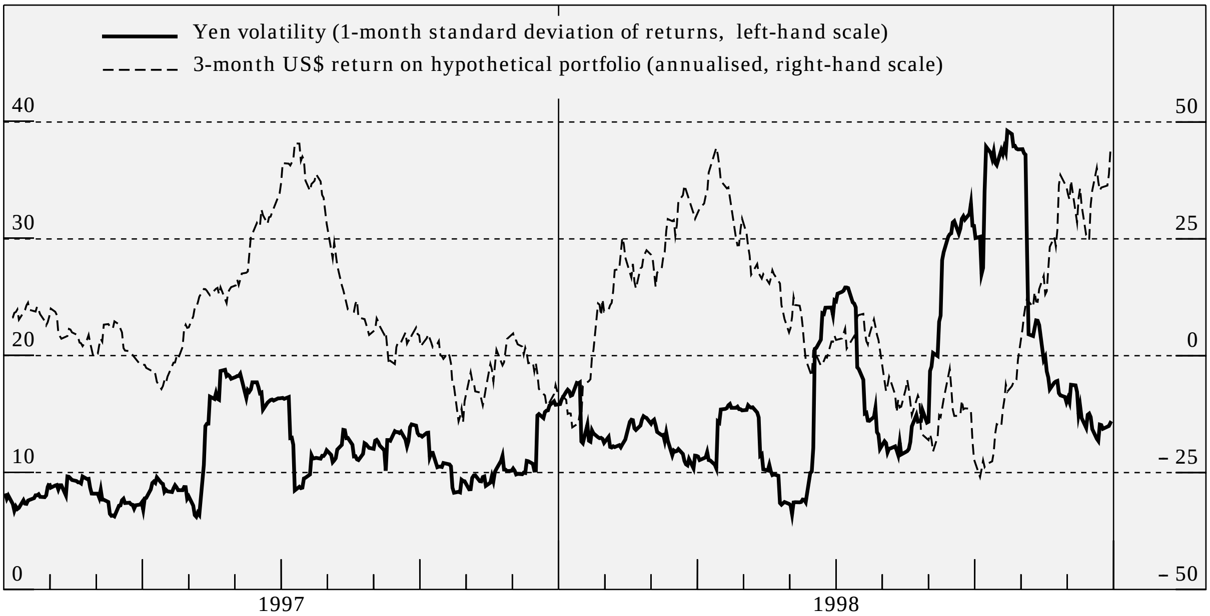
In the early 1990s carry trades along the US yield curve presented a popular profit-making strategy among investors. Between 1991 and 1993 the spread between the yield on the ten-year Treasury bond and the three-month Treasury bill averaged a comfortable and stable 300 basis points to which rising prices of Treasury bonds added capital gains. The Federal Reserve's decision to keep policy rates at very low levels over this period offered low-risk profit opportunities and allowed weak US banks to recapitalise.

The *yen carry trade* has reportedly been a fairly widespread strategy since the yen started its declining trend in the spring of 1995. Investors could borrow cheaply in the Japanese money market and invest the proceeds in a wide array of assets ranging from US Treasuries to high-yielding emerging market securities. In fact, in 1996 and early 1997 high interest rates in East Asian money markets and stable

[43] In the case of an interest rate futures contract this would imply a persistent bias of the implied forward rate, and in the case of a currency futures contract it would amount to a persistent deviation from the uncovered interest parity condition.

Asset returns and yen volatility

In percentage points



Sources: JP Morgan and BIS calculations.

dollar exchange rates attracted much of these funds.[44] This strategy paid off as long as the yen did notappreciate and other East Asian currencies remained firmly pegged to the US dollar. The graph on page 33 shows the substantial profits that a US dollar-based investor could earn by borrowing in yen and investing in Thai money market instruments.[45] This trade generated substantial profits until the emergence of pressures on the baht in May 1997. High baht interest rates against the background of a rising baht restored the ex post profitability of this trade, but few investors were willing to assure the risks implied by the trade.

It would be too restrictive, however, to view the yen carry trade as a narrow regional strategy. A clear illustration of its general attractiveness is given by the profit to a hypothetical investor holding a balanced global portfolio in equities (50%), bonds (30%) and money market instruments (20%).[46] The allocation of weights is in a sense arbitrary, but is chosen to correspond broadly to the portfolio composition of an average pension fund. This exercise can be considered as indicative of the profitability of a "plain vanilla" strategy funded by rolling over three-month yen Libor loans.

The graph on page 34 plots the annualised quarterly dollar return of the portfolio (in percentage points) net of funding costs. An important message from this graph is the persistence of profits generated by such a simple strategy for practically the entire period between January 1995 and July 1998, when asset markets experienced the adverse effects of a global repricing of risk.

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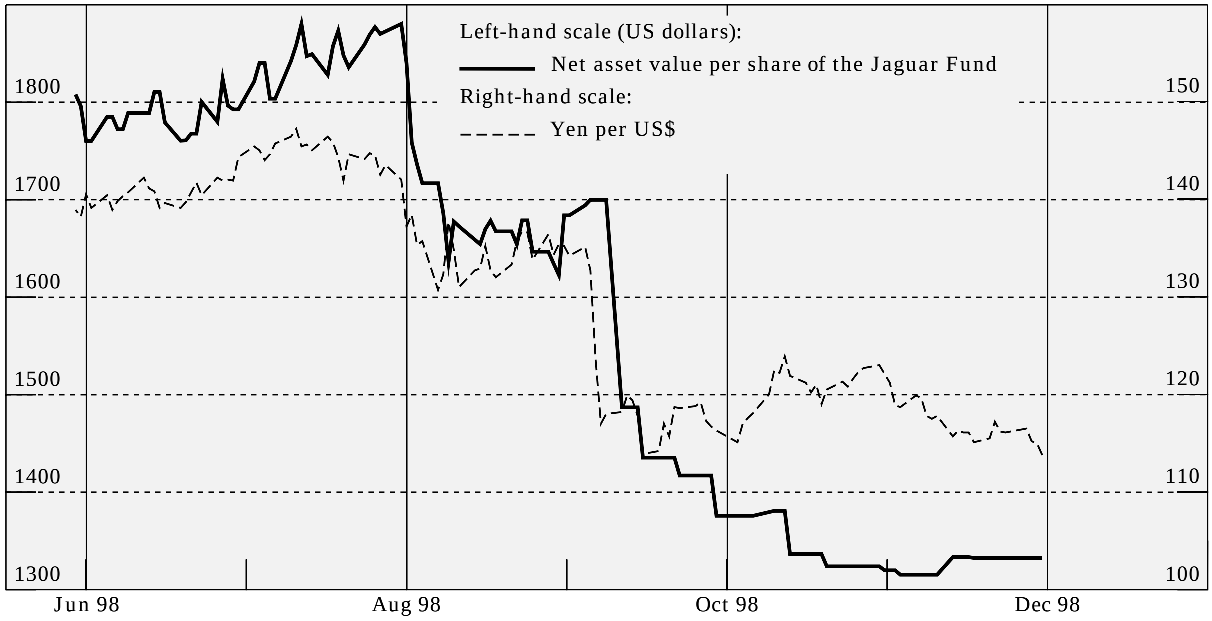
44 There are anecdotal reports of Thai baht profits being made not only by risk-seeking financial institutions such as investment banks and hedge funds, but also by more mainstream investors such as corporate treasuries.

45 The substantial rise in US dollar/baht trading observed in Bangkok in 1996 and early 1997 (see Table VI.5 in the last BIS Annual Report) is consistent with this picture. The return of the Thai money market is measured using the JP Morgan Emerging Local Markets Index (ELMI Thailand).

46 Equity returns are calculated using the market capitalisation weighted world equity index by Morgan Stanley (MSCI World). Bond returns are from the JP Morgan World Bond Index. Money market returns are a weighted average of short-dated instruments from the United States, United Kingdom and Germany while a 1% weight was given to emerging market money market instruments (ELMI Global).

Net asset value of the Jaguar Fund and yen/dollar movements



Sources: Financial Times and International Herald Tribune.

There have been two instances of sharp appreciation of the yen against the dollar since July 1998: the dollar fell by about 9% in the period between 31 August and 7 September, and then by a further 12% on 7 and 8 October. Market commentary attributed these movements (at least partially) to the unwinding of yen carry trades by hedge funds and other institutional investors. In principle, there are two channels through which the unwinding of yen carry trades may have played a role in boosting yen volatility. The first is a result of the decline in the profitability of these investors' long positions. At the end of last summer, the sudden increase in market participants' risk aversion depressed prices and fuelled a flight to safety. As liquidity dried up, even more sanguine speculators were obliged to reduce their leverage and, by undoing their carry trades, created an increased demand for yen. Under this hypothesis, hedge funds and investment houses transmitted to the yen/dollar rate shocks that had originated in other markets. It is virtually impossible to document such shifts in the absence of detailed position data for the main market participants. Nevertheless, the coincidence of the decline in the profitability of the simple hypothetical portfolio with a marked increase in the volatility of the yen/dollar exchange rate, as depicted in the graph on page 35, provides supporting evidence.

A second role that the carry trade may have played is through a multiplicative effect on the yen/dollar exchange rate itself. If a sudden appreciation of the yen against the dollar took investors by surprise, they might have reacted by closing out their short yen positions, thereby pushing the dollar down further. This was, reportedly, one of the main factors behind the unprecedented appreciation of the yen on 7 and 8 October 1998. In early October, there were signs of a substantial shift in the relative stance of policy in Japan and abroad, suggesting the possibility of a reversal of the yen's longer-term declining trend. While further easing by the Bank of Japan was viewed as unlikely and as a large fiscal stimulus package was presented to the Diet, central banks in the United States and Europe were inclined to accommodate financial markets' liquidity needs. On 7 October the yen's sudden surge against the dollar induced speculators to unwind a sizable part of their carry trades, further strengthening the Japanese currency. The graph above plots the daily share value of the Jaguar Fund, the flagship macro hedge fund of the Tiger Management Company, against the yen/dollar exchange rate. It is quite evident that the fund had substantial short yen positions and suffered losses of about 12% in the course of a couple of days. The financial press reported that losses were as high as \$2 billion during that period. Interestingly, these losses came on the heels of similar declines in the

Growth of foreign exchange market turnover at constant (1998) exchange rates (in %)

Currency	1992	1995	1998
US dollar	34	47	33
Deutsche mark	91	12	37
Japanese yen	24	–4	72
Global	**41**	**29**	**46**

Source: BIS.

fund's value (estimated at $800 million over several days) following the first episode of rapid yen appreciation in early September. At the time, market observers suggested that the US hedge fund began unwinding a massive $35 billion long dollar/yen position, of which around $10 billion was offloaded in the market overnight. Other sources estimated that unwound carry trades amounted to between $8 and 10 billion. In early November, market participants remained concerned that there was still room for more yen carry trade unwinding which might lead to further disruptions of the yen/dollar rate.[47]

While anecdotal evidence abounds, it is difficult to provide empirical estimates on the magnitude of the yen carry trade. Because the associated transactions can take a variety of forms, they are often not reflected in established international statistical data. For a direct formal evaluation of its impact, one would like to match the time-series behaviour of actual portfolio allocations with exchange rate movements, but no such data are available.[48] However, the high correlation of the profitability of yen carry trades with exchange rate movements at daily frequency is consistent with the hypothesis that the former has played an important role in determining the volatility of the latter. Furthermore, the reports on the diffusion of yen carry trades are consistent with a finding of the last Triennial Survey on Foreign Exchange and Derivatives Market Activity conducted in 1998, namely an increase in the yen's share of foreign exchange turnover. In fact, between the 1995 and 1998 surveys, the value of transactions involving the Japanese currency (at constant exchange rates) has grown at twice the rate of those involving the US dollar or the Deutsche mark, and 60% faster than global market turnover (see the table above).

[47] In early January 1999 market commentary suggested that carry trades were being built around the depreciating Singapore dollar, exploiting low interest rates in that country.

[48] McCauley and von Kleist estimated the amount of outstanding yen carry trades channelled through vehicles registered in the Cayman Islands in early 1998 at between $20 billion and $30 billion. They also suggested that this estimate may understate the true numbers ("Carry trade strategies", in the February 1998 issue of this commentary, page 23). A currency strategist quoted in the financial press estimated yen short positions at $40-50 billion in early January 1998.

ABBREVIATIONS USED FOR EXCHANGES

AEX	Amsterdam Exchanges
AMEX	American Stock Exchange
ASX	Australian Stock Exchange
BM&F	Bolsa de Mercadorias y Futuros
CBOE	Chicago Board Options Exchange
CBOT	Chicago Board of Trade
CME	Chicago Mercantile Exchange
CSCE	Coffee, Sugar & Cocoa Exchange
CX	Cantor Exchange
DB	Deutsche Börse
FINEX	New York Cotton Exchange - Finex Division
HEX	Helsinki Securities and Derivatives Exchange, Clearing House
HKFE	Hong Kong Futures Exchange
HKSE	Hong Kong Stock Exchange
ISE	Italian Stock Exchange
KLOFFE	Kuala Lumpur Options and Financial Futures Exchange
KLSE	Kuala Lumpur Stock Exchange
LIFFE	London International Financial Futures and Options Exchange
LSE	London Stock Exchange
MATIF	Marché à Terme International de France
ME	Montreal Exchange
MEFF RF	Mercado de Futuros Financieros de Renta Fija
MIF	Mercato Italiano Futures
MONEP	Marché des Options Négociables de Paris
NASD	National Association of Securities Dealers
NYBT	New York Board of Trade
NYCE	New York Cotton Exchange
NYFE	New York Futures Exchange
NYSE	New York Stock Exchange
OSE	Osaka Securities Exchange
PE	Pacific Exchange
SBF	Société des Bourses Françaises
SFE	Sydney Futures Exchange
SIMEX	Singapore International Monetary Exchange
SOFFEX	Swiss Options and Financial Futures Exchange
SWX	Swiss Exchange
TSE	Tokyo Stock Exchange