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Monetary and Economic Department

INTERNATIONAL BANKING AND FINANCIAL MARKET DEVELOPMENTS

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C O N T E N T S*

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I

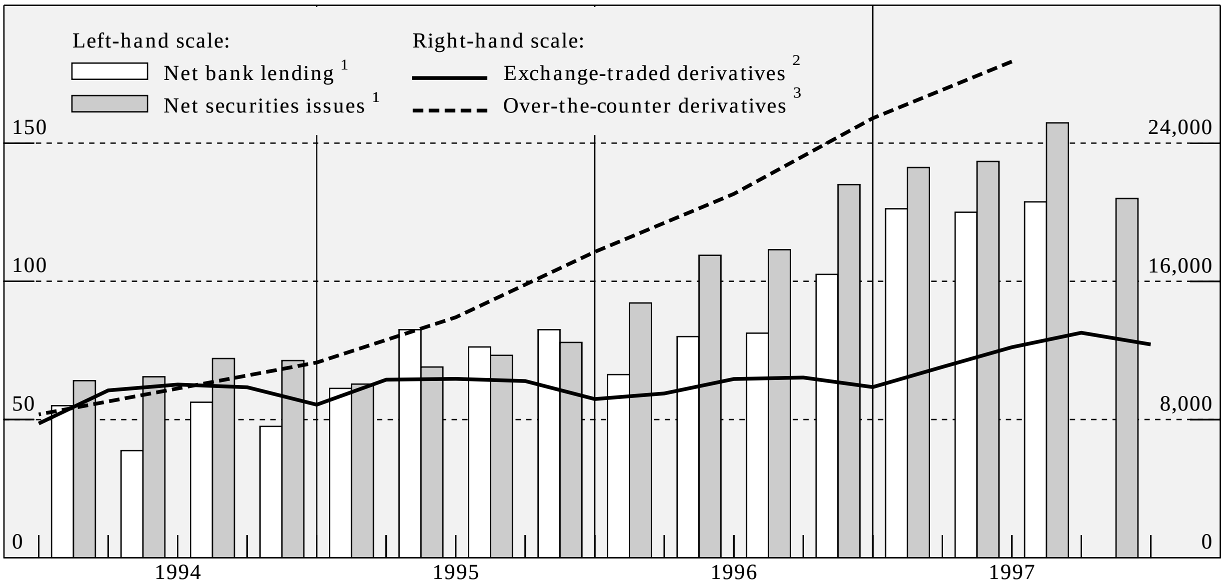
OVERVIEW OF RECENT INTERNATIONAL BANKING AND FINANCIAL MARKET DEVELOPMENTS

Deepening financial problems in Asia had broad repercussions in the fourth quarter of 1997. In October, there was a widespread rise in the risk premia attached to higher-yielding fixed income instruments, which abruptly reversed the declining trend recorded since the beginning of 1995. The overall shift in market sentiment also affected equity markets outside the region, with the sharp drop of the Hong Kong stock market in late October sparking a generalised downturn in equity markets. Associated with these developments was a "flight to quality", which benefited primarily US dollar instruments. Thus, the US currency strengthened against the yen and also, subsequently, against the Deutsche mark, while long-term US Treasury rates were pushed lower. At the same time, the world financial system seems to have shown greater resilience than during the Mexican crisis in the early part of 1995. The risk premia on Latin American and Eastern European countries' foreign currency debt retreated from their late October peak and contagion to their currencies was muted. Moreover, although the drop in major equity markets in the last few days of October triggered the activation of various types of "circuit breakers", most exchanges were able to cope reasonably well with the record volume of orders, in contrast to the "Black Monday" episode of 1987. In addition, equity indices in North America and Europe rapidly recouped most of their losses. Finally, the process of financial convergence within Europe was essentially unaffected.

Amidst the greater uncertainty, activity in international financial markets subsided in the fourth quarter of 1997. Total announcements of new international bonds and medium-term notes fell by 30% in comparison with the near-record pace of the third quarter. The decline was even sharper after allowing for repayments (60% including short-term financing), suggesting a shift of investment

Activity in international financial markets

In billions of US dollars

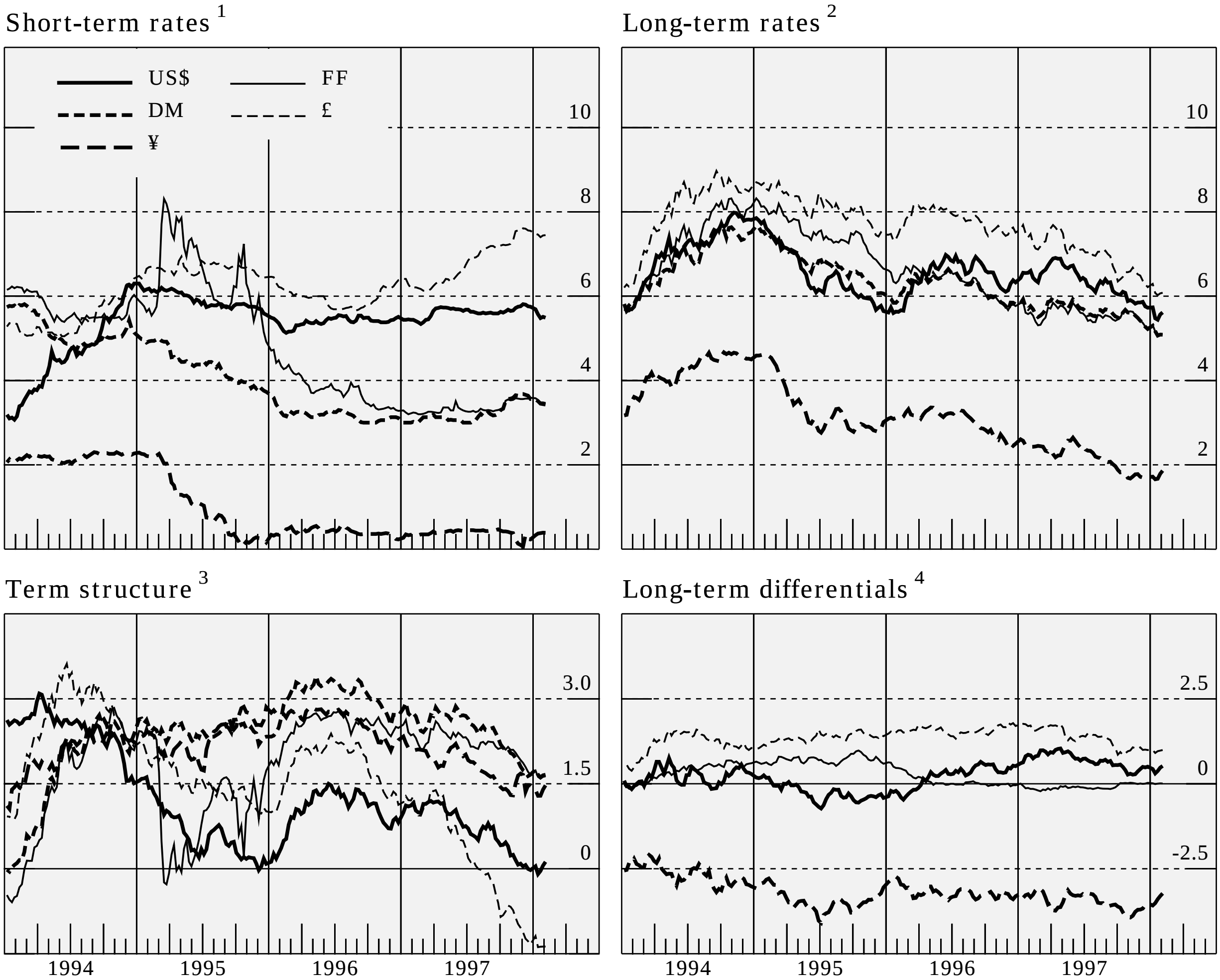


[1] Four-quarter moving averages. [2] Notional amounts outstanding of currency, interest rate and equity index futures and options. [3] Notional amounts outstanding of currency and interest rate swaps and other swap-related derivatives; semi-annual data only.

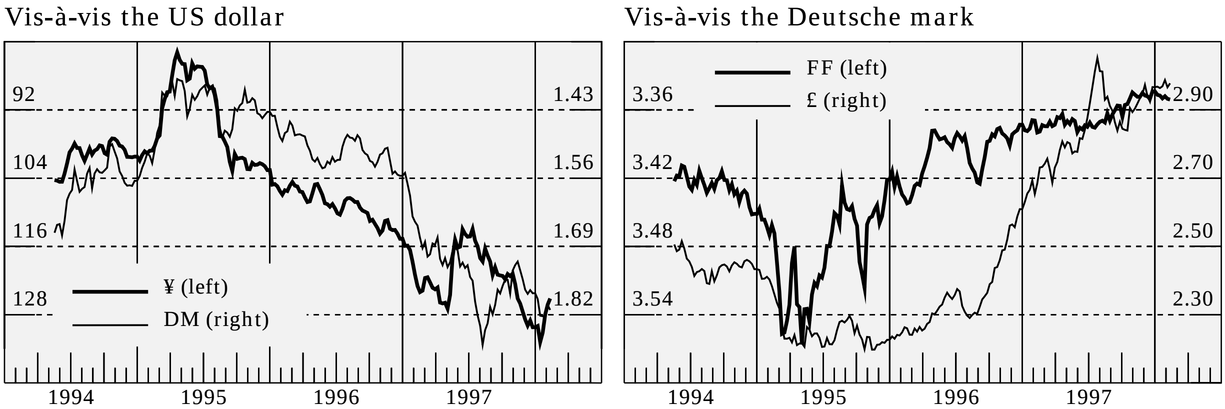
Sources: Bank of England, Euroclear, Euromoney, Futures Industry Association, International Financing Review (IFR), International Swaps and Derivatives Association (ISDA), International Securities Market Association (ISMA), national data and BIS.

International short and long-term interest rates

Weekly averages, in percentages and percentage points



Bilateral exchange rates



[1] Three-month euromarket interest rates. [2] Yields in annual terms on the basis of ten-year benchmark government bonds. [3] Long-term rates minus short-term rates. [4] Vis-à-vis German long-term rates.

Sources: Datastream and BIS.

funds back to domestic and/or more liquid markets. The slackening of business was particularly pronounced for emerging country borrowers, with a virtual drying-up of new issuance. Asian names were mostly denied access to the market and entities from other regions refrained from introducing new debt securities in view of the less favourable conditions. However, the better terms available

Estimated net financing in international markets[1]

In billions of US dollars

Components of net international financing	1995	1996		1997				Stocks at end-Sept. 1997
	Year	Year	Q4	Q1	Q2	Q3	Q4	
Total international[2] bank claims[3]	644.0	589.5	221.9	364.5	224.9	131.2	..	9,969.8
minus: interbank redepositing	314.0	179.5	86.9	179.5	104.9	56.2	..	4,734.8
A = Net international bank lending[3]	**330.0**	**410.0**	**135.0**	**185.0**	**120.0**	**75.0**	..	**5,235.0**
B = Net money market instruments	**17.4**	**41.1**	**18.5**	**7.1**	**5.3**	**9.7**	**-2.5**	**187.8**
Total completed bond and note issues	587.4	871.2	263.0	240.8	247.8	270.7	210.7	
minus: redemptions and repurchases	293.3	372.3	105.2	110.2	101.1	117.1	141.4	
C = Net bond and note financing	**294.1**	**498.9**	**157.8**	**130.7**	**146.7**	**153.6**	**69.3**	**3,327.6**
D = Total international financing[4]	**641.5**	**950.0**	**311.3**	**322.8**	**272.0**	**238.3**	..	**8,750.4**
minus: double-counting[5]	96.5	190.0	36.3	47.8	12.0	68.3	..	1,250.4
E = Total net international financing	**545.0**	**760.0**	**275.0**	**275.0**	**260.0**	**170.0**	..	**7,500.0**

[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] See notes to Table 1 of the statistical annex. [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.

in the syndicated loan market and the high volume of precautionary borrowing undertaken in the earlier part of the year may have alleviated some borrowers' need for capital market funds. Of note with respect to this last point was the accelerating pace of international bank lending to Latin American and Eastern European countries in the third quarter of 1997, according to the latest BIS banking statistics. The abundance of liquidity worldwide and the associated competitive pressures seem to have delayed a reconsideration of credit risk by major lenders. Subsequent events are likely to have encouraged a change in existing risk management practices as well as in the reliance on ratings in the pricing of credit risk (see the box on page 12).

Although the Asian crisis may have far-reaching implications, it should not obscure other important challenges facing the financial industry and its regulators. One is the phasing-in of the euro, with the race for predominance among European banking groups providing some support to activity in the European interbank market in the third quarter, according to recent BIS data. The forthcoming announcement of participating member countries and of fixed bilateral exchange rates (due in May 1998), as well as of conversion rates into the euro (in January 1999) may be the source of some uncertainty. However, progress continued to be made in the fourth quarter on a number of related issues, such as pricing methods, trading conventions and the continuity of contracts (see page 32). It is also now recognised that the changeover will have repercussions which will extend well beyond the countries expected to form part of the initial single currency area. Another challenge is the transition to the next millennium. In November, the Basle Committee on Banking Supervision, the International Organisation of Securities Commissions (IOSCO) and the International Association of Insurance Supervisors (IAIS) issued a joint statement drawing attention to the issue. Following earlier warnings, the statement highlights the risks of disruption and encourages financial institutions worldwide to commit the resources necessary to develop action plans in a timely fashion.

The turbulence seen in the fourth quarter of 1997 occurred in a context of accelerating consolidation within the world financial industry. Thus, there was a reshuffling of investment banking and asset management businesses, which accentuated the dichotomy between strategies aimed at providing fully integrated global financial services, on the one hand, and those focusing on core or niche business, on the other. In fact, the scaling-back of business by some banks reflected the failure of attempts to reach global status and to benefit from synergies between various products and services. The Asian turmoil, by revealing large trading losses, will add to pressures to improve the quality of balance-sheet items, risk management systems and the efficiency of capital utilisation. In turn, these developments may well strengthen the tendency for global strategies to be driven by investment banking structures. Of note in this respect was the record volume of international issuance related to asset repackaging during the fourth quarter of the year. The fact that, for the year as a whole, issuance by financial institutions accounted for two-thirds of the growth of the international securities market shows that cross-border capital flows are increasingly motivated by the active management of asset and liability positions and their associated risks. At the same time, the Asian crisis has served as a painful reminder of the growing intertwining between markets, as well as of the complexity of linkages. Moreover, the rapid evolution of trading and communication technologies is challenging franchises in segments of the industry that were hitherto protected. This is best illustrated by recent developments in derivatives markets and, in particular, the progress made in bringing together exchange-traded and over-the-counter business, as described in Part IV of this report. In such an evolving environment, the existing financial infrastructure and regulatory arrangements need to be adjusted to better reflect the concentration and globalisation of markets. This may prove to be another daunting challenge.

II

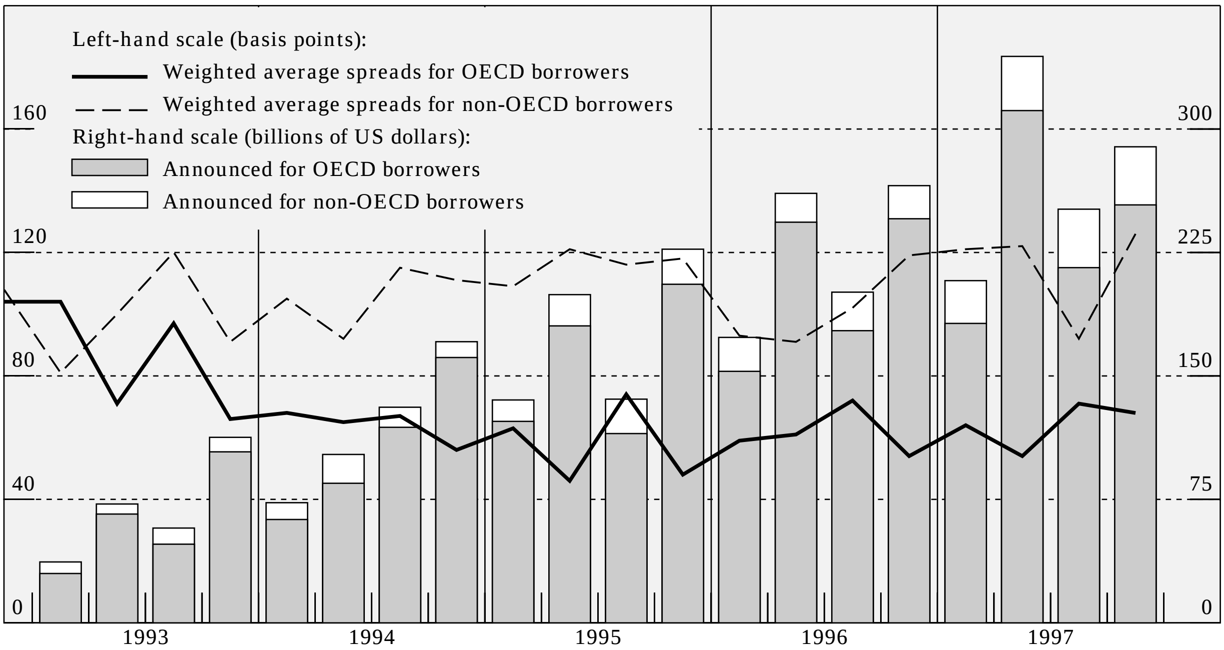
THE INTERNATIONAL BANKING MARKET

Overview

Activity in the international syndicated loan market during the *fourth quarter of 1997* seems to have been surprisingly little affected by the financial turbulence in Asia. Thus, total arrangements amounted to $292 billion, compared with $252 billion in the third quarter. The main driving force was again the continuing shift away from plain vanilla transactions in favour of more profitable structured transactions in the industrialised world, notably for mergers and acquisitions. Business was particularly buoyant in Europe, reflecting the hectic pace of consolidation in the run-up to EMU. The proliferation of hybrid structures featuring the characteristics of both bonds and loans also continued to attract the interest of a broad range of lenders. The rapid development of active credit risk management techniques, such as collateralised loan obligations, credit derivatives and secondary market trading,[1] was another important underlying factor.

While a number of deals for emerging market borrowers had been arranged before the turmoil had spread further, the less receptive attitude of international securities investors led such borrowers to turn to the syndicated loan market. A prime example of this switch was the $3 billion facility arranged for a Russian gas company, following the postponement of a convertible bond issue. However, there was a tightening of lending conditions, as reflected in less favourable spreads as well as stricter collateral requirements and material adverse change clauses. The use of adjustable spreads linked to credit ratings, such as in the case of a $2.5 billion loan arranged for Mexico, and renegotiations of repayment schedules provide further illustrations of market tensions.

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



* Spreads over LIBOR on US dollar credits.
Sources: Euromoney and BIS.

[1] According to figures released in December by the Loan Market Association in London, loan trading volume in London reached $20 billion in 1997, almost double the figure for 1996.

Main features of international lending by BIS reporting banks[1]

In billions of US dollars

Components of international bank lending	1995	1996			1997			Stocks at end-Sept. 1997
	Year	Year	Q3	Q4	Q1	Q2	Q3	
Claims on outside-area countries	**120.8**	**125.4**	**35.6**	**40.1**	**41.7**	**30.9**	**23.4**	**1,188.9**
Claims on inside-area countries	**506.5**	**452.6**	**171.2**	**179.4**	**303.9**	**176.2**	**164.6**	**8,566.0**
Claims on non-banks	189.5	308.6	57.0	116.6	79.0	62.3	94.5	2,784.9
Banks' borrowing for local onlending[2]	3.0	-35.6	-27.8	-24.2	45.4	9.0	13.9	1,046.2
Interbank redepositing	314.0	179.5	142.0	86.9	179.5	104.9	56.2	4,734.9
Unallocated	**16.7**	**11.5**	**-4.8**	**2.5**	**18.9**	**17.9**	**-56.8**	**215.0**
Gross international bank lending	**644.0**	**589.5**	**202.0**	**221.9**	**364.5**	**224.9**	**131.2**	**9,969.8**
Net international bank lending[3]	**330.0**	**410.0**	**60.0**	**135.0**	**185.0**	**120.0**	**75.0**	**5,235.0**
Memorandum item: Syndicated credits[4]	**697.7**	**900.8**	**200.9**	**265.6**	**207.9**	**344.1**	**252.0**	

[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.

Despite the continuing buoyancy of the syndicated loan market, strains were already apparent in the *third quarter of 1997.* According to the detailed BIS international banking statistics now available, there was a marked slowdown in overall international bank lending during this period.[2] The reduction in the foreign operations of Japanese banks and the spillover from the Asian currency turbulence were the main contractionary influences. Although the reduction in the foreign presence of Japanese banks has been a feature of the market since the beginning of the decade,[3] the movement seems to have gained new momentum in the period under review. Firstly, the introduction of the Prompt Corrective Action Plan in Japan initially scheduled for 1st April 1998, the beginning of the next fiscal year, might have accentuated the pressures on domestic institutions to adjust their balance sheets by applying in advance the new standards on non-performing loans. Secondly, the renewed decline of the Tokyo equity market lowered the value of the latent reserves included in Japanese banks' core capital, while the weakening of the yen against the dollar added to the difficulty in meeting capital adequacy requirements because of the increase in the yen value of foreign assets. Thirdly, the Asian crisis led to an overall reassessment of the earlier expansion of Japanese banks in the region. In the fourth quarter the collapse of certain domestic banking and securities firms caused a temporary reappearance of the premium on Japanese banks' international interbank liabilities (see the graph on page 7). This, together with the deepening of financial difficulties in Asia, may have given additional weight to this reappraisal.

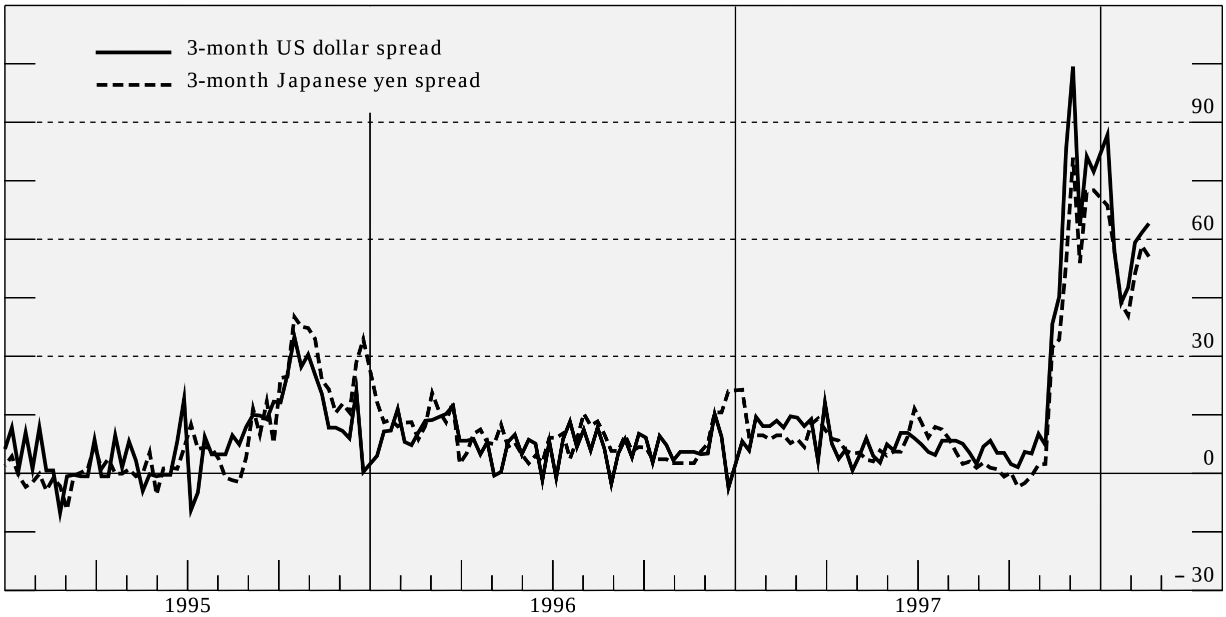
At the same time, there was a strong expansion in the interbank activity of a number of European banking groups (UK, French, German and Swiss banks), partly reflecting restructuring in the run-up to EMU. Moreover, increased global market volatility meant that continuing heavy borrowing by non-bank customers in some European currencies was accompanied by an upsurge in hedging and speculative demand for the US currency. Finally, although reporting banks reduced their exposure to Thailand and Korea by 11% and 2%, bank lending to some other major borrowing

[2] Syndicated loan facilities are included only to the extent that they are drawn down.

[3] For an analysis of the reduced international presence of Japanese banks since the early 1990s and in 1996 in particular, see the box on page 7 of the May 1997 issue of this commentary.

Differentials in US dollar and Japanese yen interbank interest rates between Tokyo and London *

Weekly data, in basis points



* Tokyo interbank offered rate minus London interbank offered rate.

Source: DRI.

countries in Asia, most notably China and Indonesia, was sustained. Meanwhile, the volume of new credit to Latin America and Eastern Europe expanded markedly, underlining the continuing availability of loanable funds.

Business with countries inside the reporting area

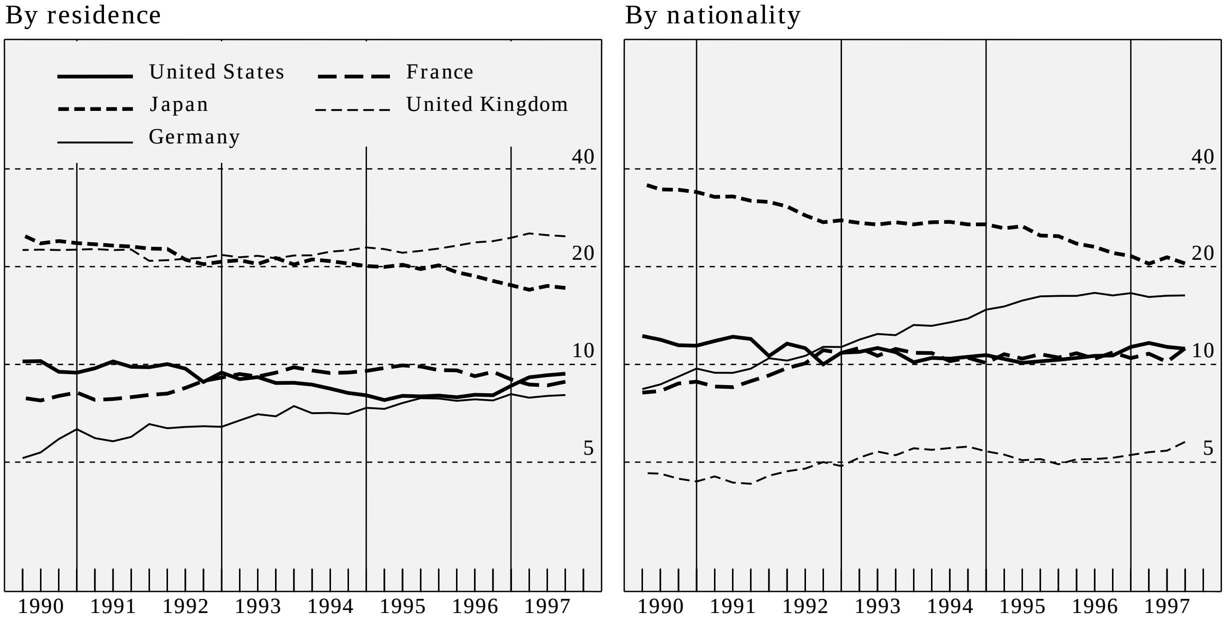
International banking business within the reporting area was subject to two opposite sets of influences in the third quarter of 1997. On the contractionary side, there was the retreat of Japanese banks from foreign markets. While closely related to the more general developments mentioned above, the movement also reflected the economic and financial situation in Japan. Another factor dampening international banking intermediation in the period under review was the apparent aversion of international investors to bank deposits. The historically low level of short-term interest rates in Japan and continental Europe accentuated the disaffection for such assets and added to pressures on banks to rely on securities issuance for their funding.

On the expansionary side, restructuring within the industry led a number of European banking groups to build up their interbank positions, with a tendency to centralise their international activities in London. While related to the competition taking place in the transition to EMU, this may also have reflected broader differences in the competitive strategy of European and US financial institutions to become global players. Thus, whereas the latter group relied on direct lending to non-bank customers for its international expansion in the nine months to the end of September 1997, the former made heavy recourse to the interbank network to broaden its reach in the same period. This difference is consistent with evidence of the greater emphasis placed by US commercial banks on investment banking and risk management in the international market.

Another underlying supporting factor, which affected both the interbank market within Europe and wholesale business with the non-bank sector located in major financial centres, was the continuing growth of the international repo market. Although no direct evidence is available, the brisk increase recorded in reporting banks' holdings of securities during this period suggests no slowing in the expansion of this market. Indeed, repo business may have been largely responsible for the rise in

International bank lending by residence and nationality of reporting banks *

Percentage shares, at end of quarter; semi-logarithmic scale



* Cross-border claims and local claims in foreign currency of banks located in industrial reporting countries.
Source: BIS.

banks' cross-border claims on the non-bank sector located within the reporting area. This is due to the fact that both the underlying collateral and the cash transactions are often included in the reported figures.[4] Thus, the strong increase recorded in the claims on entities located in the United States, Germany and Italy included a sizable volume of securities, which are often used as collateral for cash borrowing. Similarly, the parallel pick-up in lending to Caribbean offshore entities may well have been the counterpart of leveraged investment strategies. These developments suggest that the turmoil in Asian currency and equity markets has spurred greater reliance on secured lending, which may have acted as a buffer against contagion outside Asia.

Business with countries outside the reporting area

Developments in Asia in the third quarter of 1997 were accompanied by an absolute reduction in reporting banks' outstanding claims on the region (-$3 billion), for the first time in six years. In contrast, lending activity in other regions showed no sign of abating, with even a strong acceleration recorded in Latin America and Eastern Europe. Far from feeling contagion from the Asian crisis, other emerging markets appear to have benefited from the continuing abundance of worldwide liquidity in the period under review. Smaller developed countries were also major recipients of fresh banking funds, although the nature of the flows varied considerably. Whereas Greece pursued its diversification away from short-term interbank borrowing, Turkey maintained its reliance on foreign bank credits to finance its current account deficit.

The most salient feature of the third quarter was the withdrawal of banking funds from Asia in the wake of the deepening of financial difficulties within the region (see the box on page 12). The largest decline in outstanding claims was recorded vis-à-vis Thailand (-$10.5 billion), as Japanese banks withdrew from the local interbank market. There was also a widespread, but more muted, reduction in reporting banks' claims on South Korea (-$2.2 billion), where official guarantees

4 For a description of how repo transactions affect the balance sheet of banks, see the November 1996 issue of this commentary, pages 20-24.

Banks' business with non-bank entities inside the reporting area[1]

In billions of US dollars

Country of residence of non-bank customers	Cross-border positions					Memorandum item: Domestic bank credit and money[2]				
	1996		1997			1996		1997		
	Q3	Q4	Q1	Q2	Q3	Q3	Q4	Q1	Q2	Q3
Total assets	**59.0**	**85.1**	**55.2**	**73.8**	**83.2**					
Canada	0.5	-1.1	4.0	2.5	0.4	11.0	10.4	12.5	12.7	19.3
France	0.9	0.0	12.4	-0.7	2.1	15.9	4.9	12.9	24.6	15.0
Germany	8.9	5.4	-1.4	-0.1	13.0	30.7	95.0	49.0	26.3	39.0
Italy	-2.3	3.8	9.7	4.1	11.1	-4.3	20.9	10.0	7.9	-10.1
Japan	1.7	7.0	-16.4	28.5	-20.8	-21.2	116.0	-75.2	33.3	-30.6
United Kingdom...	4.1	8.8	10.3	12.4	10.8	9.1	-7.0	20.0	13.6	7.9
United States	33.3	25.2	25.0	5.9	40.1	63.6	81.2	79.0	118.5	45.9
Other countries	11.9	36.0	11.6	21.2	26.5					
Total liabilities	**22.5**	**17.1**	**99.0**	**31.5**	**10.8**					
Canada	-0.1	1.5	-0.3	1.6	-2.3	1.5	11.5	3.6	-0.2	4.9
France	2.0	-1.6	2.6	0.3	-6.0	-5.6	4.2	-11.6	8.6	6.2
Germany	-8.1	1.7	15.6	-7.1	-2.9	11.8	92.0	-27.7	8.1	-1.0
Italy	0.3	-3.8	4.2	-1.6	3.3	10.2	46.0	-16.6	17.4	3.9
Japan	-1.3	1.9	6.0	-2.2	-2.0	-51.9	134.8	-43.7	53.0	-26.7
United Kingdom ..	1.6	3.1	19.5	3.5	6.8	19.5	27.8	46.8	27.5	-35.8
United States	20.5	14.1	18.2	23.9	-10.5	56.7	148.0	90.8	62.3	117.7
Other countries	7.6	0.2	33.2	13.1	24.4					

[1] Changes in amounts outstanding excluding exchange rate valuation effects. [2] For Japan, M2+CDs; for the United Kingdom, M4; for other countries, M3.

temporarily helped support foreign lending to local entities, as well as on the Philippines (-$0.9 billion). The drying-up of banking flows was far less severe in Malaysia, which has a considerably lower level of banking debt than Thailand or South Korea. At the same time, new lending to China and Indonesia was sustained (amounting to $5.2 billion and $3.2 billion respectively). While China remained largely unaffected by the Asian crisis, the Indonesian authorities sought to ease the downward pressure on the rupiah following the floating of the currency in mid-August by tightening domestic monetary conditions and limiting forward foreign exchange transactions by domestic banks. This, in turn, may have accentuated the tendency for foreign banks to bypass the local banking system.

At the same time, the acceleration in bank lending to emerging market economies in Latin America and Eastern Europe in the third quarter of 1997 suggests limited contagion outside Asia in the period under review. At $10.2 billion, new bank lending to Latin American countries was not far from the record set in the fourth quarter of 1996, with Brazil again being the most important recipient of funds ($4.8 billion).[5] This was possibly related to earlier measures taken by the Brazilian authorities to preserve the incentives for capital imports; but it should also be seen in relation to foreign interest in acquiring stakes in the local financial industry as well as to the country's vast programme of privatisation. While reporting banks' purchases of international securities issued by residents played a role in Brazil, they were predominant in the case of Argentina, whose central government issued a sizable volume of international securities. There was also a sharp increase in claims on Chile ($1.4 billion), reflecting active borrowing in the syndicated loan market by local companies. In contrast, repayment of external banking debt by Mexico gathered pace (-$1.3 billion). Strong equity investment and capital repatriation acted to ease the country's external financing needs.

5 Moreover, according to the BIS half-yearly statistics on the maturity, sectoral and nationality distribution of international bank lending, 63% of the Brazilian banking debt outstanding at the end of 1996 was due to mature in 1997, compared with 56% for Argentina and 45% for Mexico.

Banks' business with countries outside the reporting area*

In billions of US dollars

Outside-area country groups	1995	1996			1997			Stocks at end-Sept. 1997
	Year	Year	Q3	Q4	Q1	Q2	Q3	
Total assets	**120.8**	**125.4**	**35.6**	**40.1**	**41.7**	**30.9**	**23.4**	**1,188.9**
Developed countries	24.6	20.1	9.2	6.5	4.2	8.7	7.8	206.5
Eastern Europe	3.3	10.9	1.5	6.5	4.3	3.3	7.5	103.3
Developing countries	93.0	94.4	25.0	27.0	33.2	19.0	8.1	879.1
Latin America	16.4	21.7	6.4	11.4	7.4	3.7	10.2	286.2
Middle East	-7.5	0.1	5.7	-2.1	3.5	-0.6	0.3	73.7
Africa	-2.2	-0.6	-0.8	1.3	0.8	0.9	0.7	50.5
Asia	86.3	73.2	13.7	16.5	21.4	15.0	-3.0	468.7
Total liabilities	**96.4**	**92.0**	**8.6**	**25.4**	**31.7**	**27.1**	**9.1**	**1,028.6**
Developed countries	18.8	18.5	4.9	1.5	6.2	8.3	5.3	194.9
Eastern Europe	9.2	2.7	-0.3	3.8	4.2	4.2	4.3	59.1
Developing countries	68.5	70.8	4.1	20.0	21.3	14.6	-0.5	774.6
Latin America	43.0	21.9	1.8	-1.3	5.9	19.0	1.0	247.4
Middle East	8.1	16.7	3.8	6.9	5.5	-6.1	-5.4	209.5
Africa	0.4	2.7	0.1	1.3	2.7	3.4	2.2	55.7
Asia	17.0	29.5	-1.6	13.2	7.1	-1.6	1.7	262.0

* Changes in amounts outstanding excluding exchange rate valuation effects.

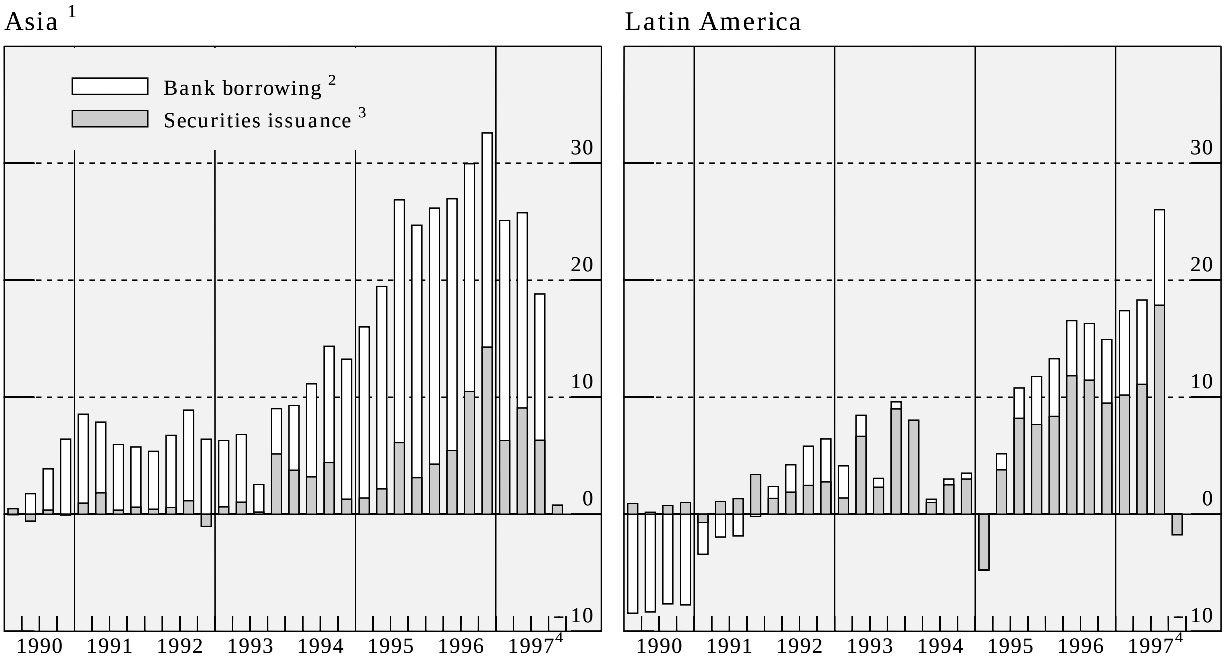
There was, similarly, a strong upsurge in new lending to Eastern Europe ($7.5 billion) in the third quarter. Sustained flows into the Russian Federation ($3.4 billion, mainly for interbank funding)[6] were accompanied by a resumption of bank lending to Poland ($1.4 billion) and Hungary ($0.8 billion). A substantial volume of international syndicated loans raised by local entities in the former case and interbank funds attracted by high domestic interest rates in the latter were major underlying factors. In the meantime, new lending to Slovak entities gained further momentum, reaching a record $1.1 billion. The tightening of domestic monetary conditions appears to have been successful in maintaining the incentive for capital inflows. In contrast, new pressures on the Czech currency were associated with a complete drying-up of banking funds to the Czech Republic. Another noteworthy development was the more active business of reporting banks with a number of smaller successor states to the former Soviet Union, including Ukraine, Kazakhstan, Turkmenistan and the Baltic republics.

The picture was even more contrasted in other regions of the developing world, although the volume of outstanding claims remained considerably smaller (and more heavily biased towards officially guaranteed facilities). In Africa, continuing new lending to South Africa ($0.7 billion) was accompanied by a further $0.5 billion reduction in banks' exposure to Algeria. In the Middle East, there was a further acceleration in new lending to Israel, as well as to a few oil producers, but net repayment by Iran. All in all, therefore, international banking activity with outside-area countries shows a modest outflow of banking funds during the third quarter. This is consistent with the limited movements in risk premia in the third quarter (see the graph on page 20), although the abrupt shift in market conditions in October may well have called this overall pattern into question, especially in the area of short-term credit.

6 The long-awaited rescheduling agreement between Russia and its foreign creditor banks on some $33 billion of Soviet debt (depending on the exchange rate used) was signed in early October and involved the immediate payment of $3 billion in cash.

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 (four-quarter moving average). [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 1997.

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

Structural and regulatory developments

In November, the Institute of International Finance (IIF) called for a reconsideration of the Basle Capital Accord of 1988 to reflect recent advances made in the management of credit risk. Senior representatives feel that existing risk weightings do not sufficiently take into account the full spectrum of credit risk attached to bank assets, the effects of portfolio diversification and the development of modern risk management practices. They consider that the rules contained in the Basle Accord have created perverse incentives by encouraging banks to acquire riskier loans. They suggest different ratios according to whether loans are made to entities based in lower-rated countries or to large companies in industrial countries. As from the beginning of 1998, banks have been allowed to use internal models to calculate their capital requirements for market risk.[7] The model approach has not yet been authorised for the calculation of capital requirements for credit risk.

The Japanese authorities revised the guidelines of a new supervisory system for banks operating in the domestic market. The new system, which is due to become effective in April 1998, aims at avoiding the emergence of a credit crunch in Japan. The Ministry of Finance will give banks without international operations a one-year grace period for the implementation of administrative orders if they are certain to meet the core capital adequacy ratio within a year. Banks will also be permitted to choose between alternative methods in evaluating their equity portfolios.

[7] In December, the finance ministers of EU countries agreed to bring European rules on capital adequacy into line with the international standards set by the Basle Committee. The agreement clears the way for European banks to use their own models to assess how much capital they need to hold as a cushion against market risk.

The Asian currency crisis in the fourth quarter of 1997

The Thai currency crisis, which spilled over to other South-East Asian countries during the summer of 1997, gained further momentum in the later part of the year.* In particular, the decision by the Taiwanese authorities on 17th October to let the currency depreciate was followed by an abrupt drop of the Hong Kong stock market in the last week of October. This, in turn, sparked a sharp fall in the Dow Jones index, causing the first early closing of trading on the New York Stock Exchange, and also affecting European equity markets. Moreover, whereas major fixed income markets had been little affected by the turbulence as long as it was confined to South-East Asia, developments in October triggered a general flight to quality, with a marked preference for highly rated dollar assets. Risk premia on emerging market debt reached levels unknown since the Mexican crisis of late 1994 and early 1995, while US Treasury bond yields fell below 6%. The turnaround was all the more severe in that international banking and securities flows to the countries concerned had been sustained until the very beginning of the "second wave" of the crisis (see the graphs on the next page).

As in the case of Mexico in 1995, local banking systems were at the centre of the crisis. Indeed, the main cause of the propagation of the Asian currency crisis to South Korea in October, and of its reverberations in other Asian economies, was the deterioration in the financial position of local Korean banks following the collapse of several heavily indebted conglomerates. Whereas implicit official support had temporarily succeeded in maintaining local banks' access to international funding during the summer, albeit at rising costs, the erosion of the credit rating of Korean entities and the accelerating weakening of the won raised fears of further bankruptcies. This added to pressures to liquidate or hedge local financial exposure. The package of liberalisation measures announced in November failed to restore market confidence and, in December, the Korean Government turned to the IMF for a rescue programme. However, despite a record-breaking support package of $57 billion, reports of higher short-term debt and lower official reserve holdings than previously released, as well as the worsening of domestic financial conditions, caused a further plunge of the currency.

With the downward spiral of local asset values and exchange rates in Asia feeding on itself, the financial problems tended to exacerbate fundamental ills and competitive currency depreciations. At the turn of the year, the liquidity crisis in Asia had reached systemic dimensions, requiring an immediate injection of cash and the rolling over of maturing debt.

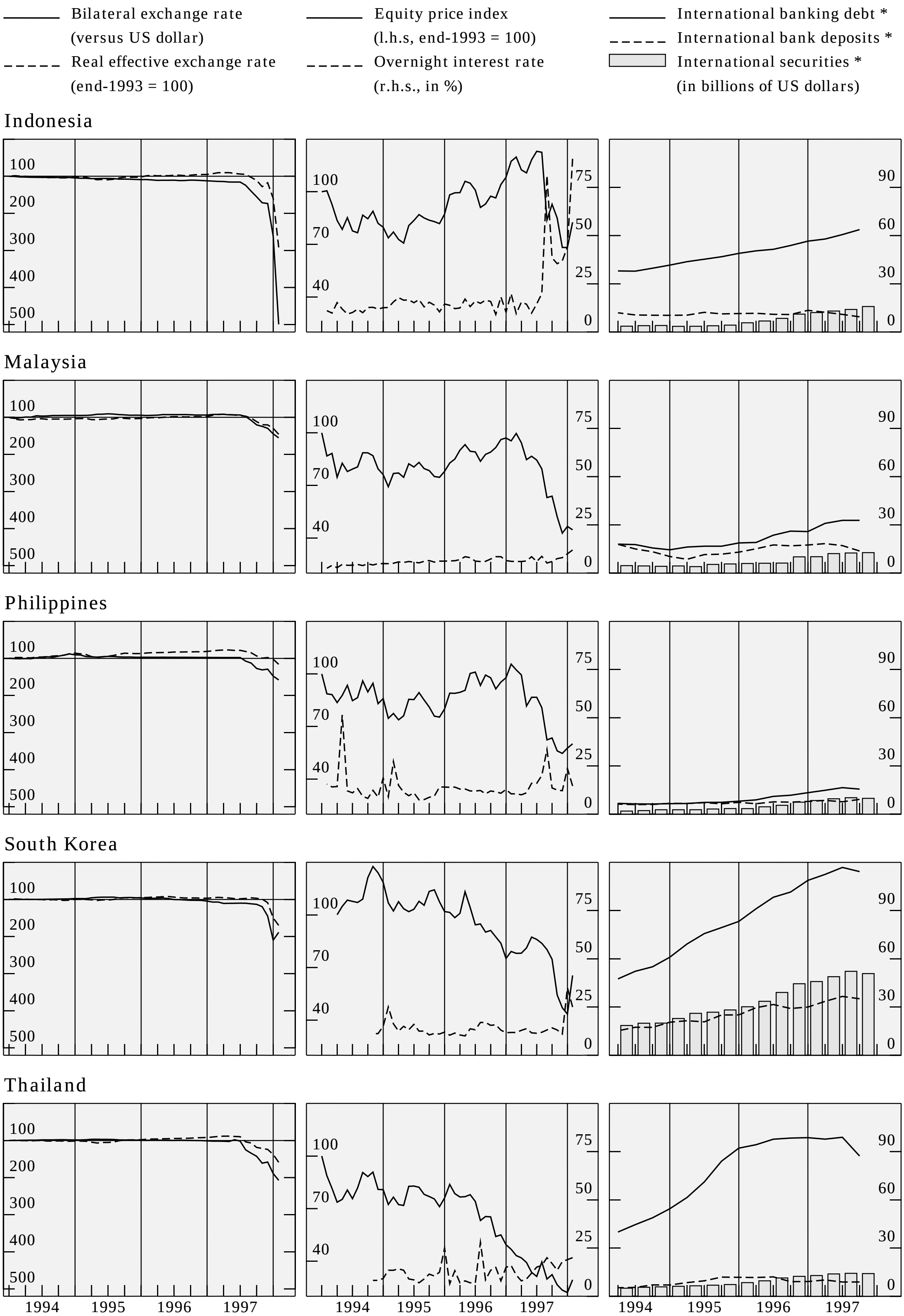
In the process, fears were expressed that the tightening of monetary and fiscal conditions attached to the IMF programmes might have deepened the crisis because of concerns that a wave of financial and corporate insolvency would follow. Although views may diverge as to the degree of tightening needed to restore market confidence, the risk of inflationary slippage in the face of massive currency depreciation requires monetary and fiscal discipline. In addition, the strict conditions attached to bailout programmes help minimise the problem of moral hazard. Such conditionality should also be seen within a broader set of requirements aimed at restructuring local financial systems by encouraging greater competition and transparency in an increasingly integrated environment.

Downgrading by rating agencies following the deterioration in the financial position of countries further compounded the problem by hindering local entities' access to external funding. Indeed, questions have been raised concerning the role of rating agencies, since downgrading often followed rather than preceded the deterioration in countries' financial conditions. Although it cannot be denied that the extent of market contagion, as well as the relevance of local private sector debt for the creditworthiness of sovereign borrowers, might have been underestimated, such criticisms still support the view that undue reliance may have been placed on ratings for the pricing of credit risk.** The steady decline in risk premia prior to the crisis, even in the absence of improvements in fundamentals, had been the source of repeated official warnings. Thus, a reassessment was long overdue, irrespective of the actions taken by rating agencies.

In South Korea, Thailand and some other countries, initial announcements of substantial international support failed to break the downward spiral in asset prices and halt the outflow of private capital. However, a similar pattern was observed in the initial phase of the Mexican crisis. In this latter case, it was only when a large loan package was followed by a clear commitment by the local authorities to rigorous macroeconomic policies and when financial market restructuring was actually set in train that the flight of capital began to be reversed. Admittedly, the wider spectrum of actors and instruments involved in the resolution of the present Asian crisis creates an even more challenging task. This will require strong political will on the part of the countries themselves, in the knowledge that the longer the instability persists, the larger the ultimate cost will be.

* For a description of the main underlying causes and of the sequence of events, see the previous issue of this commentary, page 12. ** Including for prudential rules in the case of certain categories of investors.

Selected Asian financial indicators



* Stocks outstanding.

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

III

THE INTERNATIONAL SECURITIES MARKETS

Overview

In the fourth quarter of 1997, total announcements of stand-alone international bonds and paper issued under euro-medium-term note facilities declined by almost 30% from the near-record level of the previous quarter, to $188 billion. With repayments of past issues reaching a new high at the same time, net issuance of international securities (including money market paper) more than halved, to $66.8 billion. The panic which followed the attack on the Hong Kong dollar at the end of October led to an almost complete drying-up in the issuance of lower-rated and subordinated instruments. Secondary market spreads on higher-risk issues widened sharply, forcing a large number of borrowers to postpone or withdraw issues. The few developing country names which introduced new flotations in this climate generally did so on the basis of collateralised structures or anticipated foreign currency earnings. The increase in the volatility of underlying and derivative fixed income and currency markets, together with a widening of secondary market spreads, made it considerably more difficult to arrange new financing across most business sectors (see the table below). This occurred in spite of the maintenance of broadly accommodative monetary stances in the major industrialised countries (in particular Japan, where interest rates reached postwar lows).

Main features of international debt securities issues[1]

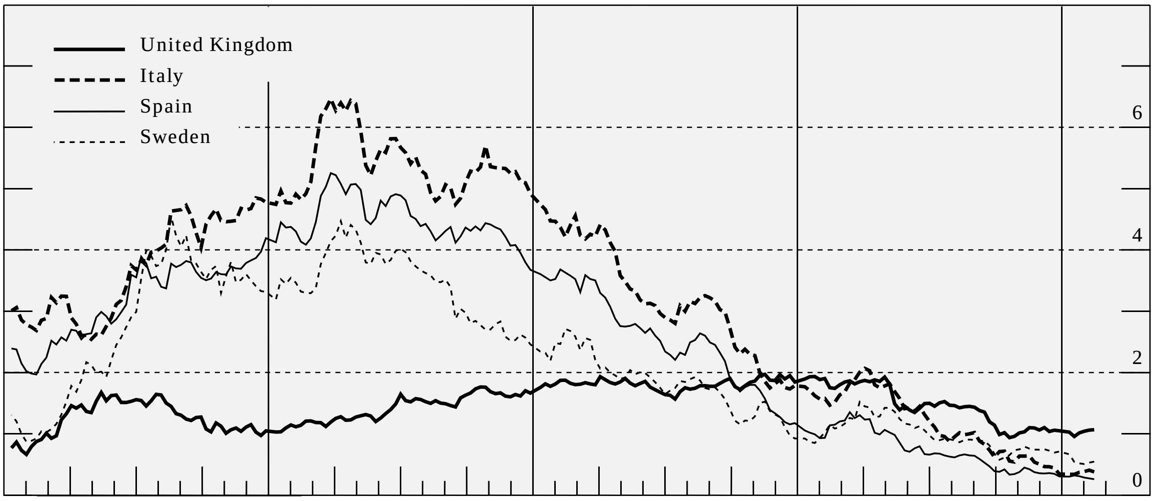
In billions of US dollars

Instrument, nationality, currency and type of issuer	1996	1997	1996	1997				Stocks at end-Dec. 1997
	Year	Year	Q4	Q1	Q2	Q3	Q4	
Total net issues	**540.0**	**519.9**	**176.3**	**137.8**	**152.0**	**163.3**	**66.8**	**3,531.4**
Money market instruments[2]	41.1	19.6	18.5	7.1	5.3	9.7	-2.5	183.8
Bonds and notes[2]	498.9	500.3	157.8	130.7	146.7	153.6	69.3	3,347.6
Developed countries	407.5	389.1	128.3	106.4	105.3	121.5	56.0	2,823.2
Europe[3]	*237.7*	*258.9*	*75.7*	*74.1*	*63.9*	*76.4*	*44.5*	*1,695.1*
Japan	*14.6*	*-3.0*	*1.5*	*2.4*	*-1.8*	*6.5*	*-10.1*	*329.8*
United States	*136.3*	*126.3*	*42.5*	*22.1*	*35.3*	*39.9*	*29.1*	*514.5*
Canada	*8.4*	*6.3*	*4.0*	*3.7*	*3.9*	*0.3*	*-1.6*	*183.0*
Offshore centres	16.3	14.9	6.8	3.9	4.8	5.5	0.7	49.2
Other countries	91.3	80.8	30.5	18.9	27.7	31.1	3.2	334.3
International institutions	24.9	35.1	10.7	8.6	14.3	5.2	6.9	324.8
US dollar	262.0	265.4	86.3	55.4	82.8	91.7	35.5	1,510.8
Yen	81.3	25.8	19.0	14.1	9.9	4.5	-2.8	487.2
Deutsche mark	54.9	49.6	12.6	14.0	11.3	16.6	7.7	349.2
Other currencies	141.8	179.1	58.4	54.3	48.0	50.4	26.4	1,184.2
Financial institutions[4]	343.9	346.5	113.6	90.0	80.5	105.0	71.1	1,602.6
Public sector[5]	123.6	103.0	42.0	32.0	43.7	30.0	-2.7	1,096.1
Corporate issuers	72.5	70.4	20.7	15.8	27.8	28.2	-1.4	832.7
Memorandum items:								
Stand-alone international bonds	**274.9**	**216.5**	**91.4**	**54.8**	**71.1**	**69.8**	**20.9**	**2,458.2**
Bonds issued under EMTN programmes	**199.3**	**157.4**	**55.6**	**52.4**	**41.5**	**47.3**	**16.2**	**484.5**

[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.

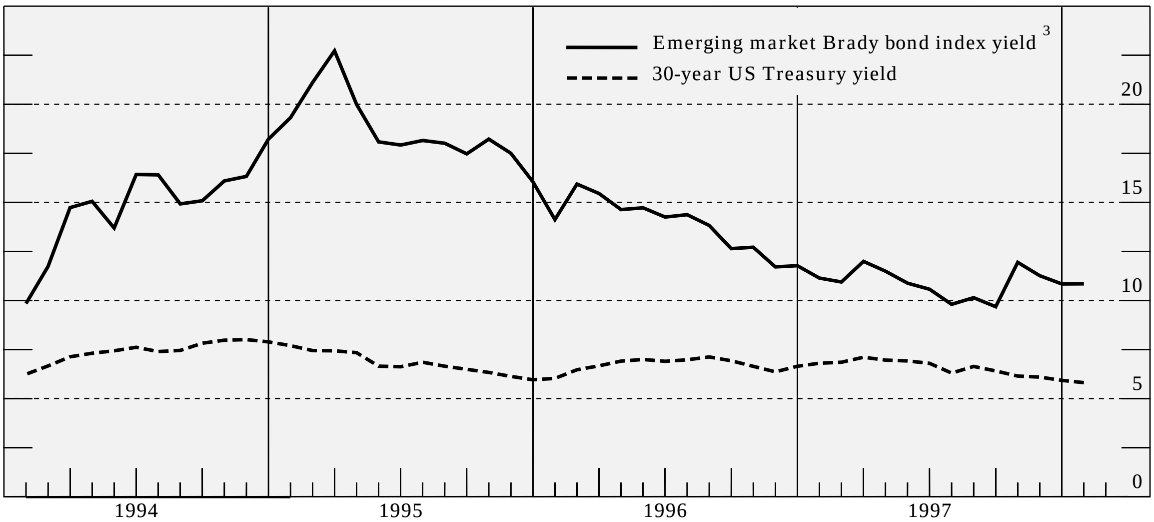
Sources: Bank of England, Euroclear, Euromoney, IFR, ISMA and BIS.

Yield differentials vis-à-vis long-term German government bonds [1]



Yield differentials vis-à-vis long-term US government bonds [1]

Emerging market bond yields versus 30-year US Treasury yields [2]



[1] Weekly averages, in percentage points. [2] Monthly data, in percentage points. [3] Yield stripped of collateral backing.

Sources: Datastream and J.P. Morgan.

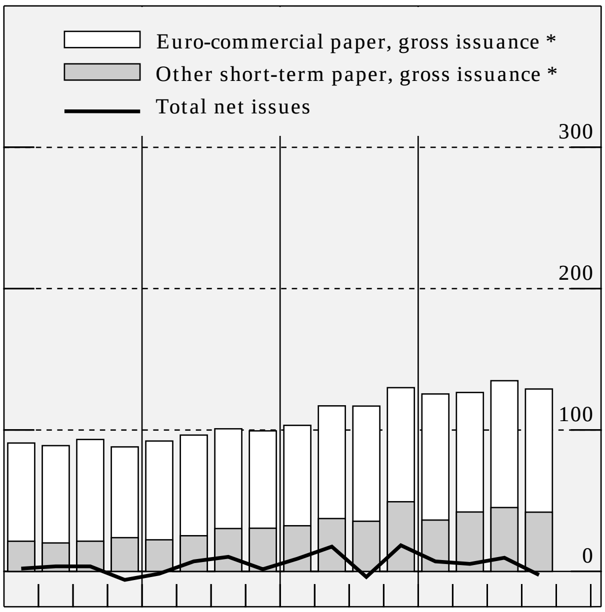
Although the reported flight to highly rated US dollar and "core" European currency assets did not result in a notable change in the currency composition of issuance, certain borrowers were able to capitalise on their high credit standing. Thus, issues launched by supranational entities and highly rated sovereign borrowers, together with securitisation vehicles, met strong investor demand in the second half of the quarter. In contrast, lower-rated names were obliged to seek alternatives in the syndicated loan market.[8] At the same time, the increasing aversion of investors to market risk was reflected in shortening of the average duration of new fixed rate bonds from the record seen in the previous quarter and a shift in favour of floating rate notes (see the graphs on page 21 and below). Moreover, with the Asian crisis leading to renewed awareness of credit risk considerations, intermediaries developed a number of structures linking coupon payments or redemption to the evolution of issuers' credit standing.

A large number of investment and commercial banks appear to have been taken by surprise by the virulence of the financial turbulence, announcing heavy losses on their proprietary trading operations. The Asian crisis also showed that, while investors may have become increasingly homogeneous in their behaviour, investment linkages are now highly complex. Thus, although available data are not sufficiently detailed at this stage to quantify investors' actual positions, the markets' steep decline appears to have been associated with the unwinding of heavily leveraged positions. Investors that had borrowed in offshore dollars or yen to finance investments in emerging market securities were faced with margin calls and had to liquidate securities in less affected markets to cover losses. Such transactions contributed to the transmission of the crisis to areas that had maintained stronger fundamentals. In addition, reports that Korean banks and institutional investors faced heavy losses on assets booked elsewhere in Asia, or even in Latin America and Eastern Europe, show that investment in emerging market countries can no longer be assumed to be flowing solely from traditional mature economies.

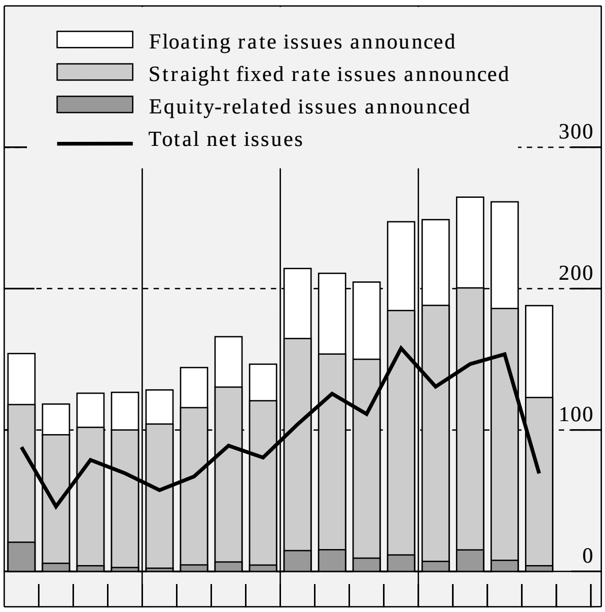
The international debt securities markets

In billions of US dollars

Money market instruments



International bonds and notes



* Excludes issues redeemed in the same quarter.

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

8 See page 5 of this commentary.

The crisis also highlighted a number of issues raised by the globalisation of international finance. The recent events have brought to the fore severe inadequacies in the areas of financial disclosure, banking supervision and bankruptcy laws, which, in their search for yield, investors were only too willing to overlook. At the same time, countries that have developed deep and sound financial markets (such as Hong Kong and Singapore), as well as stricter financial discipline, were more successful in preventing the build-up of financial imbalances.

Money market instruments/short-term euronotes

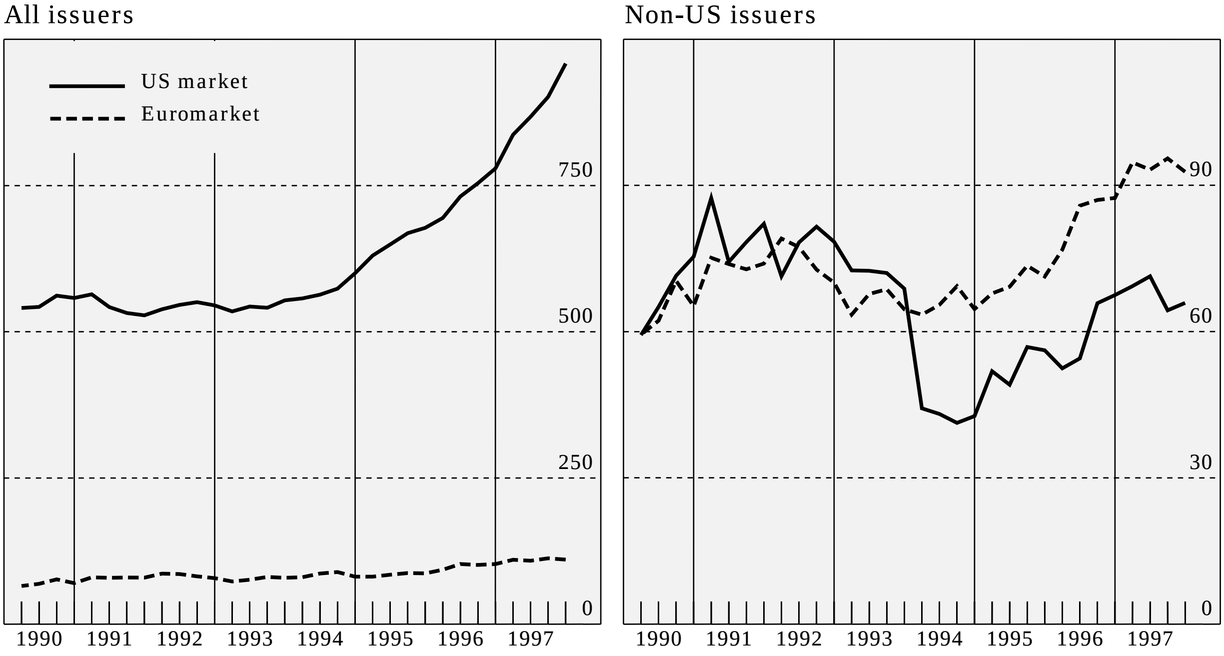
In the market for euro-commercial paper (ECP) and other short-term euronotes, the stock of notes outstanding declined by $2.5 billion in the fourth quarter of 1997, to $183.8 billion at year-end. Developments in that market segment provide another illustration of investors' abrupt reassessment of liquidity and credit risk in the wake of the Asian crisis. Thus, while the volume of short-term paper issued by emerging market names contracted, there was a much broader investor disaffection for corporate sector issues. The drying-up of liquidity in the ECP market also accentuated the contrast with the US CP market, where expansion continued at a brisk pace. In fact, some shift back to the US market was probably partly responsible for the heavy repayments of eurodollar paper. At the same time, the high level of short-term interest rates in the United Kingdom may have boosted foreign investment demand for paper denominated in sterling. Although the unsettled environment prevailing in the fourth quarter put a premium on liquidity, differences in economic conditions between Europe and the United States, as well as the more fragmented nature and considerably smaller size of European money market funds, continued to limit the growth of the ECP market. Activity may also have been hampered by fiscal consolidation in Europe.

Longer-term international securities

In the longer-term segment of the international securities markets, warnings by the US Federal Reserve of a potential resurgence of US inflation and the increase in German official rates had led to a somewhat less favourable investment climate even before the emergence of the Asian crisis. From the end of October onwards, conditions soured dramatically, prompting a widespread flight to

Commercial paper outstanding

In billions of US dollars



Sources: Federal Reserve Board, Euroclear and BIS.

Main features of the international bonds and notes market

In billions of US dollars

Instruments, currencies and type of issuer	1996	1997	1996	1997			
	Year	**Year**	**Q4**	**Q1**	**Q2**	**Q3**	**Q4**
Announced issues	**877.1**	**962.9**	**247.3**	**248.8**	**264.7**	**261.4**	**188.0**
Floating rate issues	224.1	265.2	62.8	60.6	64.2	75.4	65.0
Straight fixed rate issues	601.9	663.5	172.9	181.1	185.3	178.2	119.0
Equity-related issues[1]	51.1	34.2	11.7	7.1	15.2	7.8	4.0
US dollar	395.0	448.7	112.2	105.4	131.9	126.9	84.4
Yen	136.8	126.9	37.9	34.1	30.9	36.2	25.7
Deutsche mark	86.8	76.9	18.5	20.1	18.4	21.9	16.4
Other currencies	258.5	310.5	78.8	89.2	83.5	76.4	61.5
Financial institutions[2]	455.1	524.9	137.1	133.5	132.4	144.1	114.9
Public sector[3]	221.4	241.0	57.6	67.3	74.4	58.7	40.6
Corporate issuers	200.6	197.2	52.6	48.1	58.0	58.6	32.5
Completed issues	**871.2**	**970.0**	**263.0**	**240.8**	**247.8**	**270.7**	**210.7**
Repayments	**372.3**	**469.7**	**105.2**	**110.2**	**101.1**	**117.1**	**141.4**

[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.

highly rated government bond markets. As a result, the spreads on leading Latin American and Eastern European fixed income benchmarks rose to levels not seen since the "tequila" crisis of early 1995.[9] The turmoil also created a dichotomy in secondary market trading: transactions in liquid paper reached record levels, while trading in smaller issues ground to a halt, with large bid/ask spreads acting as a deterrent to transactions. Although the crisis in the Asian region deepened further in November and December, the perception that the major central banks would lean on the side of accommodation led to a rapid recovery of equity and fixed income markets in the industrial world (with the exception of Japan; see the graph on page 22). With the prices of securities issued by Latin American entities also showing some signs of recovery in the second half of the quarter, contagion appears to have been less pronounced than at the time of the Mexican financial crisis.

The Asian crisis occupied centre stage during the fourth quarter, but there were also other significant underlying trends. The issuance of mortgage and other asset-backed securities increased by $6.6 billion, to reach a new record of $39.8 billion. Much of the increase resulted from the introduction of new large collateralised loan obligations (CLOs). These included two separate large multi-tranche deals originated by a UK and a Swiss bank ($5.4 billion and $4.9 billion respectively). While CLOs are generally structured on the basis of portfolios of corporate loans, intermediaries have recently become more adventurous. This was illustrated in the fourth quarter by the large Swiss deal and also by a $700 million US-originated transaction that combined the use of securitisation techniques with that of credit derivatives (such as credit-linked notes and credit default swaps). The objective of these transactions is to hedge originators' exposure by repackaging a portfolio of assets in a way that best caters to investors' differing appetites for credit risk. There are, moreover, signs that the European securitisation market is expanding beyond the restructuring of bank or corporate balance sheets to include consumer or mortgage debt financing. This was evidenced by the extension by a US bank of its credit card securitisation programme to the Swiss franc sector (with a SF 1 billion issue)

9 For example, at the end of October yield spreads on some Russian and Latin American dollar-denominated fixed income securities widened to as much as 900 basis points.

and by further jumbo Pfandbrief issues.[10] The recent popularity of asset-backed securities results from a combination of factors. On the investors' side, these include the search for new sources of higher-yielding assets in a context of greater understanding of complex structures. On the issuers' side, an important element has been banks' desire to free the regulatory capital tied up in low-margin corporate loans. The need for European banks to improve their competitiveness ahead of EMU has also led them to put greater emphasis on the efficient management of their balance sheets.

The relative vigour of the non-bank financial sector contrasted markedly with the international financing activity of banks. While asset securitisation accounted for all of the increase in financing conducted by non-bank financial institutions (from $46.9 billion to $50.6 billion), concerns about the impact of the Asian crisis on the strength of internationally active banks led to a substantial decline in issuance by that group (from $97.2 billion to $64.3 billion). The marketing of subordinated bank issues proved substantially more difficult for institutions from most geographical areas. The fact that the drop in the financing activity of US banks was much less pronounced than that of European and Japanese banks may have reflected a stronger capital position and a lower overall exposure to the Asian region.

One by-product of the recent financial turbulence has been the boost given to the offering of structures providing investors with some protection against credit events. For example, in December, Argentina launched a $500 million five-year issue which will periodically reset the spread over US Treasuries through a regular auction process. Other techniques allowing the transfer of credit risk included notes with performance linked to third-party credits or guarantees provided by letters of credit of highly creditworthy banks.[11] Somewhat surprisingly, intermediaries did not moderate their efforts to develop a high-yielding eurobond market. The advent of EMU is likely to encourage the use of securities markets by lower-rated companies that have so far relied on bank financing. Despite the higher cost involved in arranging cross-currency swaps, European corporates have raised large amounts in the US junk bond market. US investment houses are building up resources in that area in the hope of taking business away from European intermediaries when corporate issuance develops.

Despite some decline in the total volume of "euro-fungible" issues in the fourth quarter (from $10.6 billion to $7.1 billion), borrowers continued to prepare for the introduction of EMU by building yield curves in the euro through ECU/euro and "parallel" securities. Large borrowers also attempted to align their issuing practices with those of European governments through large benchmarks, regular issuing calendars and the creation of coupon stripping and repurchase facilities. Moreover, some of the smaller European countries took new initiatives aimed at broadening their investment bases and diversifying their funding sources. For instance, Belgium introduced a "domestic" ten-year multi-tranche issue in Belgian francs, Deutsche marks and French francs. The securities bear similar coupons and are convertible into euros upon the introduction of EMU, at which point they will become identical and interchangeable. The fungible nature of the issues was reported to have enabled the country to achieve better terms than those available through a standard eurobond transaction. The three tranches were all issued under Belgian law and local settlement rules but the Deutsche mark and French franc tranches were syndicated in Frankfurt and Paris. The simultaneous syndication of issues in different financial centres is likely to become a standard operating procedure within the euro zone.

With the reduction in announcements and the increase in repayments being concentrated in the *fixed rate* segment, the decline in net fixed rate financing was particularly pronounced in the fourth quarter (from $109.6 billion to $28.1 billion, see Annex Table 11B). Much of the reduction in

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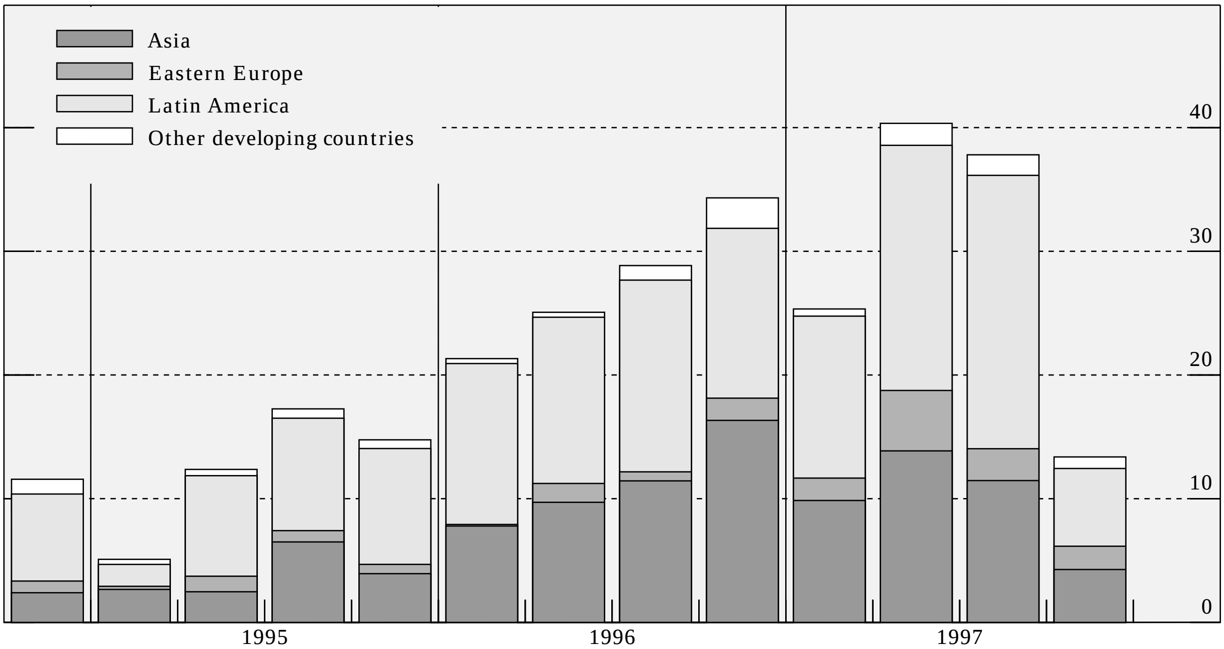
[10] Pfandbriefe are bonds issued by specialised German banks to fund their mortgage lending operations. Although such instruments shift the interest rate risk of long-term fixed rate assets to end-investors, they are not usually treated as mortgage-backed securities since the assets remain on the balance sheet of the originating banks.

[11] Interestingly, Korean and Thai public sector borrowers that had launched issues incorporating put options in the event of a downgrade of their credit ratings were faced with such a possibility as these countries' sovereign risk ratings were reduced to sub-investment ("junk") level in December.

International bond and note issuance by emerging market borrowers *

In billions of US dollars



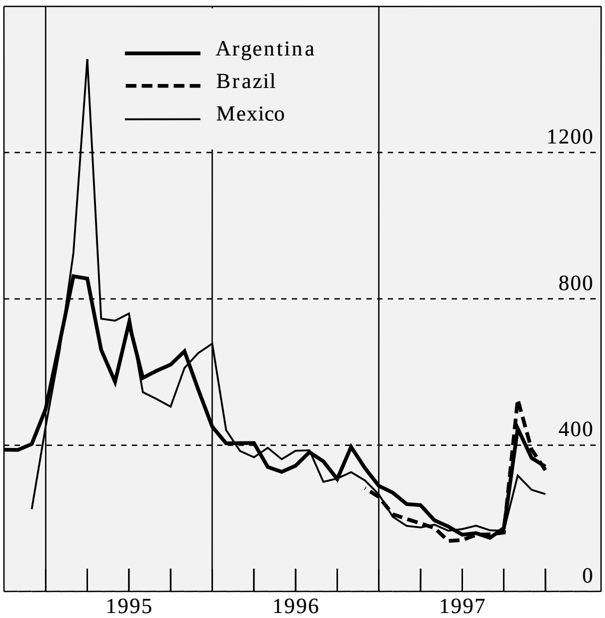
* Announced issues based on the nationality of the borrower.

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

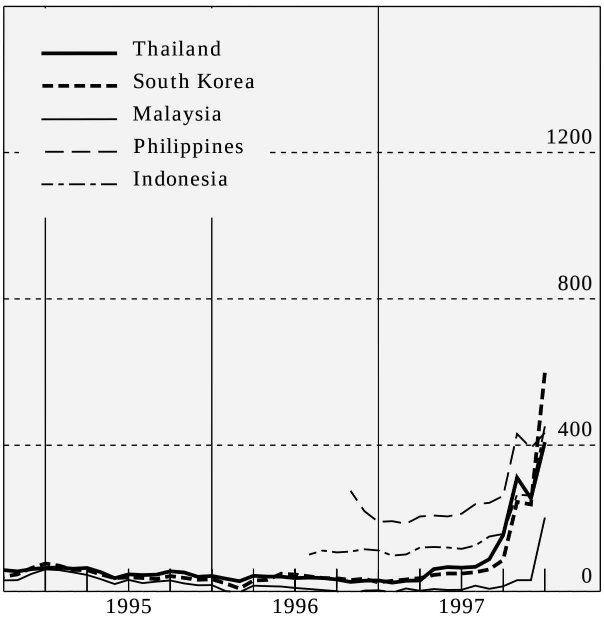
Average spread of US dollar sovereign international bonds over ten-year US Treasury bonds *

In basis points

Latin America



Asia

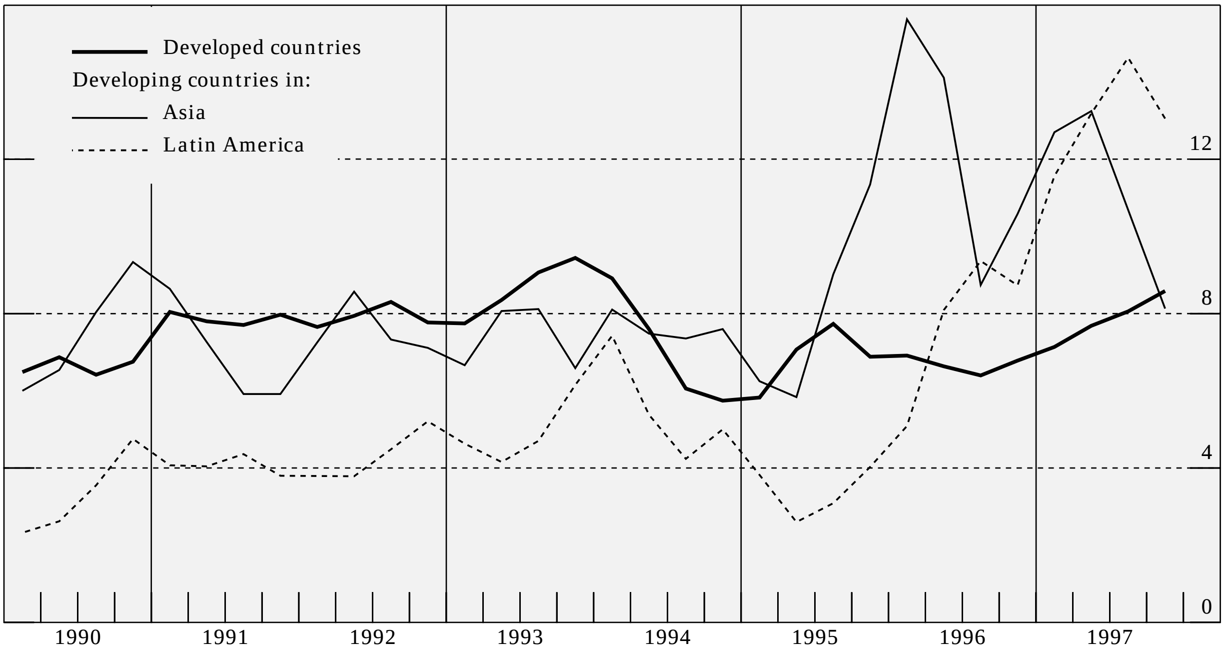


* Brady bonds for Latin American countries and the Philippines and ten-year eurobonds for Asian countries.

Sources: Bloomberg, Datastream and BIS.

Weighted average maturity of announced straight fixed rate international bonds *

In years



* Two-quarter moving average of stand-alone bonds and bonds issued under medium-term note programmes.
Sources: Bank of England, Euroclear, Euromoney, IFR, ISMA and BIS.

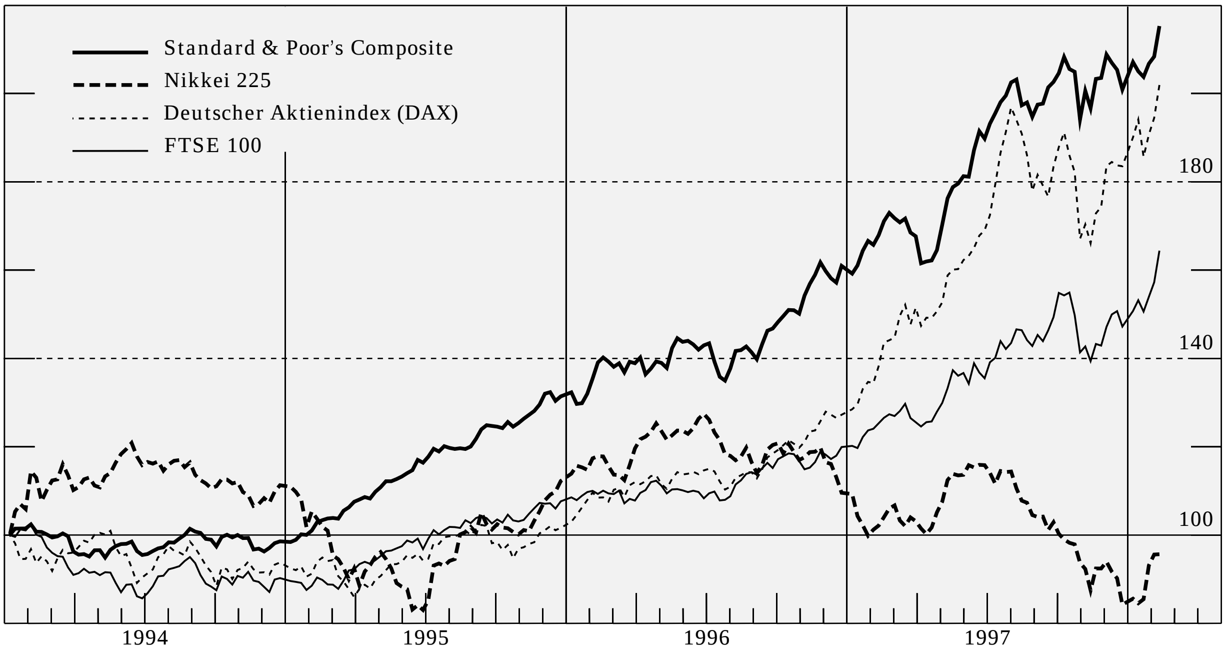
announcements took place in the US dollar segment ($79.3 billion to $42.3 billion), where conditions had become less auspicious even before the Asian crisis had begun to take its toll. In spite of widening spreads in the US dollar swap market, new dollar business was hampered by limited demand for longer-term paper, leaving investment banks with heavy inventories of securities. Thereafter, the drop in dollar issuance largely reflected the withdrawal of emerging market entities. However, highly rated sovereigns, supranational borrowers and securitisation vehicles capitalised on the strong demand for AAA-rated paper and on narrowing secondary market spreads to introduce a string of substantial dollar issues.

In contrast, business denominated in European currencies appears to have been somewhat less affected by market turbulence (with issuance declining from $59.8 billion to $47.7 billion). The flight to the safety of Deutsche mark bloc securities and receding fears of a further increase in European interest rates after the October rise were probably helpful in that respect. While a few borrowers from emerging market countries such as Argentina, Brazil and Turkey were able to bring large Deutsche mark issues in October, the focus shifted afterwards to high-quality retail-targeted securities. Arbitrage opportunities in the eurolira market moderated the drop of business in that segment, with more than 90% of issues being launched by non-Italian borrowers. The Swiss franc market also fared reasonably well with two unusually large non-bank issues (each for SF 1 billion). Despite market reports of reduced investor demand, issuance declined less in the euroyen market than in the other major currency sectors. Overall market uncertainty and anticipations of a rebound in the yen might have helped maintain Japanese retail interest in euroyen and Samurai issues. This seems to have offset the negative impact on investor demand of the low level of interest rates, downward currency pressures caused by the market's concerns over the implications of the Asian crisis on the Japanese economy and growing worries about the solidity of the financial system.

The prevailing climate of uncertainty meant that investors continued to be drawn to defensive instruments such as *floating rate notes (FRNs)*. This accounted for the less pronounced drop of activity (from $75.4 billion to $65 billion) than that seen in the fixed rate market. With concerns about the credit quality of commercial banks hampering issuance of subordinated debt, sovereign and

Equity market developments

Weekly averages (3rd January 1994 = 100)



Source: Datastream.

supranational issuers took up the slack in issuance. The cutback in borrowing by Japanese banks was also partly offset by more active recourse by European borrowers. The market offered interesting arbitrage opportunities, as illustrated by the introduction by supranational borrowers of several reverse FRNs denominated in lire. Italian retail investor interest was attracted by the high initial fixed rate coupons and, for the remaining floating rate period, the expectation of low short-term rates under EMU.[12]

The volatility of stock markets and the uncertainty over the health of Asian economies dented the enthusiasm of investors for *equity-related issues*, with announcements declining from $7.8 billion to $4 billion. Most notably, the fall in the Nikkei index led to a complete drying-up of Japanese issuance for the first time since the second quarter of 1990. Asian companies managed to launch a few issues in October, albeit on less favourable terms. For example, in order to make its offering palatable, a Korean conglomerate had to offer conversion into equity at the prevailing stock price rather than at the more traditional 10-15% premium. The ability to generate foreign currency earnings enabled an Indonesian pulp and paper company to defy the market's sentiment with a $1.4 billion convertible issue. Lastly, the market for "structured" equity-related issues appears to have expanded further. For example, investment banks created synthetic convertible issues on the basis of third-party equities or introduced instruments guaranteeing both principal protection and the opportunity to share in the gains made by equity markets.

Structural and regulatory developments

In December, the BIS published a set of research papers entitled "The Measurement of Aggregate Market Risk". The volume, prepared by a group of central bank researchers for the Euro-currency Standing Committee of the Group of Ten central banks, addresses the measurement of market risk, market dynamics, liquidity and the role that information plays in shaping market outcomes in unsettled circumstances. It explores the question of whether data on exposures to large market movements under specific stress scenarios could be collected from intermediaries, aggregated

12 Since low interest rates will translate into high interest payments.

Carry trade strategies[*]

In the early 1990s, low short-term dollar interest rates led investors to play the so-called carry trade in the dollar market. In an environment of stable long-term interest rates, profit could be made by borrowing in the overnight market and investing the proceeds in US Treasury notes and bonds. The carry was the difference between the short-term funding rate (then at 3%) and the investment yield (at 7%), representing in this particular instance a "positive carry" of 4%. The decline in long-term rates until the end of 1993 added capital gains to this generally profitable business. While the scale of the business cannot be directly measured, it is notable that US banks and securities firms' cash market holdings of bonds rose by about $100 billion per year in 1991-93.

With the low level reached by US long-term rates at the end of 1993, the carry trade shifted to Europe and in particular to the French and German markets. US or UK-based investors entering into such transactions avoided foreign exchange risks by taking a long position (in bonds) and a short position (in the money market) in the same currency. Again, the scale of activity cannot be directly assessed, but it is worth noting that UK banks and securities dealers bought over $100 billion of foreign bonds in 1993. Against the backdrop of this diffusion of the carry trade to European fixed income markets, the rise in US short-term rates in early 1994 may have indirectly led to lower prices and higher volatility in European bond markets.[**]

Low short-term interest rates in Japan since the middle of the decade had a similar impact, as Japanese investors sought to achieve high yields without taking exchange rate exposure. For instance, a US financial firm would put together a portfolio of relatively risky dollar securities,[***] combined with an interest rate swap (to transform its fixed rate exposure into a floating rate one) and forward sales of dollars against yen (to obtain returns in yen). A Japanese securities firm would then market the resultant portfolio to Japanese investors as a synthetic floating rate yen instrument at "LIBOR plus". For the investors, this yen investment would outperform yen bank deposits provided that the dollar securities performed well and the counterparties did not default on the swaps.

However, another kind of transaction, the so-called "yen carry trade", did involve an exchange rate risk. A simple example was the purchase of a US Treasury security financed with floating rate yen. With a 5% yield on the bond, a cost of funding of less than 1% and the absence of yen strengthening, the "carry" was very profitable. Moreover, if the fixed rate instrument was a Brady bond posing greater credit risk but offering, say, a yield of 8%, the carry could have mounted to over 7%. Finally, if a single dollar of investment was leveraged fivefold (which is not far-fetched if bond financing transactions through repos require only 20% overcollateralisation), the carry could approach 40% per annum.

There has been substantial discussion concerning the number and type of investors pursuing these strategies and the aggregate size of positions. Some observers have pointed to the build-up of holdings of US Treasury bonds in Caribbean offshore centres, where some hedge funds are legally domiciled.[****] It has been noted that Japanese banks built up their claims on non-bank residents in the Caribbean, which can be read as evidence of an outstanding yen carry trade of about $20 billion.[*****] However, US Treasury bond data show that the largest build-up was in the Netherlands Antilles (legal home of, among others, the Quantum family of funds), whereas yen credit has flowed largely to the Cayman Islands. In addition, the simultaneity between the purchase of Treasury paper by residents in this offshore centre and the extension of yen credit has been far from perfect (see the graph on the next page). Of course, the yen credit could be replaced by dollar credit previously used to finance leveraged portfolios of Treasury securities, thus allowing a yen carry trade interpretation.

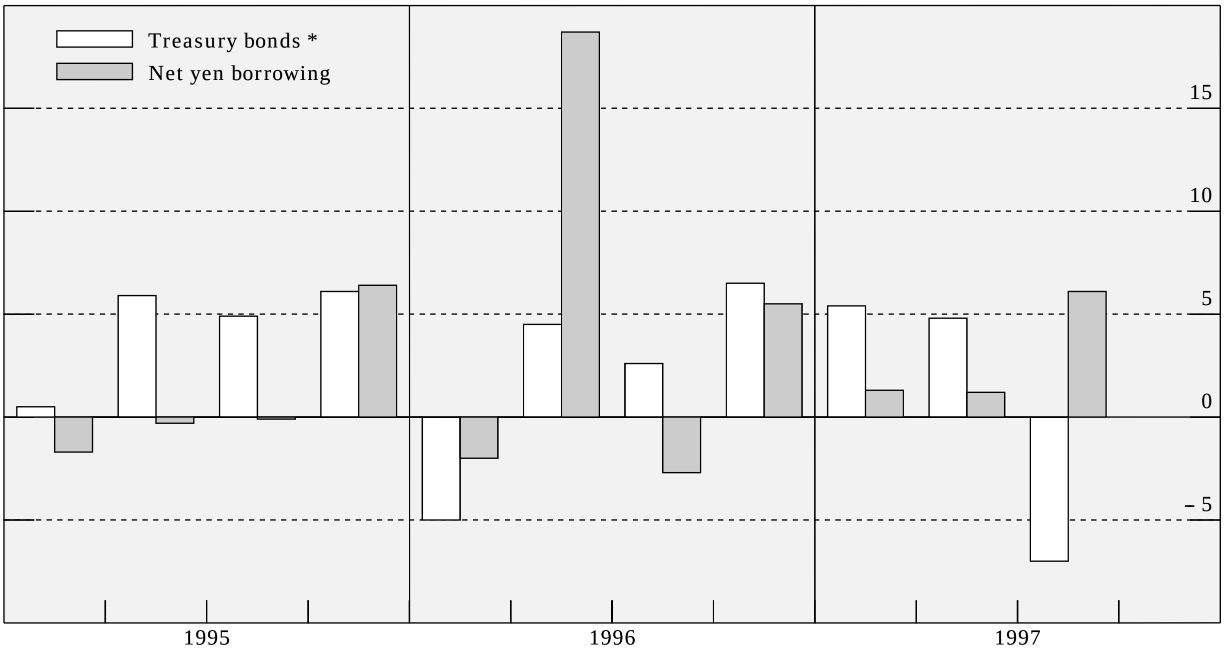
The difficulty in measuring the aggregate size of the yen carry trade is that the yen "financing" is often most conveniently arranged as a forward sale of yen against dollars. If the yen does not rise against the dollar over the investment horizon, such a short position will yield a profit proportional to the difference between dollar and yen money rates, in effect offering cheap yen financing. If yen carry trades were widespread, one would expect to observe them in more readily measurable cash market transactions on the fringes of the world financial system.[******] However, the actual importance of such business remains to be assessed.

[*] Robert N. McCauley and Karsten von Kleist of the Monetary and Economic Department of the BIS contributed this box. [**] See Claudio E.V. Borio and Robert N. McCauley, "The Economics of Recent Bond Yield Volatility", *BIS Economic Papers,* No. 45, July 1996. [***] Such a portfolio might include domestic junk bonds, low-rated international bonds denominated in dollars and money-market instruments (Treasury bills, certificates of deposit or foreign exchange forwards) in currencies linked to the dollar. [****] Hedge funds are generally unregulated investment partnerships commonly using short positions and leverage in their investment strategies. See also BIS, *66th Annual Report*, 1996, p. 102. [*****] David Folkerts-Landau, Donald J. Mathieson and Garry J. Schinasi, *International Capital Markets*¸ IMF, November 1997, p. 99. [******] One such piece of evidence is observed in Israel. In the past year or two, there has been a marked increase in credit extended by banks in the country to local residents denominated in "other currencies", overwhelmingly the yen, according to the Israeli authorities. This suggests that Israeli residents have been financing high-yielding shekel assets with low-cost yen borrowing. It is also interesting to note that credit in yen peaked in May when the Japanese currency rose sharply. The turnaround in yen credit in Israel thereafter supports the assertion that some yen carry trades have been reversed, leading to some downward pressure on currencies primarily benefiting from the trade.

across markets, and then disseminated to market participants to alleviate such information deficiencies. The research considers methodologies for designing stress tests which could be used in the collection and aggregation of data, as well as frameworks for incorporating feedback and liquidity

Net purchases of US Treasuries and Japanese yen borrowing by residents of the Cayman Islands

In billions of US dollars



* US Treasury and agency bonds.

Sources: US Department of the Treasury and BIS.

effects into an aggregate risk measurement process. The Committee accepted the conclusion that this research did not establish an adequate technical basis or adequate justification for collecting aggregate market risk data. However, the Committee decided to encourage further work on the aspects of market functioning and price dynamics under stress addressed in the volume.

Stock exchanges continued to take initiatives aimed at further improving the efficiency of their trading systems. Thus, in October, the London Stock Exchange introduced the Stock Exchange Electronic Trading Service (SETS), a new electronic order book system. The facility, which will be available for large-sized orders made on standardised settlement terms, is likely to lead to a decline in dealing commissions and brings London more closely into line with other financial centres. In November, the Frankfurt Stock Exchange launched Xetra, an electronic trading system that replaces the IBIS facility used mainly for wholesale orders. The new system is designed to give cost-effective access to all investors and to provide a more transparent view of trading through an open order book allowing a continuous monitoring of price developments. The exchange will begin to accept smaller private orders as from the end of 1998, with market participants being able to trade electronically all the shares listed on the exchange. The product range will eventually be expanded from stocks to debt securities.

Modernisation was also evident in government debt markets. In December, the Bank of England launched an official gilt strips facility which will allow gilt holders to exchange a coupon-bearing gilt for a series of new zero coupon strips matching exactly the cash flows of the parent bond, or, conversely, to exchange an appropriate bundle of strips for a coupon-bearing gilt. The facility will make available to investors and traders the most basic cash flow structure (namely zero coupon paper), thus enabling them to achieve a desired pattern of cash flows. The creation of the facility constitutes a further step in the development of the gilt market and as such received strong support from market participants. Lastly, in October, a European bank launched an electronic system for the trading, pricing and execution of international repos. Delivered through a well-known financial data provider, the service will produce live prices on benchmark instruments in 15 different currencies.

IV

DERIVATIVES MARKETS[13]

Overview

The repercussions of the Asian crisis on foreign exchange markets and the related flight to the "quality" of highly rated fixed income instruments temporarily boosted exchange-traded activity in interest rate derivative contracts in the early part of the fourth quarter of 1997. In addition, the sharp drop in global equity markets in October generated a substantial volume of business in equity-related contracts. The Asian crisis revealed the limited extent to which local companies had made use of currency hedging instruments, leading to renewed corporate interest in such tools. It also showed that many dealers had inadequately hedged their positions, with the losses likely to have dented the substantial profits recently derived from such instruments and to have prompted a reconsideration of existing risk management strategies.

Although the turmoil created by the Asian crisis occupied centre stage during the quarter, a number of underlying trends continued to assume growing importance. Thus, despite the easing of concerns related to EMU, European exchanges’ drive to innovate continued unabated. However, competitive strategies structured around new interest rate products, adjustments to contract specifications and reductions in fees have been reaching a stage of diminishing returns. This explains the apparent shift in the locus of innovation to equity products and the frenetic development of electronic trading systems. For instance, exchanges that have traditionally relied on open outcry have tended to restrict electronic trading to out-of-hours business, but this is gradually changing, as is evidenced by the growing use during regular hours of electronic facilities for small orders or less popular contracts. OTC market dealers were no less active, continuing to market products betting on the evolution of European interest rate differentials or the flattening of yield curves. It is now recognised that the removal of currency risk within EMU will shift the relative weight to credit risk. However, the greater focus on credit risk is not a uniquely European phenomenon. Other developments such as the increase in the size of counterparties resulting from consolidation and the Asian crisis are also creating strong interest in this area. This was illustrated in the fourth quarter by the active marketing of instrument and software packages to manage credit risk (see the box on page 32).

At the same time, recent industry initiatives in the area of electronic trading suggest the likely emergence of systems which could eventually supersede the traditional distinction made between exchange-traded and OTC markets, and between open outcry and electronic trading methods. While it is difficult at this juncture to make definite statements about the future (since the process encompasses a number of rapidly evolving technologies), it is nevertheless useful to survey some of these developments. First, there has been growing convergence of practices between exchange-traded and OTC markets. Thus, although exchanges retain important strengths such as liquidity, security and transparency, these advantages have been weakened by the standardisation of products and improved management of counterparty risk in OTC markets.[14] Conversely, exchanges are introducing facilities for the management of collateral in OTC transactions. Secondly, links between cash and derivatives markets have multiplied, with exchanges entering into alliances with wholesale market brokers to develop electronic trading facilities. Thirdly, the rapid development of highly cost-effective electronic technologies has raised questions concerning the need for centralised market places. Fourthly, electronic trading is facilitating the establishment of cost-effective links between exchanges which might help them maintain their competitiveness vis-à-vis the OTC market; but this does not necessarily imply that their franchises are protected. For example, providers of electronic information services are actively developing substitutes for exchanges' facilities. The entry of new entities such as

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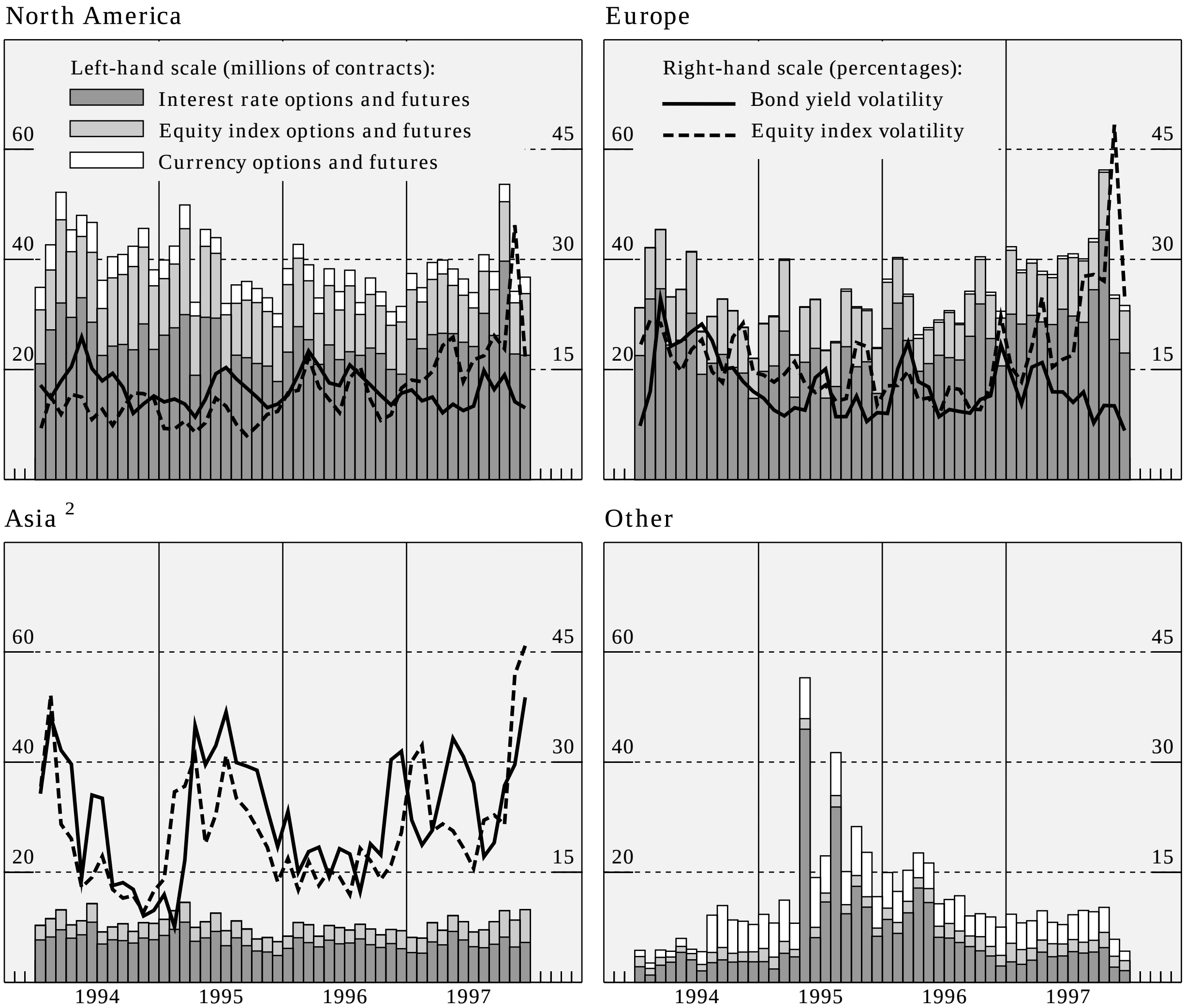
[13] The full names of the various exchanges referred to in this publication are listed on page 38.

[14] Through netting and collateralisation, for example.

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



[1] Average rolling standard deviation of 20 previous daily percentage changes in benchmark yields and equity indices of US, German and Japanese markets for North America, Europe and Asia respectively. [2] Including Australia and New Zealand.
Sources: Datastream, Futures Industry Association and BIS.

securities clearing houses into the management and clearing of collateral will also add another group of participants to the original ones.[15]

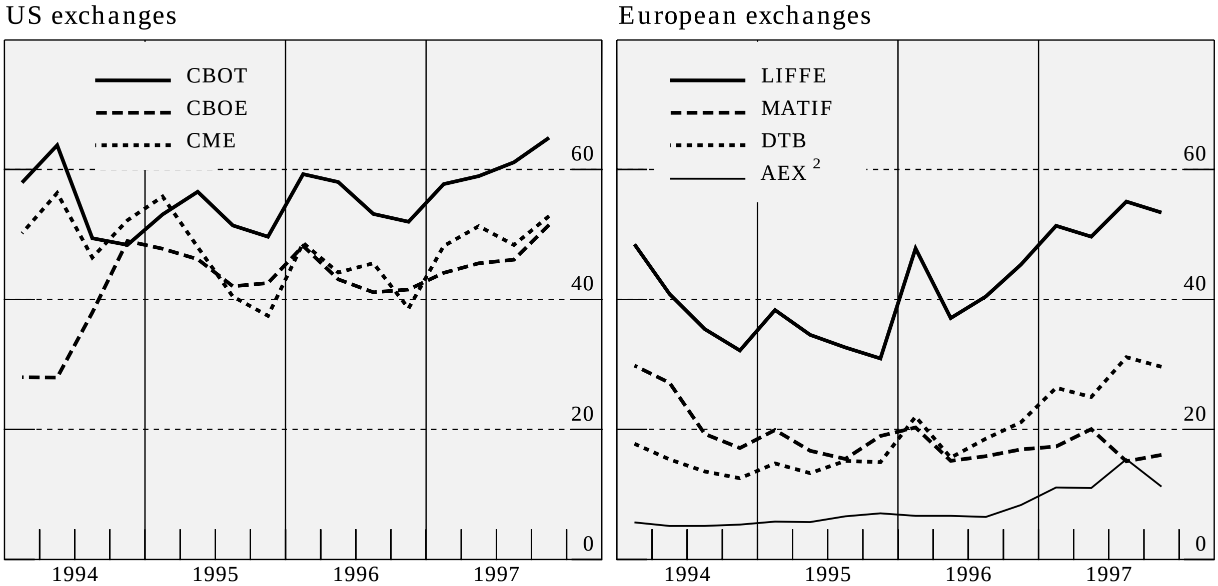
Exchange-traded instruments

The aggregate turnover of exchange-traded financial contracts monitored by the BIS expanded by 2% in the fourth quarter of 1997, to 310.6 million. This fourth consecutive quarterly increase was the result of an uneven pace of activity during the course of the quarter. In October, warnings by the US Federal Reserve about a potential resurgence of inflation, the increase in official rates in continental Europe and the deepening of the Asian crisis all combined to lift trading to new record levels on most major market places. The boost in turnover was not sustained, however, with business in interest rate and equity instruments returning to more subdued levels in November and

[15] For example, Euroclear's Integrated Collateral Management Service will use securities already held in custody to offer third-party matching and collateral monitoring.

Derivatives turnover on major US and European exchanges [1]

In millions of contracts, quarterly data



[1] Includes all types of derivative instruments traded on exchanges (i.e. including commodity products and options on single equities). [2] AEX results from a recent merger of exchanges in the Netherlands.

Sources: Futures Industry Association and BIS.

December. For the quarter as a whole, contracts on equity indices and on interest rates rose by 13% and 1% respectively, while those on currencies dropped by 25%.

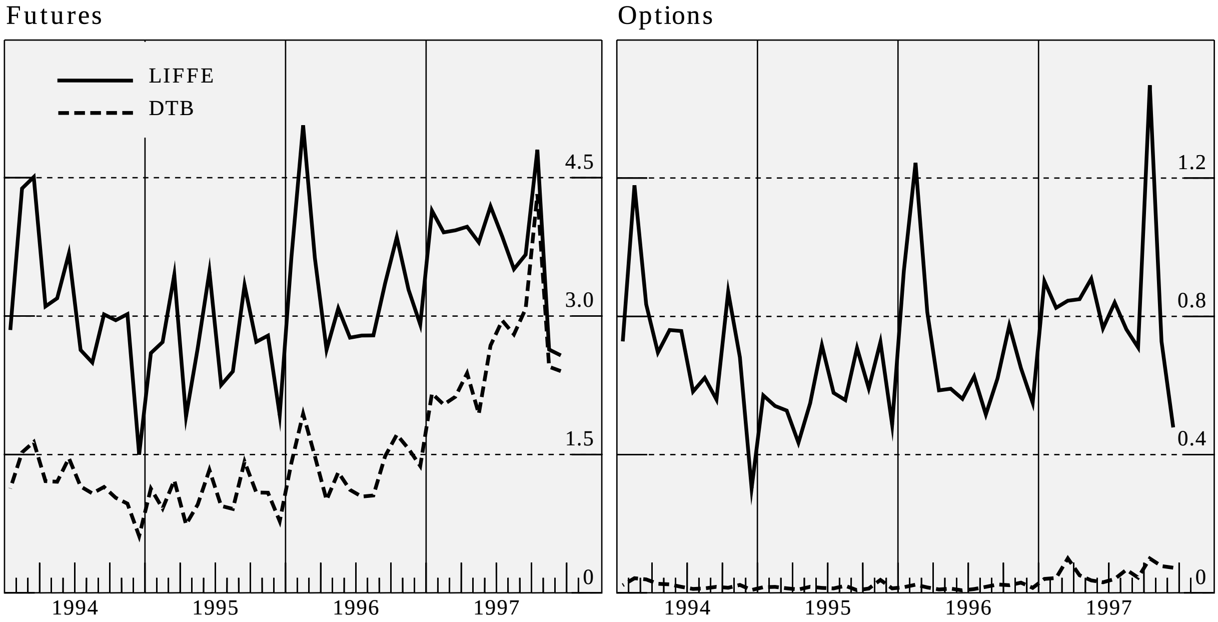
At the same time, there were significant differences in the geographical pattern of activity within each of these broad product groups. Exchanges located in developing or newly industrialised countries partly accounted for the recorded swings in overall activity. In the area of equity indices, the drop in European business was more than offset by significant expansion in North America and Asia. The record volume of business seen in Asia largely reflected the rapid expansion of Korean equity indices. In the interest rate segment, the broad-based expansion was partly offset by a pronounced decline in the number of Brazilian overnight rate contracts. Lastly, the strengthening of the US dollar on the foreign exchange market was not reflected in an overall increase in currency contracts, illustrating the failure of exchanges to capitalise on the recent turbulence in currency markets. Much of the actual drop in the trading of currency instruments during the quarter was accounted for by a sharp contraction of dollar/real currency contracts on the BM&F.

Looking at developments on individual exchanges (including all types of contracts), the CBOT remained by a substantial margin the busiest market-place in the world in the fourth quarter (with 64.9 million contracts). In spite of a lower volume of business, LIFFE managed to retain its position as second most active exchange (53.4 million). Nevertheless, upsurges in the trading of established contracts and the introduction of successful retail-targeted equity contracts by the CME (52.8 million) and the CBOE (51.5 million) made these exchanges very close competitors. While the introduction of a thriving contract on five-year government bonds led to some recovery of activity on the MATIF (16.1 million), there was a slight decline of trading on the DTB (29.7 million). This did not prevent the German exchange from further increasing its share of Bund futures trading, with 48% of total turnover in such instruments.

In Europe, the emergence of closer cooperation between the French, German and Swiss derivatives exchanges under the recently announced Eurex initiative did not put an end to the battle for

Bund futures and options turnover on LIFFE and the DTB

In millions of contracts, monthly data



Sources: Futures Industry Association and BIS.

market share. The DTB continued to give priority to the promotion of remote trading access,[16] while announcing the launch of futures contracts on Jumbo Pfandbrief issues and on the implied volatility of the DAX equity index.[17] The MATIF, for its part, introduced several measures aimed at boosting the performance of its PIBOR contracts. These included an extension of the trading period from three to five years, the introduction of monthly maturities, the launch of mid-curve options[18] and the quoting of prices on the spread between a single futures contract and a strip of four quarterly consecutive contracts.

Faced with diminishing opportunities in the fixed income area, continental European exchanges were also making preparations for the launch of an unprecedented wave of equity contracts. As an illustration, the Eurex partners announced a family of European equity indices, comprising two continent-wide benchmarks, which will compete with the Eurotop indices launched by the AEX in cooperation with FTSE International. At the same time, the projected merger of trading and clearing systems under Eurex is creating strong pressures for a harmonisation of trading mechanisms, conventions and fees.[19] For example, the DTB and the MATIF announced significant reductions in membership and/or trading fees, and SOFFEX said that it would harmonise its fees with those of its

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[16] Remote access terminals in the United States now account for between 15 and 20% of the volume on the Bund futures contract.

[17] It is hoped that the "volax" contract will appeal to the exchange's participants as well as to issuers of warrants. In 1996, the OMLX had listed the first such contract but, because it was based on historical volatility, it failed to gain market acceptance.

[18] Mid-curve options, which were introduced by the CME in 1993, are short-dated, American-style options on longer-term eurocurrency futures. These options, usually with an expiry of one year or less, have as their underlying instruments eurocurrency futures that expire between one and two years after the expiry of the option. Investors use the instruments for low-premium protection against short-term interest rate movements.

[19] The introduction by the alliance of contracts on euro-denominated interest rates will depend on which existing contracts win the market's favour. For example, the MATIF has chosen EURIBOR as the underlying for its short-term euro contracts but the DTB and LIFFE have decided to use EUROLIBOR. Given the need to ensure liquidity, Eurex would be unlikely to offer two separate sets of products.

partners. The introduction by the MATIF in April of a new 24-hour electronic trading system (NSC-VF) to replace Globex and offer dual trading (open outcry/electronic) of existing contracts will probably lead to a harmonisation of charges between pit-based and electronic trading.

Meanwhile, LIFFE introduced a raft of measures aimed at strengthening its position in the run-up to EMU. It announced that it would provide free conversion into the euro of open interest on all short interest rate contracts in EMU currencies. In December, it also set up a facility allowing investors to trade same maturity or yield curve spreads on a wide variety of instruments, which will facilitate convergence plays. While two new interest rate products were announced,[20] most other measures consisted in modifying the features of existing contracts.[21] Following a recent review of its linkage agreements, the exchange concluded that priority should be given to electronic trading methods outside its regular trading hours and, as a result, suspended in December its open outcry link with the CBOT.[22] Initiatives adopted by other European exchanges also reflected pressure to consolidate ahead of EMU. Thus, in December Sweden's OM Gruppen, owner of the OM and OMLX exchanges, announced that it was moving ahead with its planned merger with the SSE.

Although North American exchanges were somewhat less affected by EMU-related competitive pressures, much of their innovative effort was also devoted to equity instruments, electronic trading and trading links. Following the successful introduction by the CME in September of a small-sized version of its traditional S&P 500 contract,[23] the CBOT and the CBOE launched in October retail-targeted contracts on the Dow Jones Industrial Average that met with a favourable reception. The same month, the CBOT made public its willingness to expand the reach of Project A, its electronic order entry and matching service, with the installation of workstations in London, the extension of Project A's trading hours and, related to this, the discontinuation in December of evening pit trading. The CBOT also continued to work on an electronic platform that would link, in a venture with a wholesale market broker, cash and exchange-traded markets. Related initiatives were announced by the NYCE and AMEX. The recent popularity in the United States of electronic ordering and trading mechanisms has been attributed to customers' greater comfort with computer-based technologies, efforts by exchanges to facilitate access to their trading systems and member pressures to reduce costs. US exchanges also launched a variety of other products during the period under review, including ECU/euro-denominated currency contracts and futures and options on the par Brady bonds of Argentina. Lastly, US exchanges continued to develop products based on OTC instruments, as illustrated by AMEX's listing of strips on corporate bonds and the CBOE's listing of equity-linked notes.

The focus on equities and electronic trading was also evident in other parts of the world. Undaunted by the lacklustre performance of recently introduced futures and options on equity indices, the OSE and the TSE announced the launch in early 1998 of contracts based on sector-specific indices. In November, the HKFE launched new futures on individual blue-chip companies. Two Australian exchanges, the SFE and the ASX, announced that they would close their trading floors in favour of electronic trading. The switchover will end the dichotomy existing between the floor trading of options on equities and the electronic trading of equities, and provide a more efficient platform to attract cross-border users.

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[20] These were mid-curve options on three-month euromark futures and five-year gilt futures.

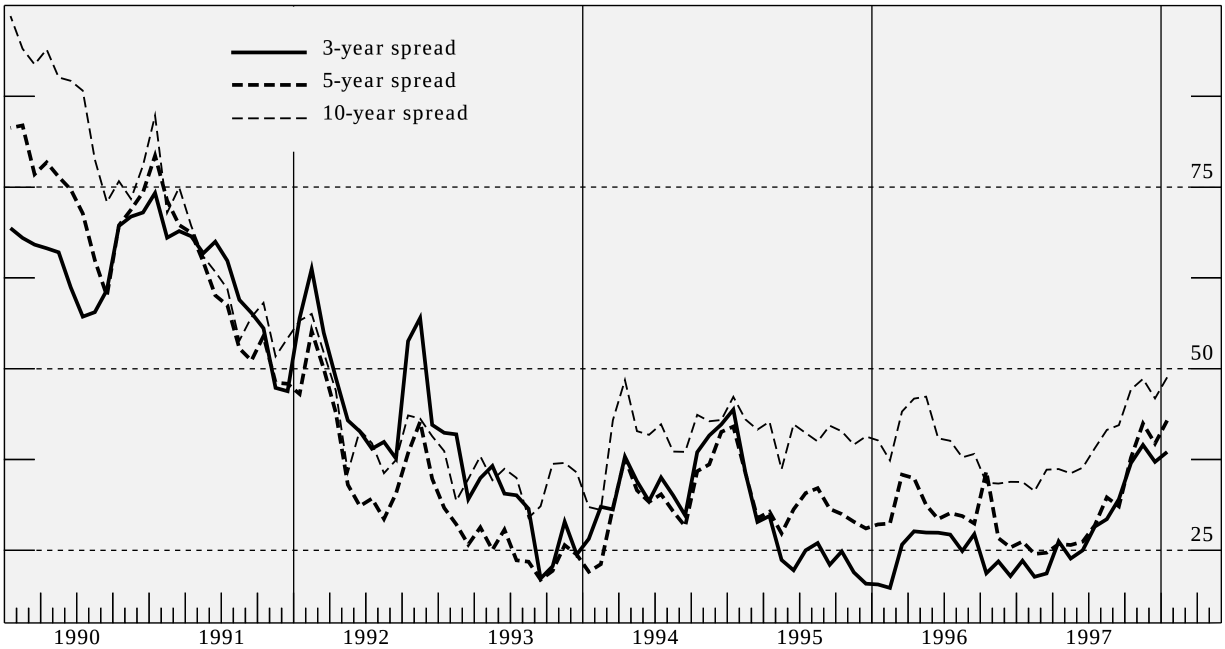
[21] These include the introduction of monthly deliveries for euromark futures, a reduction in the notional coupon and an increase in the size of long gilt contracts, as well as a lowering of the minimum basis point value of certain contracts.

[22] The exchange also announced the launch in late 1998 of LIFFE Connect, a new electronic system which will replace APT, the system that it currently uses for after-hours trading.

[23] While the "E-mini" contract was not the first US stock index instrument aimed at the retail market, it was the first time that the CME had launched a contract that was traded on an electronic platform during both regular trading hours and out of hours. Individuals are able to trade directly from their personal computers through a link offered by futures brokers, with large orders being executed on the trading floor and small ones being routed through Globex.

US dollar interest rate swap spreads over US Treasury yields

Monthly averages, in basis points



Source: Datastream.

Over-the-counter instruments

Developments during the fourth quarter of 1997 had a varied impact on the trading of OTC financial derivative instruments. In the area of *interest rate products*, activity proceeded at an uneven pace. In the US dollar market, the increase in the volatility of short-term interest rates was temporary but there was a significant widening of swap spreads owing to the flattening of the Treasury yield curve, the limited supply of US government issues, the growing reluctance of corporates to swap fixed rate issues and the overall widening of credit spreads. These developments, combined with the lower volume of swap-related bond issues are likely to have led to a slowdown in the volume of business. In the area of interest rate options, US dealers were seen offering a number of lower-premium hedging instruments.[24] In Europe, the renewed convergence of French and German long-term interest rates took place and was greeted with relief by market participants who had established long-term positions betting on such a development. However, some of the new transactions proposed were based on the assumption of a widening of yield differentials upon the introduction of EMU. Dealers involved in those trades believe that the recent convergence of long-term interest rates has failed to adequately capture post-EMU credit risk premia and that some of the less creditworthy sovereigns might face financial difficulties resulting in an eventual steepening of their yield curves. The Asian crisis had negative repercussions for dealers active in OTC instruments; several banks holding short volatility positions on instruments such as Russian "MinFin" bonds and Brady bonds suffered heavy losses.

In the area of *cross-currency derivatives*, the flight into US dollar assets was reflected in a rise in the volatility of major currency options. Dollar call/yen put options were in strong demand for much of the quarter, but the announcement of a Japanese stimulus package in December led to a rebound in the yen and a massive unwinding of short yen positions. There was reduced demand for European currency instruments (except for those based on the divergence between sterling and the Deutsche mark), while liquidity in currency hedging products in Asia dried up. The marked increase in

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24 Such as LIBOR-based flexi-caps. Flexi-caps differ from standard caps in that the buyer can only exercise a specific number of six-month caplets during a given protection interval.

Developments in the swap market in the first half of 1997

The International Swaps and Derivatives Association (ISDA) released in January 1998 detailed data on activity in the swap market in the first half of 1997. The data showed a significant deceleration in activity, with the total stock of contracts at end-June 1997 rising by 13% relative to end-December 1996, to stand at $28.7 trillion. While the reduction in growth occurred in all major groups of contracts (interest rate swaps, currency swaps and swap-related interest rate options), it was most pronounced in the case of currency swaps (from 30% to 2%). Much of the decline in this sector resulted from an actual contraction in the stock of contracts denominated in smaller currencies. The interest rate swap market nevertheless managed to grow by 15%. ISDA attributed the continued buoyancy of the OTC market during the period under review to the rise in global financial volatility, to transactions related to the convergence of European interest rates and to the financial difficulties of Asian companies. Thus, in spite of this slowdown, OTC markets continue to expand at a more robust pace than exchange-traded markets.

Derivative contracts traded over the counter[1]
Notional principal amounts, in billions of US dollars

Instruments	1991	1992	1993	1994	1995 H1	1995 H2	1996 H1	1996 H2	1997 H1
	New OTC contracts arranged								
Total	**2,332.9**	**3,717.0**	**5,516.9**	**8,133.3**	**4,258.5**	**6,910.8**	**8,310.0**	**9,464.4**	**13,821.8**
of which:									
Interest rate swaps	*1,621.8*	*2,822.6*	*4,104.7*	*6,240.9*	*3,428.9*	*5,269.9*	*6,520.3*	*7,157.8*	*10,792.2*
Currency swaps[2]	*328.4*	*301.9*	*295.2*	*379.3*	*153.8*	*301.3*	*374.0*	*385.0*	*463.1*
	Amounts outstanding at end of period								
Total	**4,449.4**	**5,345.7**	**8,474.6**	**11,303.2**	**13,922.9**	**17,712.6**	**21,068.9**	**25,453.1**	**28,733.4**
of which:									
Interest rate swaps	*3,065.1*	*3,850.8*	*6,177.3*	*8,815.6*	*10,817.0*	*12,810.7*	*15,584.2*	*19,170.9*	*22,115.5*
Currency swaps[2]	*807.2*	*860.4*	*899.6*	*914.8*	*1,039.7*	*1,197.4*	*1,294.7*	*1,559.6*	*1,584.8*

[1] Data collected by ISDA only; the two sides of contracts between ISDA members are reported once only; excluding instruments such as forward foreign exchange contracts, currency options, forward interest rate agreements and equity and commodity-related derivatives. [2] Adjusted for the reporting of both currencies; including cross-currency interest rate swaps.

Source: ISDA.

short-term interest rates and the imposition of capital controls in Asia made it nearly impossible for intermediaries to hedge their currency derivatives books. Moreover, growing concerns about the credit quality of counterparties meant that dealers were reluctant to engage in new transactions.

In the market for equity *derivatives*, the sharp rise in volatility seems to have created strong demand for downward protection, but also to have caused substantial losses amongst dealers. The high cost of standard option instruments encouraged investors to seek lower-cost alternatives, such as "buy now/pay later" and "knock-out" options and regional or sectoral baskets. Activity in equity warrants was buoyant in the early part of the quarter but moderated substantially following the knock-on effect of the Asian crisis at the end of October. At the same time, the forthcoming introduction of EMU sustained investors' interest in continent-wide sectoral baskets, with a large number of issues launched on European telecommunications and media stocks. Rumours of merger activity in the Swiss financial sector were also reflected in offerings of related warrants. Intermediaries were confident that the European warrants market would rapidly return to expansion on the back of low European interest rates, greater underlying retail interest in equity products and the cost advantage in some countries of warrants over exchange-traded products.

Growing strains in Asia did much to focus investors' attention on the issue of credit risk. As the crisis deepened, credit default swaps on a number of sovereign issues became actively traded.

Systems for the management of credit risk

The drive to launch systems for the management of credit risk continued during the fourth quarter of 1997. Following the introduction by JP Morgan of CreditMetrics™ in April 1997, Credit Suisse Financial Products (CSFP) joined the fray with the launch of CreditRisk+.* While intermediaries have in recent years designed increasingly sophisticated systems for the management of market risk, that of credit risk is less developed, resting primarily on arbitrary counterparty exposure and concentration limits, separately capitalised special-purpose vehicles, securitisation, secondary market trading and, more recently, credit derivatives. The new models use value-at-risk (VAR) methodology to calculate the amount of capital required to cushion a portfolio against a given level of losses. They allow credit risk to be measured across assets and enable intermediaries to evaluate the change in the value of portfolios caused by credit events such as downgrades and defaults. The use of such models should lead to greater efficiency in portfolio management, more refined pricing of credit and a better allocation of capital.

In a nutshell, CreditMetrics evaluates the VAR resulting from credit exposure to a broad range of individual cash and derivative assets. It assesses modifications in credit quality caused by changes in credit ratings, defaults and credit concentration. This is done by constructing a "transition" matrix giving the probability of change in credit ratings over a certain period. The expected change in market value resulting from the change in ratings is then calculated.** The last step is to aggregate these individual value distributions, taking into account the correlation between credits, to obtain a distribution of potential losses for the whole portfolio of assets.

CreditRisk+ shares the same goals as CreditMetrics but differs in that its analysis is based on the volatility of default rates associated with particular rating levels. The system works by first allocating a default rate to each risk category and then estimating the volatility of default rates. Given that default rates tend to be correlated across assets, the model attempts to capture this correlation without calculating it explicitly. The third step relates these variables to the various credits in the portfolio. As structured, the model requires only four types of variable: exposures, recovery rates, default rates and default rate volatilities.*** It is, therefore, easier to implement and faster to run, although some have argued that correlation data cannot be fully replaced by information on default volatility.

Much progress has been made in the development of such systems, but considerable work will be required to make these models fully operational. In this context, one of the major difficulties continues to be the limited availability of historical and cross-sectional data. While a fair amount of pricing and default information is available for publicly listed securities, the reluctance of banks to release internal data on loan defaults and recovery rates has meant that only sparse data are currently available. Moreover, the rarity of defaults has complicated the task of model-builders, preventing them from obtaining fully reliable default correlations and obliging them to use special statistical techniques dealing with extremely rare events.

The motives underlying such systems are varied and include the need to promote better credit risk management practices, the creation of industry standards and the education of customers. At this stage, the various sponsors are keen to downplay competition, stressing that their models offer different ways of addressing similar issues. Nevertheless, their initiators hope that these efforts will promote business in credit derivatives. Another key reason explaining intermediaries' efforts is their willingness to encourage public discussion about the modelling of credit risk in the hope that supervisors will eventually recognise models in the determination of capital requirements. The present regulatory structure does not account for the benefits derived from diversification and does not fully take into consideration the wide differences existing in the credit quality of borrowers.

* New packages were also launched by management consultancy firms.** Including the recovery rate in the event of a default. *** The model does not, however, take into account changes in credit quality other than the occurrence of default.

However, with mounting fears of default and markedly widened premia, trades became increasingly difficult to execute. Meanwhile, financial intermediaries operating in Europe were optimistic about the growth prospects of credit derivatives. The removal of foreign exchange risk and the development of new market segments such as asset-backed securities and high-yield corporate securities are expected to make these products popular means of achieving risk diversification. In the US market, the reportedly growing liquidity of the credit derivatives market enabled traders to exploit differences in the volatility of Treasury securities and corporate bonds. Options on the credit spreads between these instruments were marketed as an alternative to the trading of separate options on each type of instrument. The bulk of trading in credit derivatives continues to be conducted by a small group of highly rated banks on a fairly narrow range of sovereign and quasi-sovereign instruments.

Structural and regulatory developments

The forthcoming introduction of the European single currency kept market associations busy. In October, the British Bankers Association (BBA) announced the replacement of its current ECU LIBOR benchmarks by EUROLIBOR rates when the euro is introduced. During the three-year transitional period, the BBA will continue to publish LIBOR fixings in the seven national currency rates currently quoted. The new rate will enter into competition with the EURIBOR, a short-term Europe-wide benchmark to be launched by a number of financial trading associations in Europe.[25] In December, the European Banking Federation (EBF) published a set of rules governing which banks will be able to join the panel used in the calculation of the EURIBOR rates. In November, a working group made up of industry associations and officials from the EMI discussed the creation of a European Overnight Index Average (or EONIA). The group agreed that the rate would be constructed on the basis of the same panel as that used for EURIBOR.

In December, ISDA published three documents concerning the euro. The first provides a framework for a revisiting of ISDA Master Agreements on existing transactions in the light of EMU, thereby reducing the need for separate bilateral negotiation. The document includes a list of changes (such as price sources and market conventions) that individual counterparties might want to make to their contracts upon the introduction of the euro. The second is a follow-up on the impact of EMU on price sources. ISDA reports that significant progress has been made since its last report on the subject, including on euro rates.[26] It notes that in nearly all countries current price suppliers have announced a decision in principle on whether domestic rates will be retained or replaced, and urges remaining countries to take an early decision. The third document is a memorandum based on the deliberations of ISDA's EMU Operations Task Force. It is designed to give general guidance on the key operational issues posed for OTC interest rate derivatives business by the introduction of the single currency.

In November, the Basle Committee on Banking Supervision and the Technical Committee of the International Organisation of Securities Commissions (IOSCO) published a third joint report on the disclosure of trading and derivatives activities of banks and securities firms.[27] The survey reveals that disclosure practices improved in 1996 annual reports, particularly with respect to value-at-risk (VAR) data and the assumptions underlying VAR models, operating and legal risks, valuation techniques for trading and derivatives activities, and the accounting treatment for credit losses on derivatives positions. The report nevertheless notes that progress was less pronounced in 1996 than in previous years and that disparities remain as regards the type and usefulness of the information disclosed. The two bodies urge financial institutions to improve the disclosure of their operations in line with the growth in the level and complexity of such business. The Basle Committee and the Technical Committee of IOSCO will continue to monitor disclosure practices over the coming years.

Important developments also occurred in the United States. In December, the Financial Accounting Standards Board (FASB) announced that it would delay the introduction of its rules on derivatives accounting from December 1998 to June 1999. The FASB plans to publish the final version of the standards by the end of the first quarter of 1998. In December, the SEC voted to consider proposals to regulate securities firms active in OTC derivative markets. The new rules, which would be more flexible than the ones currently in existence, aim at encouraging securities firms to bring their derivatives business back to the United States. Under the proposals, broker-dealers specialising in derivatives would be subject to less stringent margin and capital standards than full-fledged securities firms but would also have to comply with the rules currently applicable to securities firms. A new class of "OTC derivatives dealers" would be created as an alternative to fully regulated broker-dealers. This would be available only to entities acting primarily as counterparties in OTC transactions. The agency is also considering changes to its method for calculating net capital requirements, including the use of statistical models, which would bring them in line with those of banks.

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25 For a description of the two competing projects, see the August 1997 issue of this commentary, page 24.

26 See "Effect of EMU on Price Sources", London and New York, June 1997.

27 See "Survey of Disclosures about Trading and Derivatives Activities of Banks and Securities Firms 1996", joint report by the Basle Committee on Banking Supervision and the Technical Committee of the International Organisation of Securities Commissions, Basle and Montreal, November 1997.

V

THE ROLE OF MAJOR CURRENCIES IN EMERGING FOREIGN EXCHANGE MARKETS[28]

In recent years, trading of emerging currencies in Asia, Latin America, Eastern Europe and Africa increased substantially. According to estimates provided by central banks and published in the latest BIS Annual Report, local turnover in a number of emerging currencies rose by more than one-third between 1995 and 1996.[29] In comparison, business involving the three major currencies, the US dollar, the Deutsche mark and the yen, grew by "only" 45% between 1992 and 1995, according to the last survey released in 1996 by the BIS.[30] The table on the next page reports average daily figures during April 1996 for the total turnover and currency composition of local trading for a sample of 16 emerging currencies.[31] As can be seen from the table, the US dollar is dominant in most of the local trading of domestic currencies. The yen plays only a minor role in the emerging markets that were sampled, as does the mark (outside Eastern European markets). This mirrors the international role of the dollar, which in 1995 was on one side of 83% of all transactions involving the major currencies.[32]

The currencies sampled can be divided into two groups. The first includes the Asian and Latin American currencies, the South African rand and the Turkish lira, which trade to a very large extent against the dollar but on a much smaller scale against the mark and the yen. It is noteworthy that the Japanese yen plays a fairly minor role in foreign exchange trading in Bombay, Seoul, Taipei and Bangkok, where it never reaches more than 5% of local trading against the domestic currency. A second group consists of the Eastern European currencies, the counterpart of which is split between the US dollar and the mark. However, trading against the mark exceeds that against the dollar for only one currency in this group, the Czech koruna. It should be stressed that the figures reported are only estimates and, moreover, do not allow for offshore trading. It could well be, for example, that the proportion of Korean won traded against the yen is higher in Tokyo, Singapore or Hong Kong than it is in Seoul.

The relative importance of trading of the three major currencies in emerging foreign exchange markets matches closely the primary role of the US dollar with respect to that of the Deutsche mark and the yen in the exchange rate movements of emerging currencies. There are different ways of assessing this role. One way is to use the weight that official exchange rate policies assign to the dollar, the mark and the yen. The table on page 36 reports the official exchange rate policies adopted for the currencies listed in the table on page 35. It shows that official exchange rate arrangements vary widely, ranging from an independent float to a peg. However, these policies may tell very little about the weight of the dollar and other currencies in actual policies.[33] Moreover, exchange rate movements may differ from official exchange rate policies.

An alternative is to look at the co-movement of currencies with the dollar, the mark and the yen. This can be measured by the elasticity of the dollar exchange rate of an emerging currency with respect to mark/dollar and yen/dollar movements. In practice, this involves regressing percentage

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[28] This section was contributed by Gabriele Galati of the Monetary and Economic Department of the BIS.

[29] BIS, *67th Annual Report*, 1997, page 92. Estimates by Citibank reveal that trading worldwide in these currencies may have increased by more than half between 1995 and 1997.

[30] BIS, *Central Bank Survey of Foreign Exchange and Derivatives Market Activity,* 1996, page 1 and BIS, *67th Annual Report*, 1997, page 92.

[31] The figures are reported on a net basis. In some cases, the averages refer to periods longer than a month.

[32] See footnote 30.

[33] For example, the new Israeli shekel is allowed to move within a crawling band that is defined in terms of a basket of other currencies whose weights are not disclosed.

Estimated currency composition of foreign exchange turnover in emerging currencies, April 1996

Daily averages, in millions of US dollars

Currencies	Total	Dollar	Mark	Yen
Asia	**10,043**	**9,635**	**78**	**145**
Indian rupee	1,214	1,104	38	11
Korean won	3,180	3,082	13	50
New Taiwan dollar	1,635	1,469	20	69
Thai baht[1]	4,014	3,980	7	15
Eastern Europe	**4,532**	**2,339**	**1,867**	**47**
Czech koruna	2,532	1,025	1,421	0
Hungarian forint	626	334	105	35
Polish zloty	1,174	863	270	0
Slovak koruna	200	117	71	12[2]
Latin America	**10,019**	**n.a.**	**n.a.**	**n.a.**
Brazilian real	5,467	85-90%	n.a.	n.a.
Colombian peso	140	140	0	0
Mexican peso	4,241	Most	Negligible	Negligible
New Peruvian sol	171	171	0	0
Other	**6,690**	**6,286**	**>143**	**>99**
New Israeli shekel	469	385	n.a.	n.a.
Saudi riyal	1,494	1,410	3	3
South African rand	4,706[3]	4,470	140	96
Turkish lira	21	21	0	n.a.

[1] Annual average, on a gross basis. [2] All other currencies. [3] Unusually high in April 1996 due to pressure on the rand.

Sources: National central banks.

changes of the dollar exchange rate of an emerging currency on a constant and percentage changes of the mark/dollar and the yen/dollar exchange rates. If the coefficient on the last two exchange rates is low in absolute value, this would indicate that the actual movements of the currency mainly track the dollar, while the mark and the yen do not play a significant role. Conversely, a high coefficient on the mark/dollar (yen/dollar) exchange rate would suggest that the currency mainly tracks the mark (yen).

The left-hand part of the graph on page 37 reports the elasticities of the dollar exchange rates of 16 emerging currencies with respect to changes in the mark/dollar rate (shaded histograms) and the yen/dollar rate (white histograms). The elasticities are estimated over the period 1993:01 to 1997:11 using monthly data.[34] In interpreting the graph, the following points have to be borne in mind. First, as a result of the recent major exchange rate realignments in Asia, the coefficients on the yen/dollar increased somewhat for Asian currencies in 1997. However, estimates for 1997 alone indicate that there has been no substantial change in the pattern of elasticities.[35] Secondly, the sharp realignments of the currencies of Brazil and Mexico that occurred over the past few years make the elasticities of their currencies very unstable and therefore difficult to interpret.

[34] Daily and weekly elasticities are somewhat lower in absolute value than those estimated with monthly data and are very sensitive to specific events. Monthly data are used here since the focus is on broad trends; moreover, daily data are not available for all currencies. The main results are robust to estimating elasticities with daily or weekly data. These results, as well as the relevant regression statistics for the results in the graph, are available from the author upon request.

[35] Details of these results are also available upon request from the author. Daily data were used in this case to allow a sufficiently large sample size for the regressions.

Official exchange rate policies, April 1996

Currencies	Regime	Basket	Fluctuation bands
Asia			
Indian rupee	Independent float	–	–
Korean won	Managed float	Based on the US$ rate	± 2.5%
New Taiwan dollar	n.a.	n.a.	n.a.
Thai baht	Peg	Currencies of the major trading partners (weights are undisclosed)	–
Eastern Europe			
Czech koruna	Managed float	DM: 65%; US$: 35%	Mar. 96-May 97: ± 7.5%
Hungarian forint	Managed float	DM: 70%; US$: 30%	± 2.25%
Polish zloty	Managed float	US$: 45%; DM: 35%	± 7%
Slovak koruna	Peg	DM: 60%; US$: 40%	Jan-July 96: ± 3%
Latin America			
Brazilian real	Managed float	US$	R$0.97-1.06 per US$
Colombian peso	Managed float	–	14%
Mexican peso	Independent float	–	–
New Peruvian sol	Independent float	–	–
Other			
New Israeli shekel	Managed float	Includes US$, DM, ¥	± 7%. (Band adjusted at 6% p.a.)
Saudi Arabian riyal*	Limited flexibility with respect to a single currency	US$	± 0.125%
South African rand	Independent float	–	–
Turkish lira	Managed float	–	–

* The exchange rate of the Saudi Arabian riyal is formally pegged to the SDR.

Source: IMF *Exchange Rate Arrangements and Restrictions*, 1996 and 1997.

Bearing these caveats in mind, the chart reveals several interesting findings. It shows that the elasticity of the dollar exchange rates of currencies in Asia, part of Latin America (Peru and Colombia), Israel, Saudi Arabia and South Africa with respect to mark/dollar or yen/dollar movements is very low. For every 1% appreciation of the dollar against either the mark or the yen, these currencies move generally by less than one-quarter of a percentage point against the mark and the yen. This suggests that the dollar plays a dominant role in exchange rate movements in these regions. Judging from the elasticities, the mark plays an important role in currency movements only in Eastern Europe and Turkey, where the currencies share between 30% and 70% of every movement of the dollar against the mark. Conversely, the role of the yen is limited for all the currencies in this sample, including the Asian currencies.

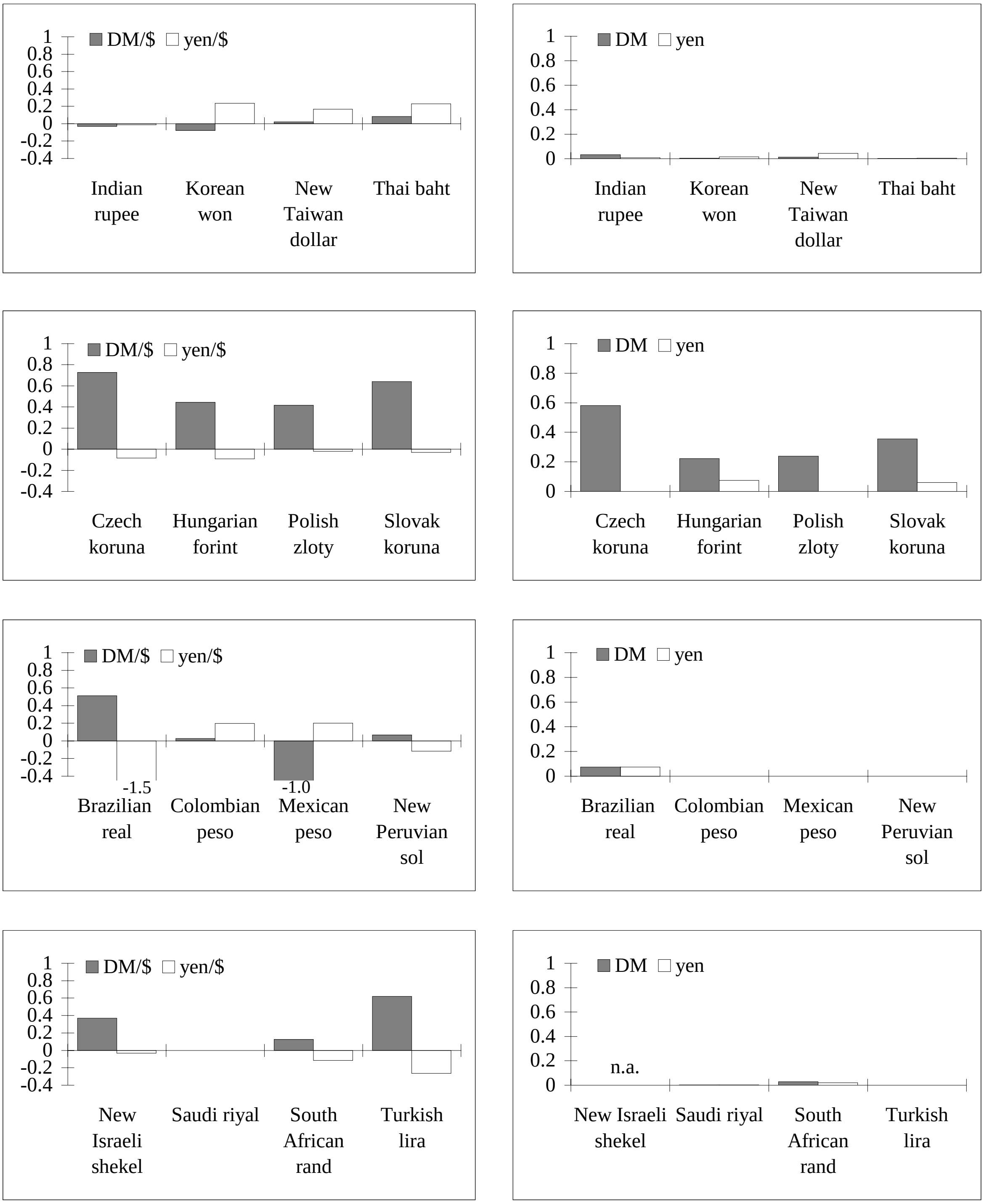
Furthermore, there is a similarity between the patterns of foreign exchange market turnover and exchange rate elasticities. The movements of emerging currencies that trade mainly against the dollar are also strongly influenced by changes in the value of the dollar. The yen plays a minor role in domestic trading in local currency in Asia, as well as in the exchange rate movements of Asian currencies. In Eastern Europe, a substantial fraction of currency trading involves the mark, and currencies in this region track the mark to a significant extent.

In summary, evidence from the composition of currency turnover and from exchange rate co-movements suggests that the dollar plays a dominant role in most emerging markets. This is true in Asia and, albeit to a lesser extent, Eastern Europe. Although it is too early to reach definite conclusions, it seems that these results would also hold for the recent period of instability in parts of Asia and Eastern Europe.

The role of the dollar, the mark and the yen in emerging forex markets *

Exchange rate elasticity

Share in forex turnover



* Exchange rate elasticities are estimated as coefficients in the regression $X_t = \alpha + \beta\left(DM/\$\right)_t + \gamma\left(yen/\$\right)_t + u_t$, where X_t is the dollar exchange rate of a currency. All variables are in percentage changes. The regression is estimated with monthly data (monthly averages) over the sample period 1993:01-1997:11; shares in forex turnover are computed from the table on page 35 as the ratio of local trading of the domestic currency against the mark or yen to trading against the dollar, mark and yen.

Source: BIS.

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
DTB	Deutsche Terminbörse
HKFE	Hong Kong Futures Exchange
LIFFE	London International Financial Futures and Options Exchange
MATIF	Marché à Terme International de France
NYCE	New York Cotton Exchange
OM	Optionsmarknad Stockholm AB
OMLX	The London Securities and Derivatives Exchange
OSE	Osaka Securities Exchange
SFE	Sydney Futures Exchange
SOFFEX	Swiss Options and Financial Futures Exchange
SSE	Stockholm Stock Exchange Ltd.
TSE	Tokyo Stock Exchange

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