BANK FOR INTERNATIONAL SETTLEMENTS

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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INTRODUCTION

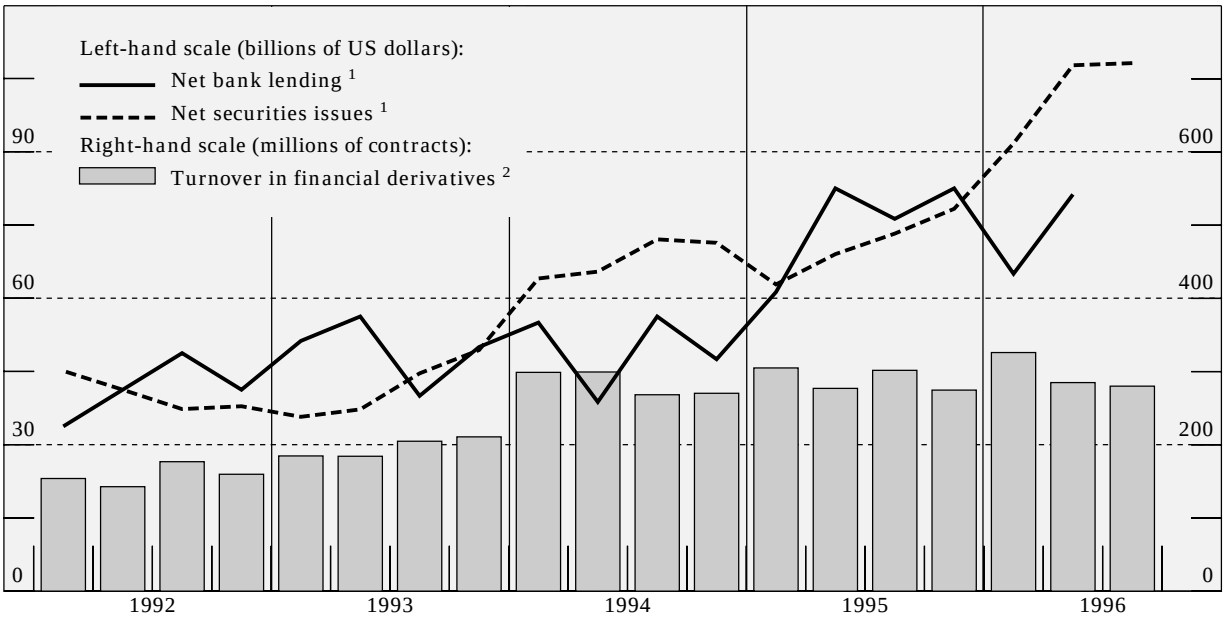
This commentary on recent developments in international banking, securities and global derivatives markets is based on partial information available for the third quarter of 1996 and on more detailed banking data for the second quarter. It is divided into five parts. Part I provides an overview of the main underlying trends that appear to have emerged in recent months in international financial markets. Part II deals with the international banking market, using information on syndicated loan facilities for the third quarter of 1996 and the more detailed BIS international banking statistics, which are available up to end-June. It includes (in Appendix 1) a summary of a recent document published under the auspices of the BIS on issues raised by the development of electronic money. Part III reviews developments in international securities markets in the third quarter of 1996 and provides (in Appendix 2) a brief assessment of the importance of repurchase agreements (repos) in the international financial markets. Part IV covers activity in derivative instruments, both those traded on exchanges, for which comprehensive up-to-date statistics are available, and over-the-counter instruments. It also includes (in Appendix 3) a survey of developments in the swap market during 1995, for which detailed data were recently made available. Finally, Part V puts the recent rise in international asset-backed securities issuance into perspective, particularly in relation to the internationalisation of US borrowers' financing.

I

OVERVIEW OF RECENT DEVELOPMENTS IN INTERNATIONAL BANKING AND FINANCIAL MARKETS

World financial markets in the third quarter of 1996 were characterised by a relatively calm climate, as well as growing optimism concerning the implementation of European economic and monetary union (EMU) and the economic outlook in developing countries. There was, as a result, a further easing of conditions in fixed income markets outside the United States, a pronounced convergence of interest rates within Europe and a significant reduction in the risk premia on lower-rated debt instruments. However, strains were visible at times in some market segments. In particular, the US dollar faced renewed downward pressure in the early part of the quarter and US long-term interest rates were affected by shifts in market perceptions with respect to the likely response of the US monetary authorities to domestic growth and inflation.

Total international financing



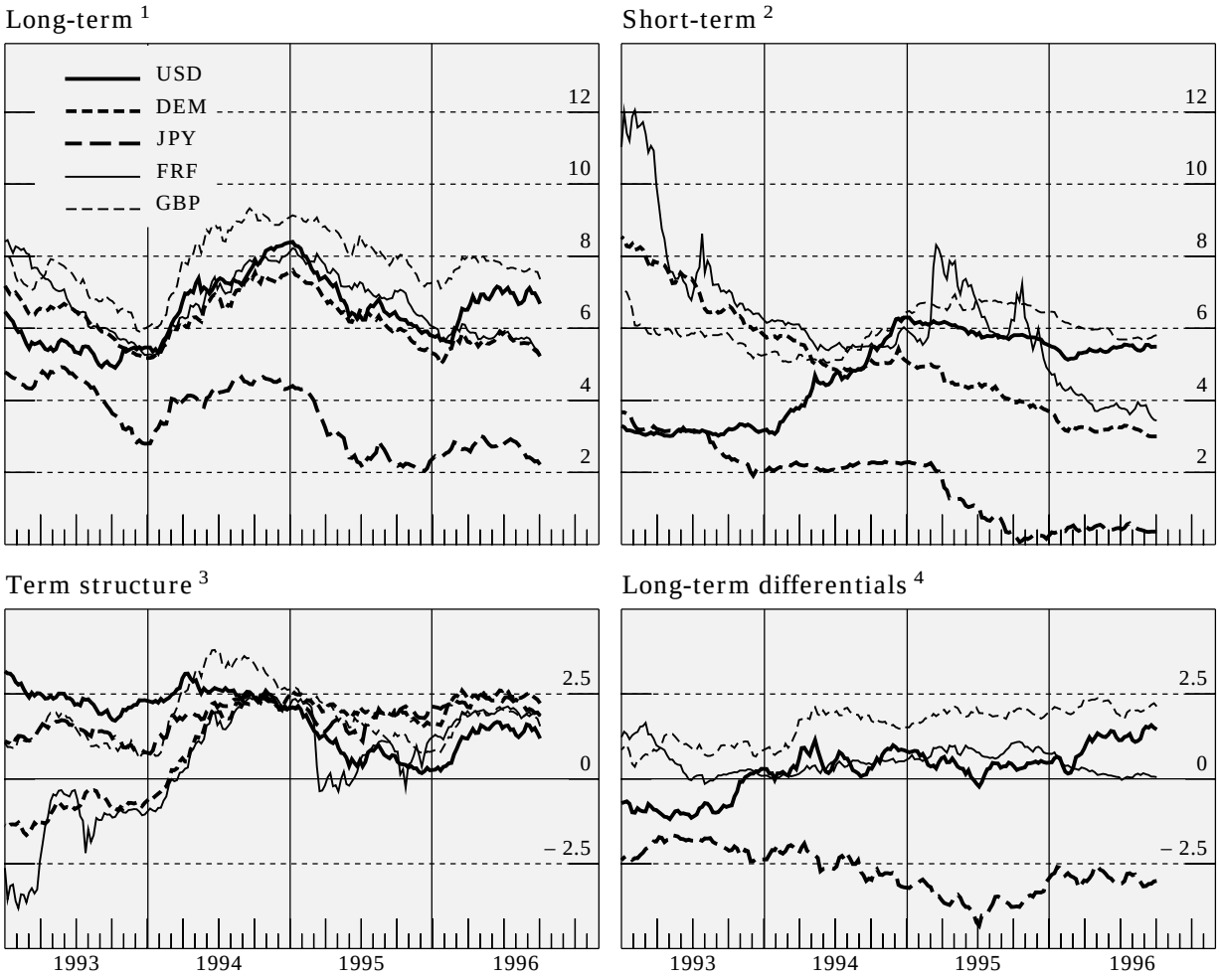
[1] Four-quarter moving averages. [2] Financial derivatives traded on organised exchanges.

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

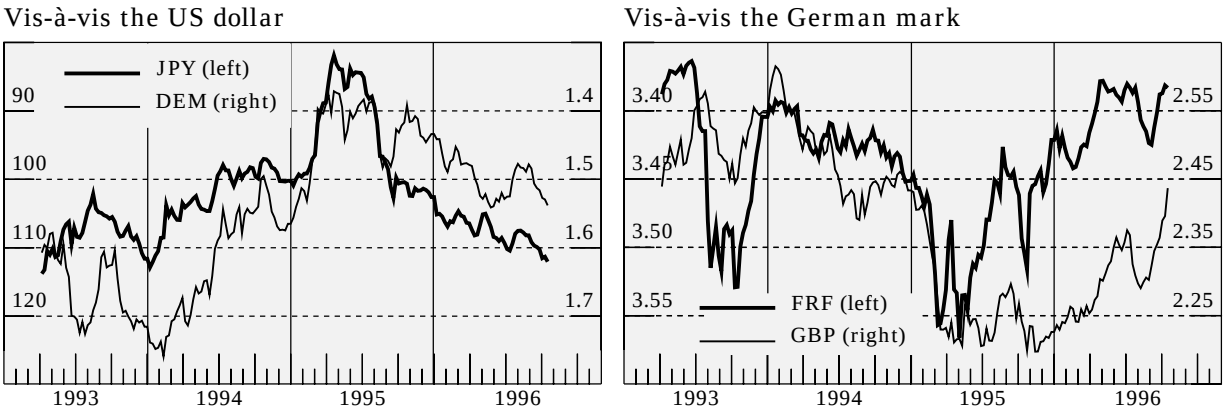
Against this background, and despite a reduction in dollar-denominated transactions from the preceding quarter, total net new issuance of international securities remained some 30% above the quarterly average for 1995. Currency stability in the latter part of the quarter, continuing low inflation and a high degree of liquidity in global financial markets appear to have led to an acceleration of international portfolio diversification, drawing an increasing number of new borrowers, issuing currencies and structures to the international market. There was strong demand for securities from Japanese and European investors, greater acceptance of securitisation outside the United States and a further movement away from domestic markets by European specialised financial institutions and local authorities. While this process of cross-border diversification is bringing undeniable benefits to investors and issuers, the increased volume of securities financing and lower-rated or unrated issues is also raising a number of questions concerning the stability of financial market flows, the pricing of market and credit risks, the transparency of arrangements, particularly those involving

International long and short-term interest rates

Weekly averages, in percentages and percentage points



Bilateral exchange rates



[1] Yields in annual terms on five-year interest rate swaps. [2] Three-month euromarket interest rates.

[3] Long-term rates minus short-term rates. [4] Vis-à-vis German long-term rates.

Source: BIS.

special-purpose vehicles (see section V), and the liquidity of complex or lower-rated issues. Indeed, concerns have been expressed that the prevailing mood of euphoria might leave markets somewhat exposed. Attention has been focused in particular on the growing preference for risky debt, which might be abruptly reversed by a turn in the interest rate cycle in the major economies, and on unresolved issues relating to the practical implementation of EMU.

Developments in fixed income, equity and currency markets were somewhat less supportive of activity in global derivatives markets. Although uncertainty in major stock markets benefited exchanges offering equity-related products, organised exchanges continued to face competition from thriving over-the-counter business. The perceived need to establish a strong position ahead of the launch of the single European currency also heightened competition between major European exchanges. There is now broad recognition that the introduction of the euro will force a consolidation of the industry, as some important contracts will cease to exist (see the box on page 28). However, the intensification of competitive pressures between exchanges, both in Europe and elsewhere, should not obscure the fact that more fundamental changes are shaping the global financial industry, with rapid progress in information technology, deregulation and competition from a wide array of participants possibly reducing the future importance of centralised trading systems.

Estimated net financing in international markets[1]

In billions of US dollars

Components of net international financing	1994	1995			1996			Stocks at end-June 1996
	Year	Year	Q3	Q4	Q1	Q2	Q3	
Total international[2] bank claims[3]	275.1	639.9	102.3	50.0	109.3	50.5	..	9,315.8
minus: interbank redepositing	85.1	309.9	47.3	0.0	24.3	-84.5	..	4,435.8
A = Net international bank lending[3].....	**190.0**	**330.0**	**55.0**	**50.0**	**85.0**	**135.0**	**..**	**4,880.0**
B = Net euronote placements	**140.2**	**192.4**	**57.8**	**45.9**	**56.6**	**75.6**	**48.0**	**710.6**
Completed international bond issues[4]	373.6	360.2	101.9	103.8	127.4	134.9	124.9	
minus: redemptions and repurchases[4]	228.4	239.4	60.4	66.0	74.5	72.1	71.9	
C = Net international bond financing[4]	**145.2**	**120.8**	**41.5**	**37.9**	**52.9**	**62.8**	**53.0**	**2,259.3**
D = Total international financing[5]	**475.4**	**643.2**	**154.3**	**133.8**	**194.5**	**273.4**	**..**	**7,850.0**
minus: double-counting[6]	60.4	113.2	29.3	8.8	49.5	43.4	..	1,210.0
E = Total net international financing	**415.0**	**530.0**	**125.0**	**125.0**	**145.0**	**230.0**	**..**	**6,640.0**

[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] Excluding bonds issued under EMTN programmes, which are included in item B. [5] A + B + C. [6] International securities purchased or issued by the reporting banks, to the extent that they are taken into account in item A.

Detailed international banking data now available for the second quarter confirm preliminary evidence of ample liquidity. The strength of final lending by banks in the face of an absolute contraction in interbank positions underlines the expansion of competing institutions and instruments in wholesale transactions worldwide. Of note in this context is the growing role of repos in the international market (with outstandings estimated at roughly $1 trillion; see Appendix 2), which provide greater leverage opportunities than traditional interbank lines but at the same time less transparency. The further retreat of Japanese banks and disinvestment by bank customers in deposits denominated in currencies offering low interest rates therefore had a limited impact on total lending activity in the second quarter. Lending to Asia was again particularly strong, although there was evidence of a loss of momentum towards the end of the quarter in the case of certain major borrowing countries. Plays on the differential between local and international interest rates were seen once again in several countries. However, there was increasing recognition of the need to reduce reliance on such flows, as illustrated by new measures to diversify funding, promote local saving and eliminate distortions in domestic financial markets.

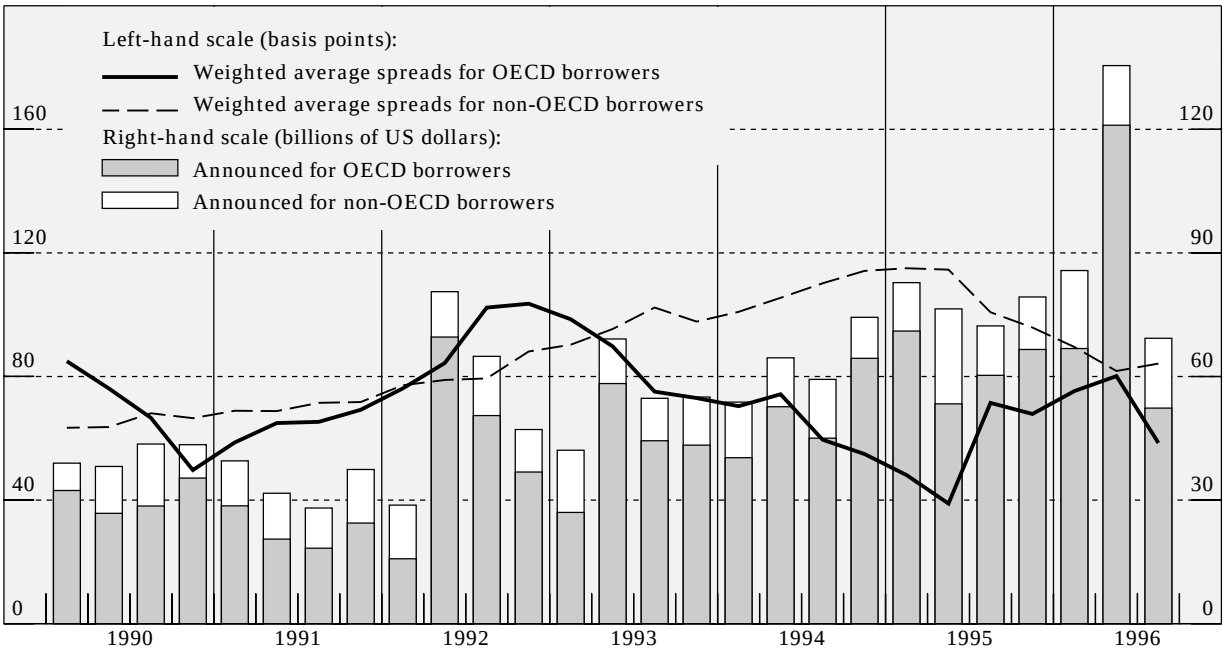
II

THE INTERNATIONAL BANKING MARKET

Main features

At $69.3 billion, total announcements of international syndicated loan facilities during the third quarter of 1996 almost halved from the record level of the second quarter (see Annex Table 8). The exceptionally large volume of facilities in the earlier period had resulted chiefly from the arrangement of loans to finance mergers and acquisitions in the United States and the French social security system. Seen in this light, the downturn does not, therefore, necessarily represent an end to the recent buoyancy of the market. Non-financial borrowers from the industrial world, particularly in sectors facing restructuring or privatisation, accounted once again for the bulk of aggregate activity, but there was also some increase in facilities for emerging market entities. The strong liquidity positions of banks stimulated their appetite for lower-rated names, leading to a further narrowing of margins for eastern European signatures, although this was offset by the entry of high-margin borrowers from the developing world. Several lower-rated borrowers took the opportunity to refinance more expensive outstanding loans or to replace bilateral credits with syndicated facilities.

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



* Four-quarter moving average of spreads over LIBOR on US dollar credits.

Sources: Bank of England, Euromoney and BIS.

Faced with low margins on lending to creditworthy borrowers, banks made efforts to link such loans to other lucrative business. There was also more emphasis on leveraged transactions, non-traditional arrangements and project financing loans to developing and eastern European countries. In spite of frequent participation by bilateral and multilateral lenders in project finance deals for developing countries and the arrangement of loans in parallel with the issuance of securities, banks appeared to be relying somewhat less on official guarantees and thus willing to assume a greater degree of risk. The low margins on loans to highly rated borrowers also acted to reduce banks' incentive to keep assets on their books. This encouraged a further expansion of secondary market trading and created a preference for making loans sharing certain features of securities (such as loan-style floating rate notes in Asia). Difficulties in attracting participants in low-return syndications led

the most active arrangers to seek new lenders, such as institutional investors or to structure loans encompassing tranches tailored to meet such investors' specific requirements.

Detailed international banking statistics now available for the second quarter show three salient developments. Firstly, there was an absolute contraction in the interbank market, owing to further retrenchment by Japanese banks, reduced offshore borrowing by the US banking system in the wake of strong domestic deposit-taking and a more modest volume of eurocurrency depositing by international investors. Secondly, there was a strong upsurge in claims on non-bank entities located inside the reporting area, related in the main to transactions in securities (see also Appendix 2). Thirdly, new lending to countries outside the reporting area - primarily to Asia - was brisk, following a slowdown in the first quarter. However, there was some evidence of a loss of momentum in the Asian region towards the end of the quarter as a result of efforts by national authorities to reduce reliance on short-term capital, a reassessment of lenders' strategies and, in several instances, economic and political difficulties.

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

In billions of US dollars

Components of international bank lending	1994	1995				1996		Stocks at end-June 1996
	Year	Year	Q2	Q3	Q4	Q1	Q2	
Claims on outside-area countries	**36.6**	**118.9**	**35.9**	**31.9**	**30.9**	**19.7**	**25.9**	**1,041.3**
Claims on inside-area countries	**228.3**	**498.7**	**131.7**	**58.1**	**27.3**	**78.6**	**21.9**	**8,021.5**
Claims on non-banks	-47.4	187.6	88.1	1.6	17.2	50.2	96.5	2,533.0
Banks' borrowing for local onlending[2]	190.6	1.1	-53.6	9.2	10.1	4.1	10.0	1,052.7
Interbank redepositing	85.1	309.9	97.2	47.3	0.0	24.3	-84.5	4,435.8
Unallocated	**10.1**	**22.3**	**-0.4**	**12.3**	**-8.3**	**11.0**	**2.7**	**253.0**
Gross international bank lending	**275.1**	**639.9**	**167.2**	**102.3**	**50.0**	**109.3**	**50.5**	**9,315.8**
Net international bank lending[3]	**190.0**	**330.0**	**70.0**	**55.0**	**50.0**	**85.0**	**135.0**	**4,880.0**
Memorandum item: Syndicated credits[4]	**252.0**	**310.8**	**76.4**	**72.3**	**79.3**	**85.7**	**135.5**	

[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.

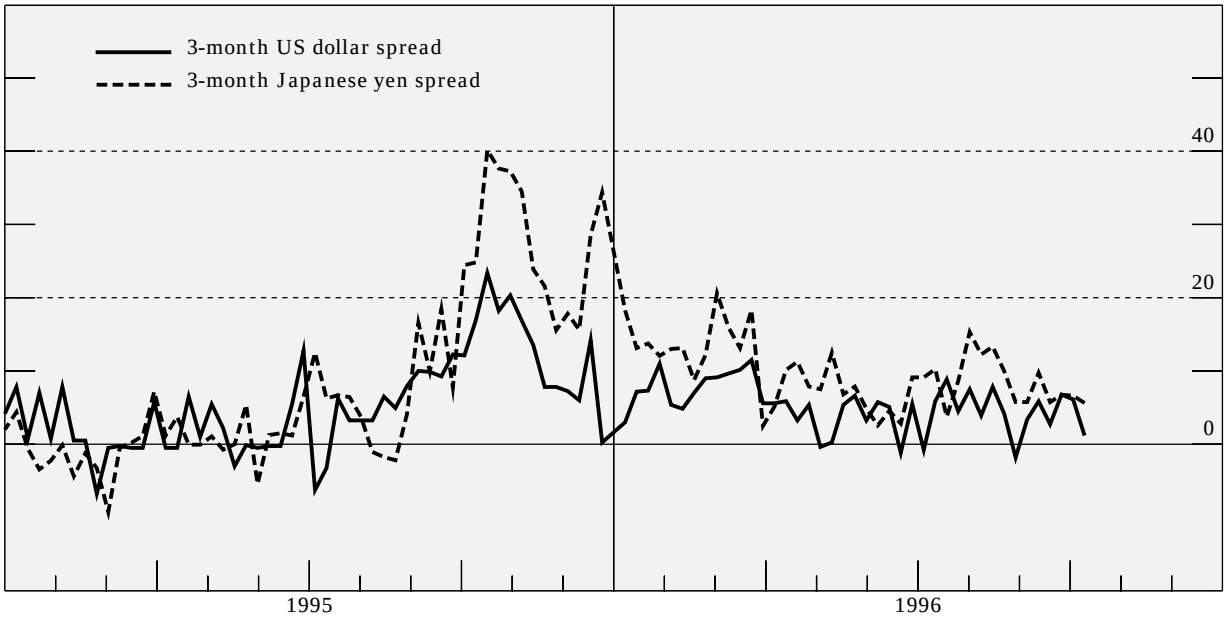
These developments were only partly reflected in the currency composition of total lending, as other factors were also present. Thus, whereas the reduction in interbank funding by Japanese and US banks led to a sharp fall in dollar intermediation, yen-denominated outflows from Japan revived activity in that segment of the market. In the European currency sectors, there was a sharp further contraction in the size of the ECU market, but renewed foreign borrowing in Italian lire to finance purchases of lira-denominated securities. In the case of the German mark, some withdrawal of deposits in the eurocurrency segment of the market was almost fully offset by re-exports by the German banking system of funds imported through other channels (foreign buying of German securities in particular).

Business with countries inside the reporting area

The sharp absolute contraction in the size of the cross-border *interbank market* within the reporting area mostly reflected repayments by Japanese banks. However, domestic factors in Japan (including possibly the weakness of the economy) may have played a considerably greater role in this

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.

retreat than the "Japan premium" in the international market, the effect of which was fading (see the graph above). The fact that at the same time the Japanese banking system markedly increased its claims on foreign non-bank customers also supports the view that liquidity did not necessarily present a problem for all Japanese banks in the period under review. Reduced reliance on neighbouring offshore centres for the funding of domestic activity was also evident in the United States, where a differentiation of the premium rates for deposit insurance appears to have benefited commercial

Currency composition of international bank lending[1]

In billions of US dollars

Currencies	1994	1995				1996		Stocks at end-June 1996
	Year	Year	Q2	Q3	Q4	Q1	Q2	
Banks in industrial reporting countries ...	**99.2**	**519.3**	**99.2**	**91.4**	**45.5**	**119.7**	**60.0**	**7,467.6**
US dollar	135.3	115.7	39.2	14.5	1.0	7.1	-32.5	3,180.8
German mark	-27.7	14.3	17.8	-13.7	10.0	52.8	8.0	1,141.7
Japanese yen	48.1	175.8	-17.7	66.8	60.7	-17.9	22.1	887.8
French franc	-41.2	50.2	9.8	10.9	-12.0	-8.1	-0.5	332.7
Italian lira	11.6	39.9	0.9	15.2	5.3	10.4	39.3	311.2
Swiss franc	-7.0	-4.6	7.2	3.8	-19.1	12.4	9.6	305.2
Pound sterling	11.5	8.7	30.6	-19.5	-5.8	4.7	-6.4	263.0
ECU	-27.8	-20.4	-3.9	-19.8	-14.7	-0.3	-10.5	182.0
Other and unallocated[2]	-3.6	139.7	15.3	33.2	20.1	58.6	30.9	863.2
Banks in other reporting countries[3]	**175.9**	**120.6**	**68.0**	**10.9**	**4.4**	**-10.3**	**-9.5**	**1,848.2**

[1] Changes in amounts outstanding excluding exchange rate valuation effects. [2] Including all non-dollar positions of banks in the United States, for which no currency breakdown is available. [3] No currency breakdown is available.

banks at the expense of savings institutions in recent quarters. The contraction of eurocurrency deposits in certain core European currencies and in ECUs was another factor contributing to the decline of the interbank market.

Cross-border lending to the *non-bank sector* within the reporting area expanded strongly (+18% on an annual basis). This appears to have been connected with banks' transactions in securities rather than outright lending to the corporate sector. There were, in particular, sharp increases in reporting banks' claims on entities located in the United States, the Cayman Islands, the United Kingdom and Germany. On the deposit side, the most notable feature was the rise in liabilities to non-bank entities located in offshore centres ($15.5 billion). The key role played by the Netherlands Antilles and the Cayman Islands in this development suggests some recycling of funds raised through other channels.

Business with countries outside the reporting area

International bank lending to outside-area countries rebounded in the second quarter of 1996. There was a renewed acceleration in flows to Asian economies, as well as sizable credits to a limited number of countries in other regions, most notably Argentina, Brazil, Greece and Turkey. At the same time, lending to eastern European countries came to a standstill, with a sharp turnaround from imports of funds to exports in the case of Poland (see Annex Table 5A). The large volume of lending to Asia, and especially to Korea, China, Malaysia, Thailand and the Philippines, should be seen against evidence of a loss of lending momentum towards the end of the quarter. Thus, whereas the ongoing process of market liberalisation (in Korea, China and the Philippines) may have

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]				
	1995			1996		1995			1996	
	Q2	Q3	Q4	Q1	Q2	Q2	Q3	Q4	Q1	Q2
Total assets	**90.6**	**23.2**	**30.9**	**34.6**	**84.3**					
Canada	1.9	-1.4	-1.9	-0.8	-0.1	3.6	6.8	8.9	5.1	9.0
France	0.7	-1.4	-1.0	-3.3	4.6	40.4	20.4	18.9	20.5	17.8
Germany	5.6	7.3	2.8	4.7	7.3	45.9	50.6	88.3	55.7	38.4
Italy	4.3	4.2	-0.1	1.2	3.3	2.9	-10.6	17.0	5.8	0.8
Japan	34.5	-10.1	9.5	-10.7	3.9	55.9	52.7	88.7	-83.1	62.3
United Kingdom	0.9	3.6	3.1	4.1	13.8	7.0	10.4	10.1	20.7	12.8
United States	20.9	19.0	-7.6	24.8	20.5	103.9	69.7	51.7	15.9	..
Other countries ...	21.8	2.0	26.1	14.6	31.0					
Total liabilities	**29.0**	**21.1**	**9.4**	**59.2**	**31.0**					
Canada	1.5	-1.2	-0.7	0.1	2.8	6.5	6.4	5.9	0.5	4.4
France	0.8	1.3	-0.4	8.8	-2.4	17.5	12.3	29.2	-21.8	-6.8
Germany	3.0	-7.7	-13.2	3.2	0.8	5.7	12.1	83.3	-3.0	11.4
Italy	1.7	-1.2	-4.3	8.5	-0.2	3.5	-0.4	43.0	-26.2	14.8
Japan	0.3	3.0	-0.2	6.5	5.8	19.4	50.1	116.8	7.8	63.9
United Kingdom	-0.5	1.3	5.8	5.4	3.6	18.6	17.1	26.8	26.2	21.6
United States	2.8	11.5	7.2	8.4	-2.3	89.5	72.7	67.8	75.8	40.6
Other countries ...	19.4	14.1	15.2	18.3	22.9					

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

facilitated capital flows, the impact of new restrictive measures to reduce dependence on short-term funds also began to be felt. This was particularly the case in Thailand, where the raising of reserve requirements on short-term foreign currency liabilities in April and a widening current account deficit led to some capital outflows, as reflected in the weakening of the equity market and downward pressure on the currency during the summer. A large current account deficit also began to deter foreign capital in the case of Korea, which experienced a fall in the exchange rate in May and June. In the case of China, the banking inflows largely reflected growing financial integration with Hong Kong, although new rules were introduced in June to curb foreign borrowing through banks' foreign affiliates. By contrast, the statistics suggest a revival in international bank lending, albeit from relatively low levels, to Malaysia and the Philippines, possibly in response to the high level of domestic interest rates and a more positive perception of economic performances and policies.

In Latin America, the $3.1 billion of new bank lending was mainly accounted for by Brazil ($1.9 billion, in spite of additional restrictions introduced in February) and Argentina ($1.1 billion, following net repayments in the first quarter). Borrowers in the region continued to diversify their financing sources, stepping up in particular their issuance of international securities. The reduced importance of the international banking sector in channelling funds to the region, while partly related to the restructuring of domestic banking systems, was accentuated recently by net repayments of banking debt (including early repayments by Chile and payments of overdue debt by Venezuela). Faced with large capital imports through direct and portfolio investment, countries in the region continued to accumulate foreign exchange reserves, which were partly redeposited with banks abroad. This was a significant factor behind the $11.3 billion rise recorded in liabilities vis-à-vis Brazil, which resulted in a further narrowing of reporting banks' net claims on that country (to $6.2 billion at mid-year, the lowest figure ever recorded in the BIS statistics).

Stagnation in overall lending to eastern Europe in the second quarter of 1996 was the result of two opposite movements. Whereas some unwinding in repo transactions with Poland was responsible for most of the $1.1 billion decline recorded vis-à-vis that country, the Czech Republic

Banks' business with countries outside the reporting area*

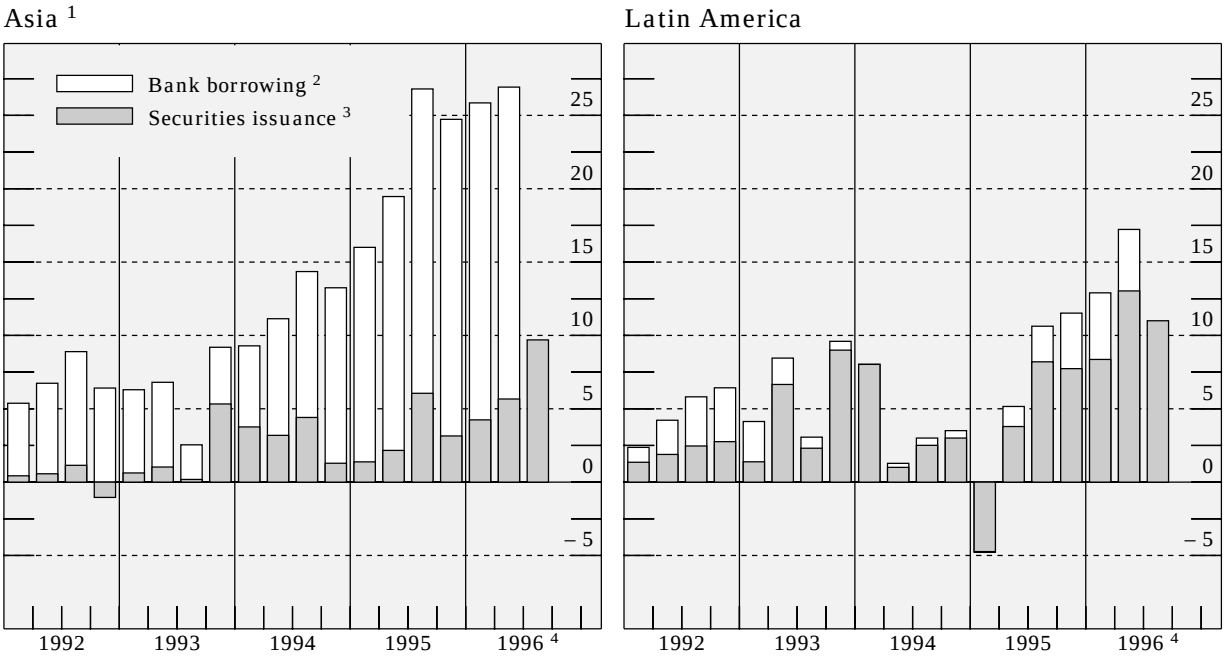
In billions of US dollars

Outside-area country groups	1994	1995				1996		Stocks at end-June 1996
	Year	Year	Q2	Q3	Q4	Q1	Q2	
Total assets	**36.6**	**118.9**	**35.9**	**31.9**	**30.9**	**19.7**	**25.9**	**1,041.3**
Developed countries	-1.3	24.9	7.5	5.7	4.3	3.8	-0.1	191.9
Eastern Europe	-13.0	3.1	1.0	1.4	0.5	2.8	-0.6	86.9
Developing countries	51.0	91.0	27.4	24.8	26.2	13.1	26.5	762.5
Latin America	2.0	15.1	4.5	5.2	8.4	0.0	3.1	247.8
Middle East	3.1	-6.8	-0.9	-1.9	-3.0	-4.4	0.1	69.0
Africa	-2.0	-3.7	-1.2	-0.4	-0.4	-0.8	-0.3	35.2
Asia	47.8	86.3	25.0	21.9	21.2	18.3	23.6	410.5
Total liabilities	**74.6**	**96.5**	**20.1**	**37.5**	**11.4**	**28.7**	**27.1**	**946.3**
Developed countries	22.4	20.2	-1.2	15.5	-5.9	5.2	6.7	183.3
Eastern Europe	2.0	9.2	1.9	3.7	2.7	-0.4	-0.3	45.5
Developing countries	50.1	67.1	19.4	18.3	14.6	23.9	20.7	717.5
Latin America	21.0	42.4	14.4	18.1	8.6	3.3	17.1	221.4
Middle East	2.9	8.8	5.2	-6.3	-1.9	8.7	-3.7	207.6
Africa	3.3	-1.2	0.5	-1.1	-0.6	-0.1	2.0	42.3
Asia	22.9	17.0	-0.6	7.5	8.4	12.0	5.3	246.3

* Changes in amounts outstanding excluding exchange rate valuation effects.

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 euronotes and international bonds. [4] Data on bank borrowing are not yet available for the third quarter of 1996.

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

and the Russian Federation continued to attract banking funds ($0.3 billion and $0.6 billion respectively), albeit on a smaller scale than in the first quarter. Measures taken earlier to stem short-term capital imports in the Czech Republic and Poland, as well as early repayment of official debt by Hungary, contributed to curbing banking flows to the region. Similarly, within the reduced overall volume of credits to the group of developed countries outside the reporting area, there was a net repayment of debt by Australia ($2.6 billion) on the one hand, and sizable inflows into Greece ($1.6 billion) and Turkey ($1.4 billion) on the other. This led the authorities of the latter two countries to introduce or consider new measures to limit short-term inflows, such as reserve requirements on foreign currency liabilities in Greece (in June) and plans to extend the maturity of banking debt in Turkey.

Structural and regulatory developments

Two important initiatives relevant to international banking activity were taken during the third quarter. In August, the European Monetary Institute released a progress report describing the prospective cross-border payment system in euros under stage three of EMU in January 1999. The system, known as TARGET (Trans-European Automated Real-Time Gross settlement Express Transfer system), will link the real-time gross settlement systems of individual EU central banks.[1] However, the pending issue of access to intraday credit in euros for non-EMU banks raised concerns about differentiated treatment. This added to the debate over the possible financial implications of the introduction of the euro (see also the sections on securities and derivatives). Also in August, the British Bankers' Association (BBA) released a "Deposit Netting Agreement" (DNA) intended to

[1] "First Progress Report on the TARGET System", European Monetary Institute, Frankfurt, August 1996.

enable banks to offset mutual unsecured deposits both internationally and locally.[2] Based on legal opinions produced for other existing netting agreements, including those developed by the International Swaps and Derivatives Association (ISDA) for derivatives transactions and by the BBA and ECHO for foreign exchange transactions, the DNA may eventually be enforceable in 12 jurisdictions, including (in addition to the United Kingdom) Belgium, France, Germany, Japan, Singapore and Switzerland. This could contribute to a reduction of credit risk in the international interbank market, thus potentially reversing the recent trend away from traditional interbank lines and in favour of collateralised lending (see Appendix 2).

2 "International Deposit Netting Agreement", British Bankers' Association, August 1996.

Appendix 1: Issues raised by the development of electronic money

The BIS, in cooperation with the Group of Ten central banks, has recently studied issues surrounding the development of electronic money. This work has focused on five areas: security, money laundering, legal issues and regulatory and monetary policy. A document on the security issues was published in August, and in October the BIS released a short staff report on the implications of the development of electronic money for central banks and the possible policy responses.[3]

The term electronic money (or e-money) generally encompasses devices allowing the electronic recording and storing of a prepayment, the value of which is decreased whenever the consumer uses the device to make purchases. Such devices take the form of either prepaid cards or prepaid software products that use computer networks such as the Internet (sometimes referred to also as "digital cash"). To store the prepaid value, card-based schemes typically involve a microprocessor chip embedded in a plastic card, while software-based schemes use specialised packages installed on a standard personal computer.

Most e-money schemes are designed to facilitate retail payments from consumers to merchants and have a relatively low limit on the maximum value that can be held. They are intended for use in small-value retail transactions, as a substitute for cash and - to a lesser extent - other cashless retail payment instruments such as cheques and funds transfers. In practice, the future of e-money is likely to depend on its cost advantages over other payment methods, as well as on revenues from fees and the investment of outstanding balances for issuers (in addition to cost savings in the case of bank issuers) and considerations of security and privacy for users (consumers and merchants).

The development of e-money raises a number of issues of particular concern to central banks. These include *security* and *legal considerations*, as well as policy issues related to the function of *payment system* oversight, the operation of *monetary policy* and, to the extent that central banks have *supervisory responsibilities*, the possible financial risks borne by issuers of e-money. In the monetary area, for instance, e-money could lead to shifts in the velocity of money, which might temporarily reduce the usefulness of (narrow) monetary aggregates as policy targets. The possible effect of e-money on the implementation of monetary policy would occur primarily via its impact on central bank balance sheets. Since e-money is expected to substitute mostly for cash, which is a large or even, in some countries, the largest component of central bank liabilities, widespread use of such an instrument could lead to a significant shrinkage of central bank balance sheets. Although in normal circumstances a relatively small balance sheet suffices to support open market operations, it could limit the scope for large-scale reserve-absorbing operations that might be necessary in special circumstances.

Moreover, since banknotes in circulation represent non-interest-bearing central bank liabilities, a substitution of e-money for cash would lead to a corresponding decline in central bank assets and in the interest payments derived from these assets. A substitution of e-money for cash would thus imply a loss of seigniorage to central banks, although this loss would have to be very large for seigniorage revenue to fall below the operating expenses of most central banks. However, even a modest loss of seigniorage could be of concern to some governments, particularly in countries with large budget deficits.

Policy responses to these regulatory and monetary policy issues will depend on whether e-money is covered by existing regulations (and whether these are the most appropriate), which institutions are allowed to issue it, which aspects give greatest concern (such as security or money laundering) and the extent to which e-money replaces cash. It is important to emphasise that the

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[3] "Security of Electronic Money", Basle, August 1996 and "Implications for Central Banks of the Development of Electronic Money", Basle, October 1996. Copies of these documents can be obtained from the BIS or through its Web site.

development of e-money and the consequent policy assessments are subject to considerable uncertainty. This is likely to influence the timing and nature of any regulatory response. Regulation of electronic money may help limit any risk associated with various schemes, but may also limit competition and innovation and thus make the resulting schemes less attractive. Overall, designing an appropriate regulatory framework will entail reconciling the different objectives, including the stability and financial integrity of the issuers, protection of consumers and promotion of competition and innovation.

Banknotes and coin in circulation (1994)

Countries	As a percentage of GDP	As a percentage of central bank liabilities	As a percentage of deposits*	Memo item: deposits as a percentage of GDP*
Belgium	5.2	42.0	37.1	14.0
Canada	3.5	86.7	78.9	4.4
France	3.4	37.7	17.8	19.2
Germany	6.8	63.4	42.0	16.2
Italy	5.9	27.9	19.1	30.7
Japan	8.8	84.5	37.0	23.6
Netherlands	6.3	43.0	33.4	18.8
Sweden	4.5	25.2	n.a.	n.a.
Switzerland	7.8	42.9	44.1	17.9
United Kingdom	2.8	69.8	4.8	58.8
United States	5.2	84.1	44.7	11.6

* Demand or transferable deposits included in the narrow money aggregates (typically M1; M2 for the United Kingdom).

III

THE INTERNATIONAL SECURITIES MARKETS

Main features

The total volume of net new issues of international securities moderated during the third quarter of 1996, but was nevertheless 30% higher than the quarterly average for 1995. For the first nine months of 1996, the pace of issuance was 50% above that in the same period of 1995, bringing the annual rate of growth of the stock outstanding to 16%, from 13% in 1995. In the main, the same underlying factors which had favoured financial flows through the international securities markets in earlier periods were present in the third quarter. These included the diversification of borrowing and investment flows, the appearance of new actors (from emerging markets in particular), the flexibility of available techniques and the spread of securitisation outside the United States. As in previous quarters, the easy stance of monetary policy in the major economies encouraged investors to seek higher-yielding cross-border alternatives, leading to a narrowing of spreads relative to benchmark issues. In the industrial world, one of the most striking developments was the scale of the rally seen in the debt markets of "peripheral" European countries towards the end of the quarter as investors

Main features of international securities issues[1]

In billions of US dollars

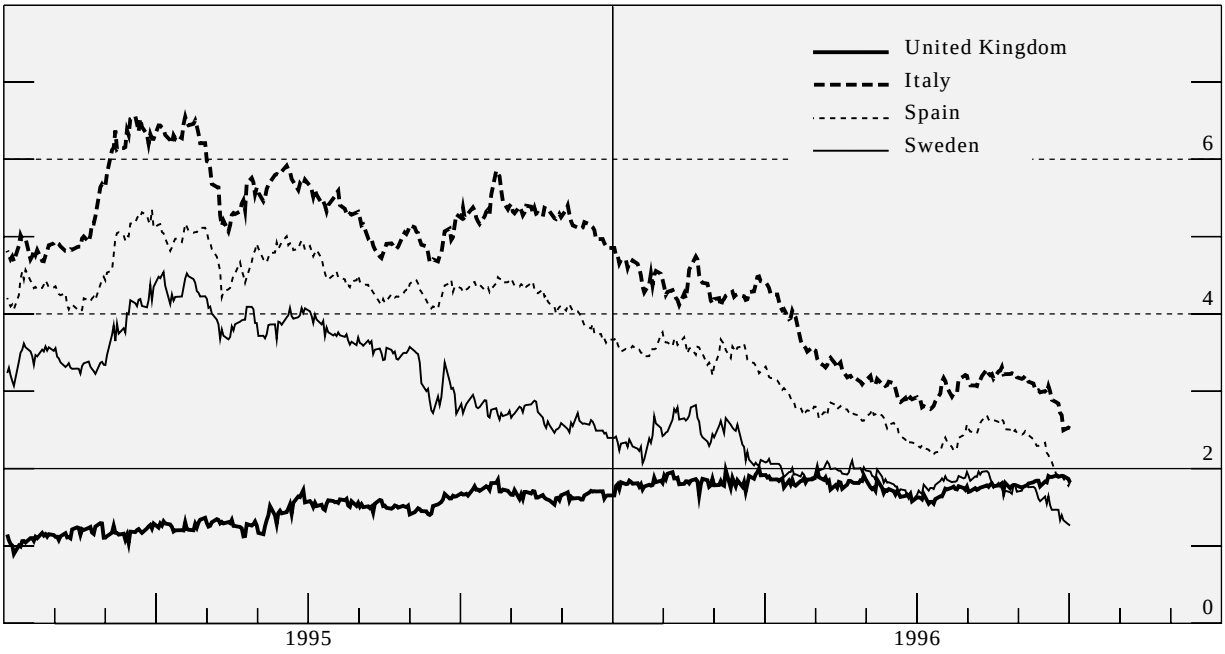
Country of residence, currency and type of issuer	1994	1995			1996			Stocks at end-Sept. 1996
	Year	Year	Q3	Q4	Q1	Q2	Q3	
Total net issues	**285.4**	**313.2**	**99.3**	**83.8**	**109.4**	**138.4**	**101.0**	**3,062.1**
International bonds	145.2	120.8	41.5	37.9	52.9	62.8	53.0	2,305.1
Euronotes	140.2	192.4	57.8	45.9	56.6	75.6	48.0	757.0
of which: bonds issued under EMTN programmes	*58.1*	*59.9*	*13.7*	*16.1*	*47.1*	*43.1*	*30.5*	*275.8*
Developed countries	209.6	232.7	70.5	60.4	79.2	91.6	68.7	2,320.3
Europe[2]	*167.2*	*170.6*	*45.8*	*44.3*	*47.1*	*55.6*	*39.5*	*1,399.0*
Japan	*-26.9*	*-26.8*	*-11.7*	*-3.1*	*-3.3*	*-2.6*	*-3.9*	*217.1*
United States	*41.3*	*65.4*	*24.7*	*17.2*	*32.5*	*34.7*	*25.1*	*400.5*
Canada	*18.2*	*10.8*	*6.6*	*0.0*	*0.4*	*1.1*	*1.4*	*181.7*
Offshore centres	37.2	37.3	8.8	9.2	14.5	18.7	9.3	225.0
Other countries	28.6	27.4	15.0	11.0	12.7	19.8	19.8	204.8
International institutions	9.9	15.8	5.1	3.1	3.0	8.3	3.2	312.0
US dollar	73.5	74.7	25.3	25.3	43.8	74.9	35.9	1,138.9
Japanese yen	106.8	108.3	37.5	22.8	15.2	24.3	24.1	520.8
German mark	27.4	55.9	14.9	15.8	21.7	9.9	11.5	342.4
Other currencies	77.7	74.3	21.7	19.8	28.8	29.3	29.5	1,060.0
Financial institutions[3]	153.9	186.3	57.3	51.2	77.7	77.8	70.4	1,234.0
Public sector[4]	109.9	87.3	35.0	12.9	22.2	37.4	24.3	1,038.8
Corporate issuers	21.5	39.7	7.0	19.7	9.6	23.1	6.3	789.3

[1] International bonds and euronotes. Flow data for international bonds; for euronotes, changes in amounts outstanding excluding exchange rate valuation effects. [2] Excluding eastern Europe. [3] Commercial banks and other financial institutions. [4] Governments, state agencies and international institutions.

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

Yield differentials over long-term German government bonds

In percentage points



Source: Datastream.

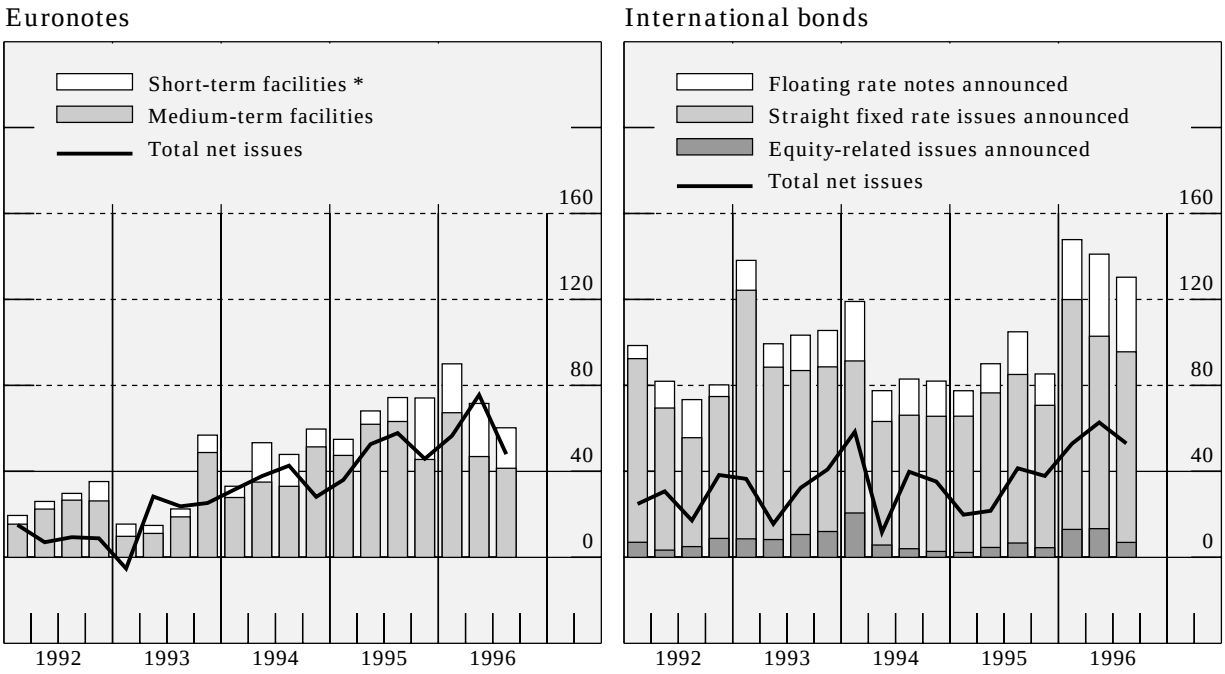
increasingly factored out currency risk following growing evidence of governments' determination to implement the fiscal correction necessary to meet the Maastricht criteria (see the graph above). Rallies were also recorded in emerging market debt. Brady bonds, in particular, received support from an exchange of such debt for eurobonds by the Philippines, the likelihood of similar schemes elsewhere, secondary market purchases by issuing countries, improvements in creditworthiness and a widening of the investor base for emerging market paper.

Financial institutions again accounted for the bulk of net new issues (70%). However, a further broadening took place in the range of borrowers included in this group, such as state and local financing agencies, lower-rated entities and special-purpose vehicles (SPVs). There was, in particular, sustained issuance of international asset-backed securities (ABSs), which is generally conducted through SPVs (see the special feature at the end of this commentary). Although little information is available so far on ABSs issued under euronote programmes, it can be estimated that 40% of net new international securities issuance by financial institutions during the third quarter of 1996 was related to the securitisation of loans or other assets. At the same time, developing country names raised a record volume of new funds (see Annex Table 9). Their borrowing was boosted by large refinancings of official loans (especially, but not exclusively, by Mexico) to take advantage of the decline in risk premia, as well as by the growing recourse of Asian entities to the market.

The currency composition of new issues showed a decline in dollar-denominated transactions but a sustained volume of issuance in other currencies. The reduction in the volume of dollar issues mainly reflected reduced euro-commercial paper (ECP) and other short-term euronote issues by US names, possibly in favour of the more liquid US market. The more positive stance of investors vis-à-vis high-yielding European currencies and emerging market signatures contributed to raising the share of non-dollar issues. Japanese investors were reportedly major subscribers of foreign paper, especially customised euronotes offering enhanced returns.

The international securities markets

In billions of US dollars



* Including euro-commercial paper facilities.

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

The euronote market

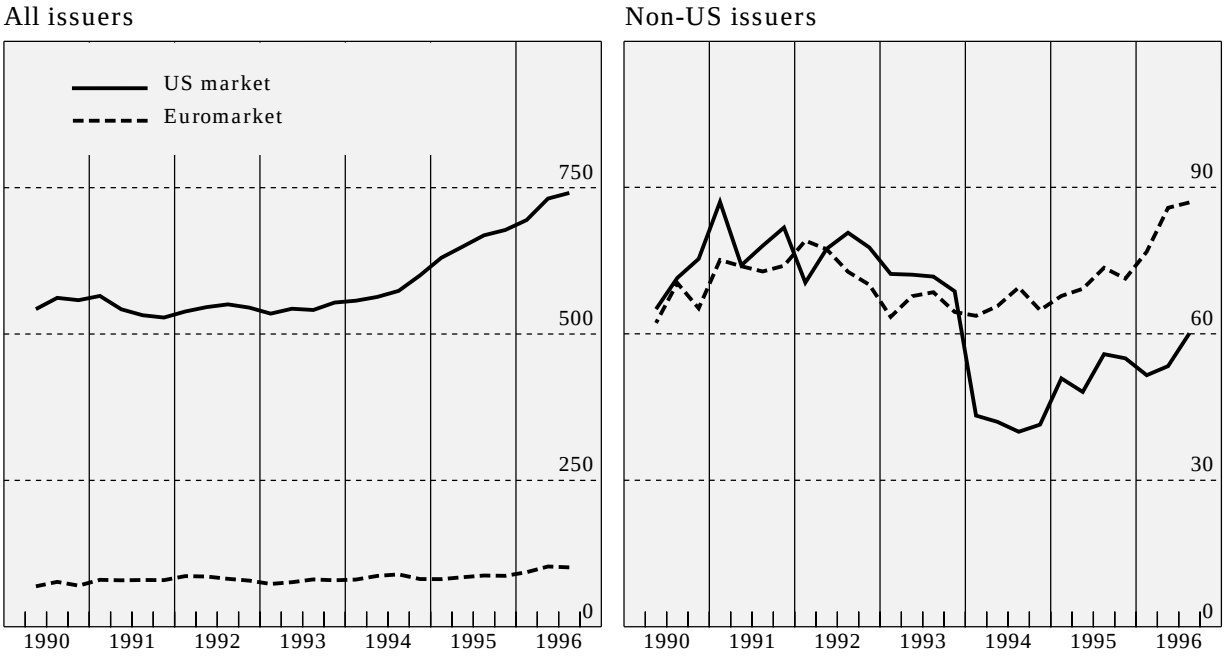
The slowdown in total net new financing through euronote programmes between the second and third quarters of 1996 was mainly due to repayments of ECP and other short-term debt instruments denominated in US dollars. In addition to the refinancing through international bonds of a sizable amount of ECP placed earlier by CADES (the French entity created to finance the outstanding debt of the French social security system), the short-term sector continued to face competition from other instruments. In particular, the ECP market remains overshadowed by its US counterpart (see the graph on the next page) and handicapped by lower liquidity, restrictions in several major European currencies and the relatively small size of the European money market fund industry. By contrast, the US CP market has benefited in recent years from a number of favourable influences, including strong economic growth, a widening spectrum of borrowers, the large size of money market funds, merger and acquisition transactions, the development of short-term ABS programmes and the growing use of hedging instruments, such as swaps and other derivatives. In due course, however, these same factors, combined with the introduction of the single European currency, may also contribute to the development of a pan-European CP market.

At $51.9 billion, total net issuance under euro-medium-term note (EMTN) programmes continued to run at a rate 20% above the average for 1995. Underwritten issues remained the chief source of market expansion in volume terms, but there were also a large number of dealer-based arrangements for smaller amounts. For new borrowers, placement through dealers remains a more discreet way of testing market acceptance than traditional bonds. For regular borrowers, the technique provides a quicker, cheaper and more flexible way of accessing different groups of investor. This helps to explain the expansion in recent quarters of structured paper, such as reverse dual-currency[4] and swap-driven issues targeted at various categories of Japanese investor. Deregulation in Japan and

4 Whereby interest, rather than the repayment of principal, is denominated in a different currency.

Commercial paper outstanding

In billions of US dollars



Sources: Federal Reserve Bank of New York, Euroclear and BIS.

a lack of attractive local investment and lending opportunities in a context of historically low domestic interest rates have induced Japanese investors and intermediaries to seek higher returns abroad through customised features which can be best accommodated by the EMTN market.

The international bond market

According to preliminary data, announcements of new international bonds declined by 8% between the second and third quarters of 1996, to $130.3 billion.[5] Nevertheless, activity has been unusually brisk so far in 1996, with total new issues announced in the first three quarters of the year amounting to $419.2 billion, compared with $357.9 billion for the whole of 1995. In spite of the strong inroads made by EMTNs in recent years, full-year results will represent a new landmark for the international bond market. Issuance was affected somewhat in the early part of the quarter by the weak performance of the US dollar, uncertainty over the direction of monetary policy in the major OECD countries and unsettled political conditions in some European countries. Thereafter, the recovery in the dollar's fortunes combined with stable US official rates and evidence of easing in Europe and Japan spurred issuance. While the high volume of redemptions also acted to support gross issuance, dealers reported that a significant number of highly rated borrowers were accessing the market ahead of need in order to lock in at what they perceived to be low interest rates.

Uncertainty over the direction of interest rates once again created strong demand for floating rate instruments, with FRNs accounting for a historically large share of total gross activity (27%). By contrast, the modest recovery seen in equity-related financing in the first and second quarters seemed to peter out. US dollar deals accounted for almost 50% of total gross issues, while the yen, the German mark, the Swiss franc and the Dutch guilder recorded modest increases in market share. The political and budgetary difficulties experienced by some European countries in the early part of the quarter put downward pressure on their currencies, which helps explain the drop in investment demand for securities denominated in French francs, lire, pesetas and sterling.

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5 Third-quarter data are likely to be revised upwards when information from additional sources becomes available.

Main features of the international bond market[1]

In billions of US dollars

Instruments, currencies and type of issuer	1994	1995			1996		
	Year	Year	Q3	Q4	Q1	Q2	Q3
Announced issues	**361.6**	**357.9**	**104.9**	**85.3**	**147.8**	**141.1**	**130.3**
Straight fixed rate issues	253.2	280.0	78.4	66.2	107.0	89.5	88.7
Floating rate notes	75.2	59.8	19.8	14.6	27.9	38.2	34.7
Equity-related issues[2]	33.2	18.1	6.7	4.5	13.0	13.4	7.0
US dollar	115.5	118.5	39.8	30.6	63.1	67.5	61.8
Japanese yen	69.6	76.5	23.5	17.1	13.6	15.4	16.0
German mark	37.8	55.5	11.7	14.4	24.4	14.6	17.4
Other currencies	138.6	107.5	29.9	23.2	46.7	43.6	35.1
Financial institutions[3]	155.3	160.6	45.9	39.4	78.7	63.9	62.3
Public sector[4]	122.9	111.0	32.5	22.4	40.2	33.3	42.8
Corporate issuers	83.4	86.3	26.5	23.5	29.0	43.8	25.3
Completed issues	**373.6**	**360.2**	**101.9**	**103.8**	**127.4**	**134.9**	**124.9**
Repayments	**228.4**	**239.4**	**60.4**	**66.0**	**74.5**	**72.1**	**71.9**
Memorandum item: **Bonds announced under EMTN programmes**	**59.4**	**70.6**	**15.3**	**21.7**	**54.9**	**45.6**	**29.3**

[1] Excluding bonds issued under EMTN programmes, which are considered as euronote issues. [2] Convertible bonds and bonds with equity warrants. [3] Commercial banks and other financial institutions. [4] Governments, state agencies and international institutions.

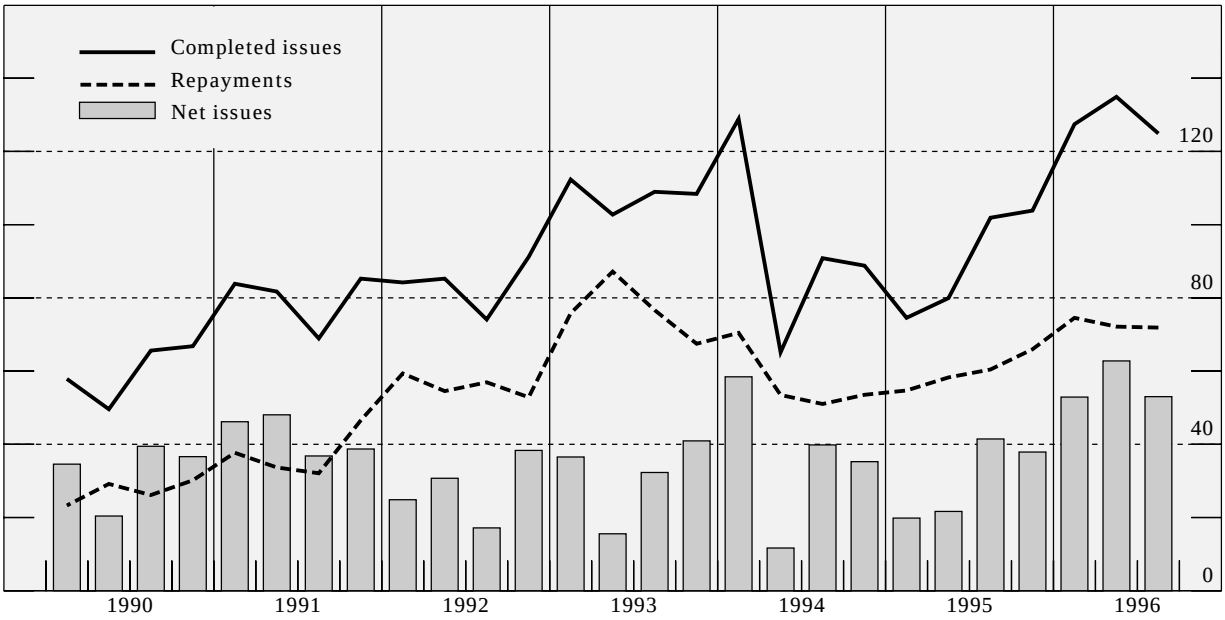
Sources: Bank of England, Euroclear, Euromoney, IFR, ISMA and BIS.

In spite of the decline in the volume of mortgage and other asset-backed securities from the record amount of the previous quarter (from $26.7 billion to $20.2 billion), investors reportedly displayed growing receptiveness for such structures. Most of the issues continued to be made in global form, in US dollars and at floating rates on the basis of US-originated receivables. However, several new issues backed by US dollar receivables or representing repackagings of Brady bonds were also denominated in German marks. There was further evidence of diversification away from US originators, with the launch of the first issues denominated in guilders and Finnish markkas and the first securitisation based on vehicle lease receivables originating in Thailand. A large UK bank also announced its intention to securitise $5 billion worth of corporate loans. The low margins on corporate loans and the opportunity provided by asset-backed securities to keep relationships and ancillary business without tying up capital could make ABSs increasingly attractive to banks.

Developing and eastern European countries launched a record volume of bond issues ($20.7 billion). Moreover, several borrowers, such as Argentina, China, Mexico and the Philippines, extended the maturity of their debt to as much as 20 years. Mexican borrowers were by far the most active, with, inter alia, a $5.4 billion five-year FRN being issued by the central government to refinance more costly official debt incurred in the wake of the financial crisis of early 1995, which was the largest single-tranche issue ever introduced in the euromarket. Mexico had initially intended to arrange a smaller syndicated loan, but in the light of strong interest on the part of international investors decided to structure most of its fund-raising exercise as a securities issue. Asian borrowers also made greater use of the international bond market ($7.3 billion), but activity was concentrated in Thailand and the Philippines. In the case of the Philippines, which has not been very active in the euromarket in recent years, much of the rise was accounted for by the Mexican-style exchange of outstanding Brady bonds for $690 million of uncollateralised 20-year eurobonds. At 225 basis points over US Treasuries, the spread on the new eurobond issue was significantly lower than that of the earlier Mexican refinancing, reflecting the general narrowing of margins for emerging market debt

Activity in the international bond market

In billions of US dollars



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

and a significant improvement in the local economy. The development of liquid eurobond issues for such borrowers and additional debt exchanges of this type could well reduce the importance of Brady bonds as a benchmark for emerging market debt.

Straight fixed rate issues. Announcements of straight fixed rate bonds proceeded at a steady pace in the third quarter, with $88.7 billion worth of issues. Swap rates in some of the main currency sectors were not highly favourable to swap-related issuance, but this was compensated for to some extent by a broad narrowing of risk premia. There was an extension of the average maturity of issues in several major non-dollar sectors, but the short-lived extension seen in the US dollar segment in August (when the Federal Reserve decided to leave official rates unchanged) was not sufficient to prevent a small shortening of maturity. The principal foreign bond markets exhibited contrasting performance, with Yankee issues declining further from the peak reached in the first quarter but Samurai issues continuing to soar, accounting for almost three-quarters of yen issues. In their search for higher returns, Japanese retail investors proved once again to be avid buyers of high-coupon securities launched by lower-rated borrowers or encompassing an element of currency risk (especially reverse dual-currency bonds). The search for higher yields also appeared to spread to other groups, continental European investors in particular, as illustrated by several sizable German mark denominated issues for, among others, Argentina, Mexico, South Africa and Venezuela. One of the most interesting structures involved the arrangement of a back-to-back swap transaction in the global bond market whereby the Tennessee Valley Authority and the European Investment Bank swapped the proceeds of their respective DM 1.5 billion and $1 billion issues. By acting as direct counterparties, the borrowers were able to achieve better terms than under conventional swapped issues.

Floating rate notes (FRNs). Uncertainty with respect to interest rates, the strong liquidity position of financial intermediaries and a surge in repayments generated strong investor demand for floating rate assets, with announced issues amounting to $34.7 billion. Demand for dollar-denominated issues was particularly buoyant, with large deals boosting the share of that currency in total issuance (78%) and the average size of issues. These included the aforementioned $5.4 billion issue for Mexico and a $2 billion transaction for the United Kingdom which partially refinanced a $4

billion FRN maturing in September (the remainder was refinanced in the fixed rate segment). An interesting feature of the UK issue was that it was the first foreign currency issue eligible for Bank of England rediscounting, an element that helped the borrower achieve a coupon of 12.5 basis points below LIBID. Several other large dollar transactions were launched by asset-backed vehicles, with the total volume of floating rate ABSs amounting to $15.6 billion.

Equity-related bonds. Gross issuance in the equity-related sector continued to be subdued in the third quarter ($7 billion). Although equity market performance in North America and Europe was strong, it was less so in Asia, where most issuers of equity-related debt are concentrated. Japanese equity markets dropped sharply from the level reached in the second quarter, while the performance in other Asian countries was mixed. As in previous quarters, borrowers continued to favour convertible issues. Notable deals included a large convertible yen deal (¥150 billion, equivalent to $1.4 billion) for the offshore subsidiary of a Japanese bank (several other banks were also reported to be preparing substantial issues). Another development was the tendency to introduce issues incorporating increasingly complex features.

Structural and regulatory developments

Following the decision in December 1995 by the European heads of state or government at the Madrid summit to convert all ECU contracts at a rate of one to one with the euro, new initiatives were taken during the third quarter to reduce remaining uncertainties concerning its legal enforceability. Thus, in August, the International Primary Market Association and ISDA agreed on a proposed standard wording to be inserted into contracts to allow for the Madrid decision. At the same time, the European Commission clarified the treatment of certain existing contracts by declaring that all ECU bonds relating to European institutions would be fully convertible (at a rate of one to one) after 1999. These initiatives were aimed in part at restoring confidence in the ECU bond market, with a narrowing of the differential between its actual and theoretical values seen as contributing to a smooth transition to the single currency.

In the area of secondary market trading, the Emerging Market Traders Association and the International Securities Clearing Corporation signed a memorandum of understanding to set up a clearing house for emerging market debt, the Emerging Market Clearing Corporation. The purpose of this arrangement between major emerging market dealers and brokers is to reduce counterparty risks and trading costs. It will be limited initially to the trading of Brady bonds, the stock of which amounts to more than $140 billion and which are currently the most widely traded and liquid emerging market securities (trading was estimated at more than 20 times the stock figure last year).

Appendix 2: Repos and the international financial markets

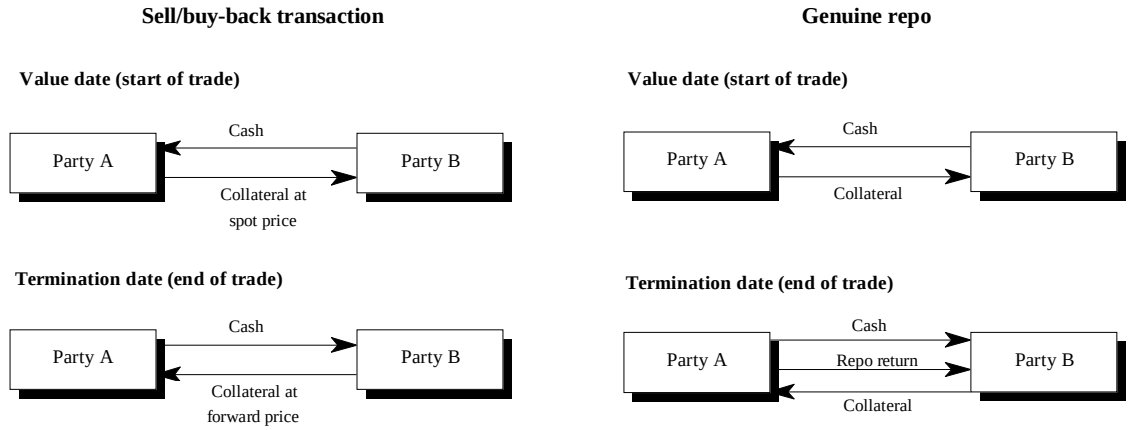
Repurchase agreements (or repos), which involve the sale of securities against cash with a future buyback agreement, have become an important element of the international banking and financial markets. Already well established in the United States, the use of repos spread to the euromarket in the second part of the 1980s as a result of strong trading demand from dealers and smaller commercial banks with limited access to international interbank funding. Growth was subsequently spurred by a number of factors, including arbitrage with derivatives markets, the introduction and development of domestic repo markets, securitisation and pressures to economise on capital, as well as attempts to reduce counterparty risks and the costs and risks associated with cross-border securities settlements. Greater harmonisation of the legal, accounting and taxation framework across countries has acted as a further stimulus to the international use of repos.

According to international accounting practices, the funds advanced by the purchaser of a security under a *firm* repurchase agreement are generally treated as a collateralised loan and the underlying security is maintained on the balance sheet of the seller. Such collateralised loans are generally extended between financial institutions for very short periods (a few days) and, as such, belong to the global interbank market.

The purpose of this note is threefold: firstly, to describe the various types of collateral arrangements associated with repo transactions; secondly, to clarify the accounting treatment of repos in the international banking statistics; and finally, to assess their overall importance in both qualitative and quantitative terms.

1. Repos and collateralised loans

As defined above, a repo consists of the sale of a security with an agreement to buy it back at a specified future date or on demand, in exchange for cash provided by the repo buyer (from whose standpoint the transaction is referred to as a reverse repo). The firm commitment by the repo seller to repurchase the security is the key criterion in classifying the transaction as a collateralised loan. Included in this treatment of collateralised loans are therefore **sell/buy-back transactions** and "**true**" or "**genuine**" **repos.** While both types involve a contract to sell the security and repurchase it at a later date, genuine repos link contractually the two legs of the transaction and provide an explicit return (i.e. the repo rate; see the diagram below).[6]



6 While in a genuine repo the interest rate is explicit, in a sell/buy-back transaction it is incorporated in the purchase and sale prices of the securities being exchanged. Repo rates are derived from those on comparable money market instruments, with the relationship between the two depending on the availability of collateral. For instance, in a US dollar overnight repo, the rate normally lies slightly below the federal funds rate, with the spread between the two varying according to the supply of Treasury bills used as collateral.

Securities loans, which constitute the third category of collateral transactions, are not generally treated as collateralised loans unless the securities are lent against cash, in which case they can be considered as reverse repos from the point of view of the borrowers of the securities. Also not treated as collateralised loans are contracts with only an option to repurchase the securities rather than a firm commitment to do so ("non-genuine" or "spurious" repos). The treatment of the various types of repo arrangements is summarised in the table below.

While the use of securities loans is growing, *sell/buy-back transactions* appear to be the most important form of repurchase agreement in the international market.[7] The preference of market participants for such agreements has been attributed to their simplicity and the independent identity of (i.e. the absence of any formal link between) the two legs of the transaction. These factors may also help to explain the slow progress in the adoption of the global master agreement developed by the International Securities Market Association and the US Public Securities Association.[8]

Within the category of genuine repos, *delivery repos*, whereby the seller transfers control of the securities to the custodian of the purchaser, seem to be predominant. However, *tri-party repos*, whereby the two parties agree to use a common custodian to guarantee each other's obligations (which reduces the transaction costs associated with the first type), have expanded in recent years. The third type, *hold-in-custody repos* (whereby the repo seller retains custody of the securities), remains marginal, the lower transaction costs involved being outweighed by the greater risk and potential legal difficulties incurred by the buyer.

	Treated as collaterised loans	Importance
Repurchase agreements[1]		
Genuine repos		
delivery	*Yes*	**
tri-party	*Yes*	*+
hold-in-custody	*Yes*	*
Non-genuine repos	No	*
Sell/buy-back transactions	Yes	***
Securities loans	**No**[2]	**+

*** = important; ** = moderately important; * = not widely used; + = growing in importance.

1 Firm buyback commitments only; excluding buyback options. 2 Unless lent against cash.

2. Accounting treatment in the international banking statistics

Assume for the sake of simplicity that a repurchase transaction takes place between two banks, A (the repo seller) and B (the repo buyer).[9] An outright sale of the securities would merely give rise to a transfer of ownership of the securities (and therefore of the cash in the opposite direction) between A and B. By contrast, a firm commitment to return the securities to the seller implies that the original securities remain on the seller's balance sheet, while the transfer of cash from B to A creates new assets and liabilities for A (see the illustration on the next page).

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7 See Annex 2 of the report "Cross-Border Securities Settlements", prepared by the Committee on Payment and Settlement Systems of the central banks of the Group of Ten countries, BIS, Basle, March 1995.

8 The formal contract made under the ISMA/PSA global master repurchase agreement specifies the legal status of the transaction as well as the treatment of margining, coupon payments, pricing and collateral.

9 Although institutions involved in repurchase agreements include, in addition to commercial banks and other credit institutions, securities houses and money market funds, it is assumed for the purpose of the illustration that the transaction takes place between two BIS reporting banks.

Original balance sheets:

Bank A				Bank B			
Assets		**Liabilities**		**Assets**		**Liabilities**	
Securities	100	Deposits	100	Cash	100	Deposits	100

Balance sheets after repurchase transaction:

1. If treated as outright sale of securities

Bank A				Bank B			
Assets		**Liabilities**		**Assets**		**Liabilities**	
Cash	100	Deposits	100	Securities	100	Deposits	100

2. If treated as collateralised loan

Bank A				Bank B			
Assets		**Liabilities**		**Assets**		**Liabilities**	
Securities	100	Deposit	100	Lending to A	100	Deposits	100
Cash	100	Borrowing from B	100				

Therefore, when aggregating the balance sheets of banks A and B, three claims are reported under the collateralised loan operation (as against two under an outright purchase): the original securities holding (by A), an interbank claim (by B on A) and the cash or the use made of it (by A). This means that, if used on a large scale, repo transactions may be an important determinant of the stock of international bank assets and liabilities and of their fluctuations over time.

3. Importance of repos in the international banking market

For intermediaries active in securities markets, the repo market offers a cheaper way of obtaining short-term funds than non-collateralised interbank lines. For the providers of the funds, the lower return is set against the advantages of the collateral and, in the case of banks, its preferential treatment for capital adequacy purposes.[10] Repo rates are closely linked with those of short-term interest rate derivatives, with arbitrage opportunities allowing repos to bridge cash and derivatives markets. These features of repos, combined with the growing involvement of banks in securities and derivatives trading, would support the hypothesis that a significant proportion of international banking activity now takes place on a repo basis.

Unfortunately, statistics on international repos are not directly available. A first approximation is provided by the stock of BIS reporting banks' holdings of international and foreign domestic securities, which currently amounts to about $1 trillion, or one-tenth of gross international bank claims outstanding and one-fifth of the latter aggregate adjusted to exclude interbank redepositing. Movements in such holdings over the last few years have mirrored those of the total banking aggregates (both gross and net; see the graph). Indeed, the greater fluctuations recorded by these totals would be consistent with the impact of repos on banks' balance sheets, as explained above. However, while the large stock outstanding underlines the importance of securities holdings in international banking activity, it does not necessarily reflect international repo-related transactions, because there are two opposing influences. On the one hand, this $1 trillion includes outright

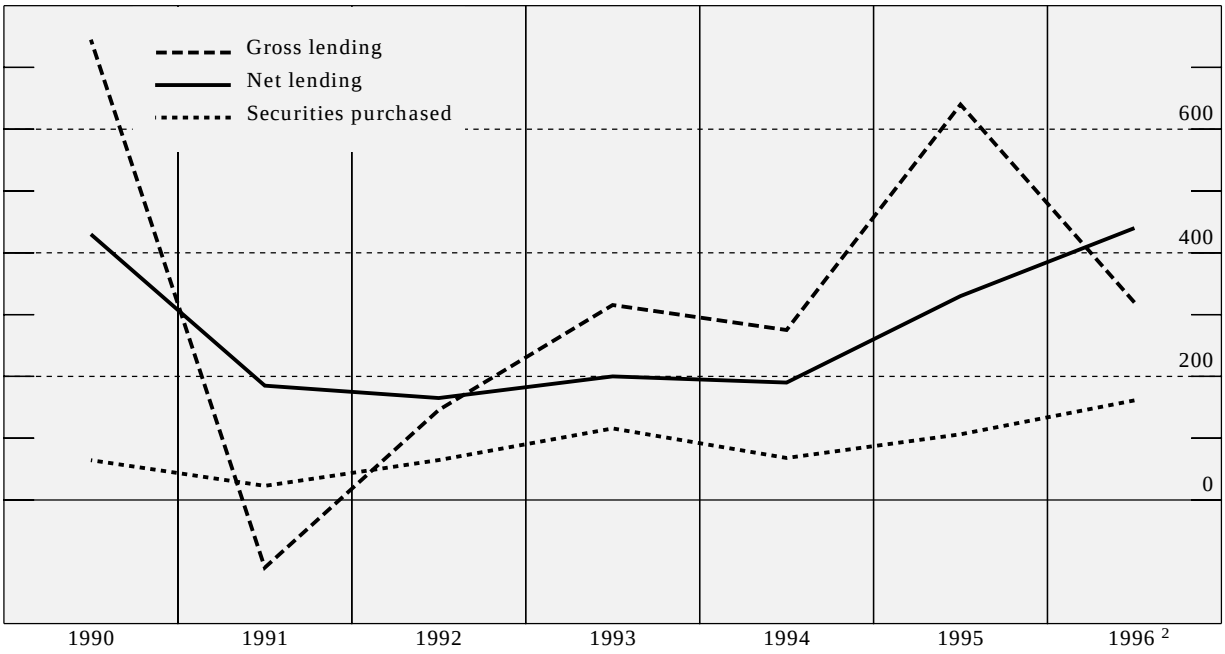
[10] According to the Basle Capital Accord of July 1988, loans secured against securities are given the weight of the collateral (i.e. a zero weight in the case of OECD central government paper, as against 20% in the case of non-guaranteed loans to OECD commercial banks).

investment in securities, especially corporate issues (only sovereign names are generally used for repo transactions). On the other hand, it excludes the domestic collaterals to repos, i.e. banks' holdings of government paper issued on the local domestic market.

While the first factor might considerably reduce the relevant total, the second one appears to be overwhelming, leaving the $1 trillion mentioned above as a conservative estimate of the total stock of securities underlying repo transactions in the international banking market. This is comparable to rough estimates made for the US market and is more than ten times larger than any other major domestic repo market. When seen in relation to the more than $9 trillion and nearly $5 trillion of gross and net international bank credit outstanding at mid-1996, the role of repos in the international banking market therefore appears significant.

International bank lending and banks' international securities holdings [1]

In billions of US dollars



[1] Changes in amounts outstanding excluding exchange rate valuation effects. [2] First half of 1996 annualised.

Sources: National data and BIS.

Three observations support the assertion that there is a large domestic counterpart to international repos. One stems indirectly from the change in the accounting treatment of repos in the UK international banking data at end-1995 (from the recording of a change of ownership of the underlying securities to collateralised loans with no change of ownership of the securities). Although the upward revision was limited to $83 billion (or one-third of the international securities holdings of banks located in the United Kingdom), the opening of a repo market for gilt-edged securities in January this year boosted the figure considerably in the subsequent months.

A second observation is that repos have been extensively used at times for borrowing in currencies facing temporary downward pressures on the exchange markets[11] or for raising short-term funds to invest in long-term instruments, with the domestic banking system of the currency concerned being called upon (as reverse repo counterparty) to provide the cash. Although the underlying securities provided as collateral would be included in the international banking statistics were the repo counterparty to be a reporting bank, it appears that such collateralised borrowing generally involves a

[11] Although in some cases the funds were used to speculate against the currency in question, it is believed that the bulk of such borrowing was for the purpose of hedging securities holdings against currency risk.

considerably wider array of foreign financial institutions than the group of BIS reporting banks. These currency and interest-rate-related transactions were instrumental in the strong growth recorded by the international bank lending aggregates in 1992-93 and again in 1995 (see the graph).

A third observation which points to the importance of domestic government paper in repo-related international transactions is the large volume of secondary market trading in securities reported by the two international clearing houses, Euroclear and Cedel. Direct operational links with the German settlement system[12] mean that virtually all cross-border securities trading in German government securities is done through the international clearing houses. According to Euroclear estimates, some two-thirds of such transactions involve repos. Incidentally, secondary market turnover in DM-denominated securities during 1995 was about 75 times the stock of DM-denominated securities held by BIS reporting banks at end-1995. While also suggesting a significant volume of non-reported domestic securities underlying international repo transactions, this high turnover points to the short-term nature of repo arrangements and, when seen in relation to the estimated $1 trillion in outstanding repos, to the enormous size of cross-border banking and (indirectly) securities transactions associated with repos.[13]

4. Concluding remarks

In spite of the importance of repos in international banking activity, little quantitative information is available on this rapidly growing market segment. Existing statistics confirm that it is a major determinant of international banking flows, acting increasingly as a substitute for traditional interbank credit. In that perspective, a large international repo market can be seen as one of the responses of internationally active banks to the challenges posed by securitisation and financial innovation, reflecting their success so far in integrating these developments into their asset and liability management strategies.

However, the role of repos in the world financial markets is considerably larger, bridging banking, securities and derivatives business at the global level. The estimated stock figure of $1 trillion, as well as the multiple figure for turnover implied by such a large amount outstanding (possibly in the order of $50 trillion; see footnote 13), mean that this market segment is not only at the centre of market risk management techniques but also a major component of all cross-border capital flows.

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[12] Direct or indirect links between Euroclear and Cedel and other major local settlement systems are either non-existent (in the case of the United States and Japan) or hampered by restrictions, differences in market rules or market inefficiencies.

[13] Another element of comparison between stocks outstanding and turnover, and one which is possibly more relevant in view of the intimate relationship between the two markets, is provided by interest rate futures, with a multiple of 45 for 1995 (See Annex Table 20A). This would suggest turnover in international repos of some $40-50 trillion per year, which is consistent with an average life of about one week.

IV

DERIVATIVES MARKETS

Exchange-traded instruments

The aggregate turnover of exchange-traded financial contracts monitored by the BIS declined further in the third quarter (by 2%, to 280.1 million transactions). Although there were localised episodes of higher volatility in all three market risk categories (interest rates, equities and currencies), these were not sufficiently pronounced to impart a significant upward momentum to overall market activity. In the area of interest rate contracts, the moderate increase in activity seen in North America and Europe was not sufficient to offset a sharp decline in Brazilian business, leaving total volume at 183.2 million contracts, or 4% lower than in the preceding quarter. More active European trading of stock index options meant that equity business fared somewhat better, with a 5% increase in turnover, to 73.2 million. In spite of some increase in the volatility of the major currency pairs in the early part of the quarter, trading in currency-related contracts remained subdued, with transactions declining by 2%, to 23.5 million.

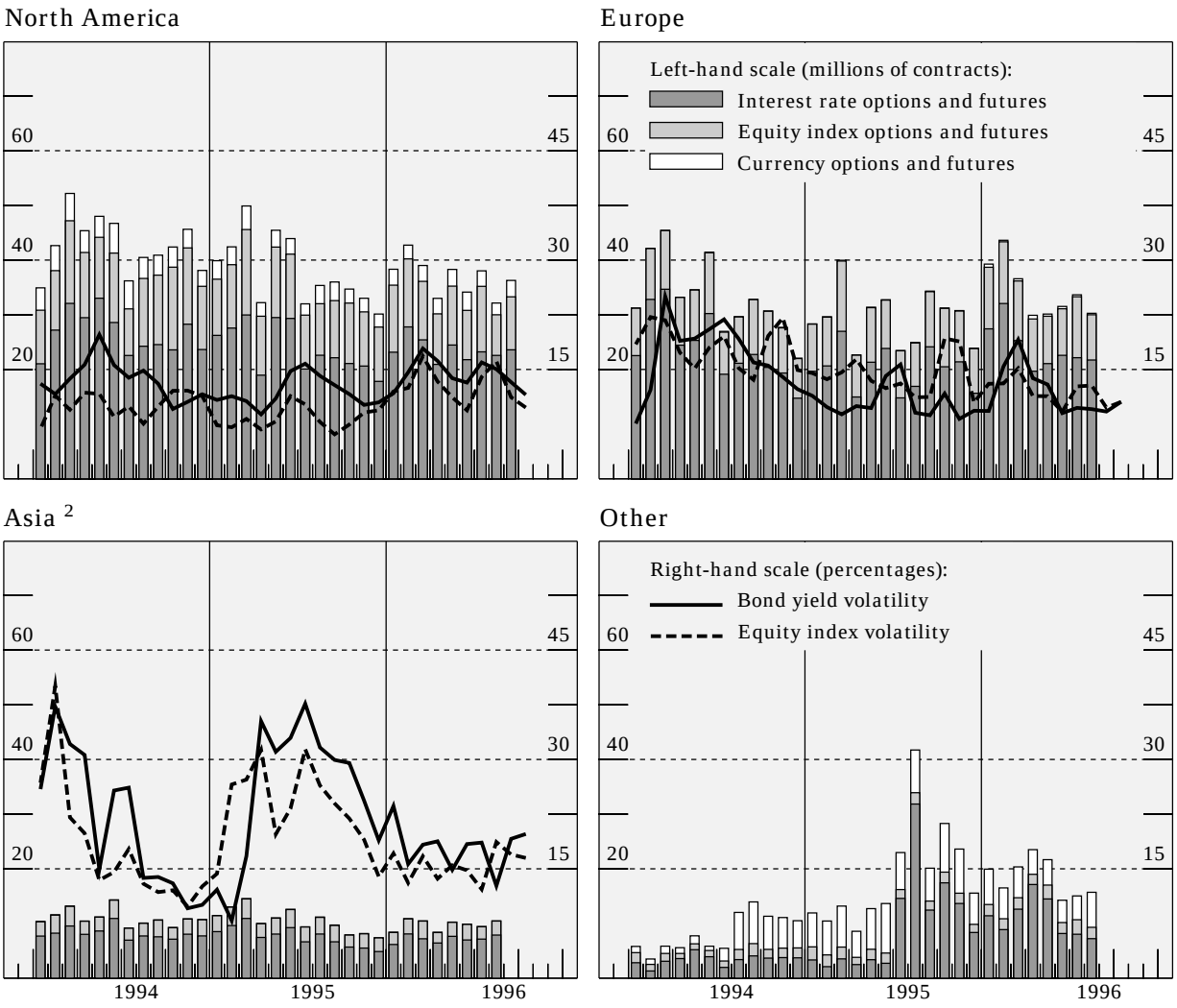
For the first three quarters of 1996, total turnover of financial contracts amounted to 891.1 million, a 1% increase compared with the same period in 1995. While both currency and equity index contracts experienced a decline in turnover (by 18% and 2% respectively), interest rate contracts continued to expand (by 5%). The further deceleration in the growth of exchange-traded activity appears to indicate that certain groups of products (such as the well-established interest rate contracts) are entering a period of consolidation, while others (particularly currency-related instruments) are affected by competition from over-the-counter (OTC) products. Business conducted on US exchanges declined (by 7%, to 329.4 million contracts) but this was more than offset by an increase in activity elsewhere (by 7%, to 561.7 million). In the United States, trading in commodity contracts (not included in the BIS statistics) enabled the Chicago Board of Trade (CBOT) to increase its market share. Strong activity in international contracts allowed the London International Financial Futures and Options Exchange (LIFFE) to maintain its leading role in Europe. However, a sharp increase in interest rate business on the Deutsche Terminbörse (DTB) meant that it came close to displacing the Marché à Terme International de France (MATIF) as the second most active exchange in Europe. In Asia, business on Japanese exchanges and on the Singapore International Monetary Exchange (SIMEX) slowed substantially. In Latin America, there was a considerable drop in Brazilian interest rate option trading as the easing in monetary policy weakened the incentive to use instruments enabling financial market participants to avoid the impact of compulsory deposit requirements with the central bank.

Competition in exchange-traded markets remained intense during the period under review. This reflected a variety of factors, with perhaps the most important being the challenge created by the prospective introduction of the single European currency. In response, exchanges announced several, to some extent overlapping, initiatives. Apart from EMU, exchanges throughout the world generally faced pressure to reduce transaction costs as well as a need to consolidate market share through various forms of round-the-clock trading and cross-market links. With respect to innovation, recently established exchanges tended to introduce new interest rate contracts, while older exchanges focused on equity contracts or on measures aimed at reviving flagging business.

More confident expectations regarding the transition to the single European currency further intensified the debate concerning the likely consolidation of the European derivatives industry and about which of the major exchanges, products and technologies would gain supremacy in the new integrated environment. This was illustrated by the establishment in many financial centres of official and private task forces to analyse the implications of EMU and make recommendations aimed at strengthening the competitive position of the respective financial sectors. Financial market participants and national authorities recognise that the introduction of the euro will lead to profound changes in the structure of European financial markets. Indeed, the entry into force of the Investment Services Directive has already led to heightened competition in the European financial services

industry.[14] The closure of the Irish Futures and Options Exchange (IFOX) in August, as well as the difficulties faced by a number of other European derivatives exchanges, have brought the potential consolidation facing the industry into sharp focus.[15] Some of these issues are discussed in further detail in the box on page 28.

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.

Efforts were also made to capture greater shares of global trading activity. SIMEX announced a one-hour extension of the trading day for its euroyen contract in response to the introduction in April of joint trading of the euroyen contract between LIFFE and the Tokyo International Financial Futures Exchange (TIFFE). In addition, the CBOT extended the trading period on Project A, its overnight trading system, by half an hour. Several new trading links were

[14] One aspect which has implications for derivatives markets is the permission for exchanges to place cross-border trading screens anywhere within the European Union.

[15] There are more than 20 derivatives exchanges in Europe.

implemented or announced. The London Securities and Derivatives Exchange (OMLX)[16] established a link with the Finnish Derivatives Exchange (Suomen Optiomeklant or SOM), which permits the clearing of short-term markka and Finnish government bond futures contracts. The new link, which supplements the existing one between SOM and OM Stockholm, is the latest in a series of recent cooperative agreements between Scandinavian-based market-places. The New York Mercantile Exchange (NYMEX) and the Hong Kong Futures Exchange (HKFE) signed a linkage agreement allowing Hong Kong traders equipped with NYMEX's electronic trading system to trade the latter's energy and commodity contracts in the Asian time zones. In addition, further moves were made in the direction of remote trading access. In June, the Marché des Options Négociables de Paris (MONEP) became the third non-US exchange (after LIFFE and the HKFE) to obtain "non-action" relief from the US Securities and Exchange Commission, enabling the exchange to market its equity option contracts to professional investors in the United States. In August, the OMLX also received similar relief from the Commodity Futures Trading Commission for its contracts linked to the OMX equity index.

However, other developments illustrated the difficulty of structuring trading agreements that are satisfactory to both partners in a highly competitive environment. Following the collapse of collaboration between the DTB and the MATIF, the DTB reasserted control over the electronic access points operated by the MATIF for French users of DTB products. In parallel, the exchange announced that it would install two new electronic access points in the United States for the trading of German mark interest rate futures. At the same time, the MATIF confirmed that negotiations were being held with the Chicago Mercantile Exchange (CME) and SIMEX on creating a 24-hour link, in an attempt to rival the forthcoming introduction of the open outcry linkage between the CBOT and LIFFE.[17]

Several new listings on established exchanges were made for equity products, including options on single equities on LIFFE and the DTB and a new futures contract based on the DAX Mid-Cap Index on the latter. The HKFE launched long-dated equity options on the Hang Seng Index, while the MONEP launched long options on several single stocks. A number of US exchanges also announced the forthcoming launch of flex-type options on single equities. By introducing such instruments the exchanges hope to attract some of the business now conducted in the OTC markets.

The drive to bolster market presence in anticipation of EMU was much in evidence in the area of European interest rates, with LIFFE and the DTB both announcing the launch in November of one-month euromark contracts. Increased activity in German mark interest rate swaps (see the section on OTC markets) and greater issuance of short-term paper by the Bundesbank could support activity in those contracts. For the DTB, the new one-month contract and a new three-month euromark contract will replace the existing three-month contract based on the FIBOR, a domestic rate that was never able to replace DM LIBOR as a pricing benchmark for OTC transactions. The DTB hopes to attract business by being slightly ahead in listing the new one-month instrument, by providing spread trading opportunities with other products spanning the DM yield curve and by offering low trading fees. In the United States, the CME gained regulatory approval from the Commodity Futures Trading Commission for its Globex Foreign Exchange Facility (GFX). The GFX will attempt to boost liquidity on Globex's after-hours currency contracts through a dedicated group of market-makers who will post bid and offer prices in certain currency contracts. The exchange also announced that seven new currency futures contracts on the German mark would be listed on Globex in the fourth quarter. New contracts introduced on recently established exchanges included a three-month LISBOR futures contract on the Bolsa de Derivados do Porto as well as one and three-month BUBOR futures on the Budapest Commodity Exchange.

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16 The OMLX is owned by the Stockholm Optionsmarknad (OM).

17 The trading agreement between the CBOT and LIFFE was signed in December 1995 and was due to become operational in June this year. However, the need to harmonise clearing systems has delayed the introduction of joint trading until May 1997.

European economic and monetary union and exchange-traded markets

With exchange rate and inflation risks ceasing to be prime determinants of returns on European fixed income securities, much trading activity will be conditioned by credit risk considerations. While bond futures contracts could in principle still be applied to domestic government bonds of varying creditworthiness, business in interest rate products is likely to gravitate to the underlying market offering benchmark rates (themselves conditioned by factors such as creditworthiness and liquidity). The large size of the underlying euro-denominated bond market could provide opportunities for the launch of a number of contracts covering the length of the euro yield curve, but there is unlikely to be demand for as wide a range of national bond futures as currently exists. Competition in short-term interest rate futures is likely to be even more intense than in government bond futures; eurocurrency rates are based on generic interbank rates and will therefore not be able to support much more than a few pan-European short-term contracts. Persistent differences in national accounting, disclosure and fiscal treatment within the new currency area are likely to shield European equity contracts from the full brunt of intra-European competition, enabling exchanges to further develop this side of their business in the years to come. In the case of currency contracts, EMU will represent less of a challenge to European exchanges since much of currency hedging activity already takes place in the OTC market.

The question as to which major European exchange will assume the dominant role post-EMU has generated a large volume of press coverage. Unworried by the possibility that the United Kingdom might not join EMU from the very beginning, LIFFE is basing its competitive strategy on the importance of London as a global financial centre and its weight as the most active and diversified European exchange, as well as on the establishment of intercontinental trading links (with the CBOT in the United States and the Tokyo Stock Exchange and TIFFE in Japan). The exchange has already announced measures aimed at capturing euro-denominated business such as the conversion of its euromark contract into a short-term euro contract from 1st January 1999. Following the end of cooperative efforts between the DTB and the MATIF, the two largest continental European exchanges have lost the opportunity to form a united front against LIFFE and have returned to a more competitive relationship. The DTB is following a multi-pronged strategy, emphasising the benchmark nature of German government debt, its status as the biggest electronic trading exchange in Europe (which it is actively using to disseminate electronic access points in other European countries and in North America) and its high volume of equity-related business. The MATIF is banking on the sophistication and liquidity of French debt markets (in particular in short-term instruments such as repos), prospective international linkages and proactive measures taken by the French Treasury.[*] The MATIF has already made provision for contracts to be denominated in euros from 1st January 1999 and, although no euro-denominated bonds will be traded before 1999, there are plans to introduce "theoretical" euro contracts as soon as the list of participating countries and their respective currency conversion rates are known (sometime in 1998). Ultimately, however, the emergence of a dominant trading location will not be conditioned by a single advantage but will depend on a complex set of interrelated factors such as the importance and efficiency of the financial sector in each country, the size and liquidity of underlying markets, the level of trading costs and commissions (including the cost-efficiency of clearing and cross-margining systems), the preference of market participants for open outcry versus electronic trading facilities,[**] the nature of the regulatory framework and decisions taken by national authorities concerning the conversion of government debt into euros.

[*] The French Treasury has announced that the stock of French franc government debt will be converted into euros from 1st January 1999 and that new government debt will be issued in that currency as from that date. French equities will also be traded in euros from the start of EMU. [**] Open outcry is often considered to be superior for price discovery, but electronic trading is said to offer significant cost advantages.

In contrast to the various initiatives aimed at expanding product lines and trading links, there was some movement in the direction of retrenchment. In particular, the low level of dealers' margins in relation to exchange fees maintained the pressure to reduce trading costs through a rationalisation of services. Important cost reduction measures included an agreement between the CBOT and the CME to establish a common banking facility that would provide for joint clearing and delivery of contracts from August 1997. Mention may also be made of the merger between LIFFE and the London Commodity Exchange, which came into effect in September. The merged entity will be able to benefit from a broader range of products, an important element in the exchange's competitive strategy ahead of the introduction of the euro.

Over-the-counter (OTC) instruments

According to market sources, OTC business continued to be buoyant in the third quarter. Although the volume of leveraged structures remained modest relative to the early 1990s, market

reports pointed to active Asian demand for complex products such as dual-currency bonds and structured EMTNs (particularly in Japan). In the area of interest rate products, intermediaries reported renewed interest in strategies and instruments based on the convergence of European interest rates and on an anticipated flattening of the German mark yield curve. Save for window-dressing transactions ahead of the Japanese fiscal mid-year, activity in yen interest rate swaps was reported to be somewhat subdued. In currency products, the sharp fall of the US dollar against the yen and the German mark in July and early August renewed end-user interest in currency hedging transactions. Although end-users continued to favour relatively simple products, dealers actively marketed currency options based on binary payouts.[18] However, the drop in the US dollar on the exchange markets illustrated some of the potential pitfalls involved in using such instruments. With parities moving out of their pre-established trading ranges, end-users were suddenly obliged to turn to simpler instruments, while dealers had to conduct reverse hedging transactions.

Activity in the warrants market was sustained, with issues rising by $0.6 billion to $17.5 billion, which brought the aggregate value for the first nine months of the year to $62 billion. While equity and currency instruments tended to predominate, there was also renewed interest in commodity-related products. The recovery in most major equity markets, which followed a drop in July, created strong investor interest in call options on single equities and on a variety of equity baskets or indices. Although intermediaries focused on instruments based on European stocks, emerging market equities also proved popular. The sharp fall of the US dollar in the early part of the quarter gave impetus to currency warrants. Many of the structures now routinely available in the wholesale market were offered, including standard call and put options, more complex range and barrier structures as well as quanto[19] and quattro-type[20] offerings. A notable development was the launch by a US investment bank of the largest-ever issue of warrants on equity indices. The offering included 66 tranches on the indices of 24 countries in Asia, Europe and the Americas, which accounted for an estimated 92% of the $16.9 trillion of global equity market capitalisation. Investors were allowed to buy the German-listed warrants in either dollars, German marks or Swiss francs.[21] More generally, the high proportion of warrants denominated in German marks and Swiss francs, and active market-making by European banks, indicate the strength of continental European demand for such instruments.

A number of innovative structures were introduced over the review period. In July, several banks active in German financial markets began to make markets in interest rate swaps based on the Frankfurt Interbank Overnight Average (Fiona) rate. The swaps, also known in the United States as Overnight Interest Rate Swaps (OISs), involve an exchange of longer-dated interest rates (of up to one year) against a benchmark rate based on a new overnight fixing of the FIBOR. The initiative comes in the wake of the recent German relaxation of restrictions on short-term debt issuance and aims at improving Frankfurt's competitive position ahead of EMU. A US bank followed with the introduction in Europe of OISs involving US dollar LIBOR and a daily fixing of the Fed Funds Effective Rate (FFE). A market for such instruments already exists in a number of other European currencies, with the French franc segment being the most active. Another innovation that attracted attention was the introduction by UK-based intermediaries of instruments offering returns tied to the volatility of financial assets. Under one of the structures, the intermediary offered a "volatility swap" to an investment fund that was based on the current volatility of the S&P options contract, with the payout determined by the difference between implied and realised volatilities upon maturity of the instrument. In order to meet the fund's investment guidelines, the short-dated swap was structured as

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[18] In contrast to simple options, which have a continuous payout profile, binary options generally pay a fixed amount if the underlying reaches a predetermined level or remains within a certain corridor.

[19] Instruments (typically equity index futures and options, bond options and differential swaps) denominated in a currency other than that in which they are usually traded.

[20] Instruments in which the payout is based on the performance of four underlying assets.

[21] A major omission from the list of indices was that of the CAC-40 index, which would have required a Paris listing.

an issue of put warrants listed in Luxembourg.[22] A related development was the establishment of a Luxembourg-listed fund offering investors returns based on the volatility of equity and commodity markets. Such an investment vehicle could appeal to investors believing that "buy and hold" investment strategies will generate lower returns than in the past. In a separate development, a Canadian-based bank began to offer credit protection for interest rate swap dealers who do not want to take on the credit risk of their counterparties. Lastly, there were reports of growing interest in non-deliverable forward (NDF) contracts on eastern European currencies. NDFs enable users to hedge currency exposure in markets where forward contracts do not exist owing to exchange controls or other regulatory restrictions.

In September Cedel Bank launched its Global Credit Support Service (GCSS). The GCSS opened with four customers and offers real-time book-entry collateral management for derivatives transactions. The services offered include full customisation of credit support agreements, round-the-clock real-time collateralisation, optimisation of asset usage and seamless cross-currency substitution (securities in any currency will be eligible as collateral).[23] If the system were to be used on a wider basis, it could further enhance liquidity in the OTC market by freeing up lines of credit and permitting access to a broader range of counterparties. Lastly, a Japanese bank was the latest financial institution to launch a credit-enhanced derivatives trading programme. The AAA-rated "termination" programme, which is backed by collateral and insurance from a similarly rated insurer, should facilitate the arrangement of OTC transactions with highly rated dealers.

Structural and regulatory developments

In July, the central banks of the G-10 countries published a report outlining a framework for the regular collection of OTC derivatives market data from a number of leading global dealers.[24] The report noted that improved information on the size and structure of derivatives markets is needed to increase market transparency and thereby help the authorities and market participants to better monitor patterns of activity in the global financial system. The framework, which has been developed in consultation with market participants and industry associations, envisages the regular compilation of internationally consistent statistics on the notional amounts and gross market values outstanding of foreign exchange, interest rate and equity-based derivative instruments. The statistics will also include derivatives-related credit exposures before and after netting arrangements and will be based on consolidated reports provided by dealers to their national central banks or regulators. The report recommends that the data be compiled and published by the BIS, initially on a semi-annual basis, possibly beginning at the end of 1997. The report follows an earlier G-10 study, published in February 1995, which reviewed central banks' information needs in relation to derivatives market activity.[25] The format of the new reporting structure is based on a joint proposal made in May 1995 by the Basle Committee on Banking Supervision and the Technical Committee of the International Organization of Securities Commissions.[26]

In August and September, the Board of Governors of the US Federal Reserve System (BoG) and the US Office of the Comptroller of the Currency (OCC) separately issued two documents

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22 In buying such a put, the fund took the view that implied volatility was overstated and it will gain if realised volatility proves to be closer to its historical value (i.e. lower than the implied).

23 In accordance with market practices, agreements will be made on a bilateral rather than a multilateral basis.

24 See "Proposals for Improving Global Derivatives Market Statistics", Basle, July 1996.

25 See "Issues of Measurement Related to Market Size and Macroprudential Risks in Derivatives Markets", Basle, February 1995.

26 See "Framework for Supervisory Information about the Derivatives Activities of Banks and Securities Firms", Basle and Montreal, May 1995.

providing initial guidance to banks using credit derivatives.[27] The papers represent the first attempt made to clarify the regulatory issues surrounding this expanding new market,[28] defining the most commonly used credit derivatives, examining the different types of risk attached to them and discussing some of the regulatory and supervisory implications of transactions involving such instruments. The documents highlight different aspects of the market. The OCC focuses on general supervisory issues, emphasising that these products are new and largely untested, that valuation methods are not as analytically developed as they are for other financial derivatives, and that, in the light of these uncertainties, banks interested in using credit derivatives should exercise proper care and diligence. It also reviews the various risks associated with these instruments. In the particular area of credit risk and related capital requirements, it notes that some forms of credit derivative are functionally equivalent to standby letters of credit or similar types of financial enhancement, while other forms might be closer to more traditional derivatives, thus implying different capital requirements. The BoG paper covers similar ground but provides a more detailed assessment of the balance-sheet treatment and capital requirements for credit derivatives positions held in banks' trading books. It points out that banks using such products to hedge credit exposure could significantly reduce their capital charges but again that those acting as intermediaries might in some cases incur less favourable capital treatment of the positions (as financial enhancements rather than as derivatives). However, the agencies noted that regulatory, supervisory and accounting standards are not yet definitive and that, as the market expands, further discussions among regulators may result in revised or additional guidance.

The debate over the pre-commitment approach (PCA) to capital adequacy remained polarised, with some US regulators being positive about the potential of the approach but with European regulators having reservations. Although still at the experimental stage, the PCA would represent an alternative to the standardised and internal model approaches approved by the Basle Committee on Banking Supervision for implementation in early 1998. Under the PCA, a financial institution would pre-commit an amount of capital that it believes to be sufficient to cover a maximum trading loss exposure over a given commitment horizon. Losses in excess of this amount would be penalised by the imposition of fines and/or public disclosure of the breach. Proponents of the PCA have argued that the internal model approach suffers from a number of shortcomings. These include the lack of accurate measurement of risk exposures over the ten-day holding period mandated by regulators and the inability of regulators to verify the quality of internal models and their projections. Opponents of the PCA have been concerned that it might encourage short-term trading and that there is no incentive to provide more than a minimum capital charge against shocks. They have also argued that it could expose the financial system to systemic risk if, in the event of a shock, traders simultaneously attempted to liquidate their positions in order to avoid exceeding their pre-committed loss ceiling.

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[27] See "Credit Derivatives", Comptroller of the Currency and "Supervisory Guidance for Credit Derivatives", Board of Governors of the Federal Reserve System, Washington, August 1996.

[28] For an introductory treatment of the issues surrounding credit derivatives, see pp. 36-40 of the August issue of this commentary.

Appendix 3: Activity in the swap market in 1995

According to the latest survey by the International Swaps and Derivatives Association (ISDA), activity in the swap market continued to develop strongly in 1995.[29] The new data highlight inter alia the relatively rapid growth of non dollar interest rate swaps and an extension of the modest recovery seen in 1994 in currency swaps. Another notable development was the stronger expansion of the OTC segment covered by ISDA than of exchange-traded instruments.[30] The growth of activity in OTC markets continued to reflect longer-term trends such as the emergence of an active and liquid interbank market, the more widespread use of derivatives (particularly among institutional investors), the development of risk reduction techniques (such as collateral arrangements and credit-enhanced vehicles), the improvement in credit evaluation methods, the standardisation of market practices and documentation and the creation of increasingly sophisticated risk management instruments.

Derivative contracts traded over the counter[1]

Notional principal amounts, in billions of US dollars

Instruments	1989	1990	1991	1992	1993	1994	1995[2]
	New contracts arranged						
Total	**1,347.2**	**1,769.3**	**2,332.9**	**3,717.0**	**5,516.9**	**8,133.3**	**11,169.3**
of which:							
Interest rate swaps	*833.5*	*1,264.3*	*1,621.8*	*2,822.6*	*4,104.7*	*6,240.9*	*8,698.8*
Currency swaps[3]	*178.2*	*212.8*	*328.4*	*301.9*	*295.2*	*379.3*	*455.1*
	Amounts outstanding at end-year						
Total	**..**	**3,450.3**	**4,449.4**	**5,345.7**	**8,474.6**	**11,303.2**	**17,712.6**
of which:							
Interest rate swaps	*1,502.6*	*2,311.5*	*3,065.1*	*3,850.8*	*6,177.3*	*8,815.6*	*12,810.7*
Currency swaps[3]	*449.1*	*577.5*	*807.2*	*860.4*	*899.6*	*914.8*	*1,197.4*
Memorandum items:							
Exchange-traded financial instruments	**1,766.9**	**2,290.4**	**3,519.3**	**4,634.4**	**7,771.1**	**8,862.5**	**9,185.3**
Interest rate futures and options	1,588.7	2,054.0	3,229.3	4,298.4	7,321.1	8,401.2	8,605.1
Currency futures and options	66.2	73.5	81.2	97.6	110.3	95.7	81.1
Equity index futures and options	112.0	162.8	208.8	238.4	339.7	365.6	499.1

[1] Data collected by the International Swaps and Derivatives Association (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] Data for 1995 are not fully comparable with previous periods owing to a broadening of the reporting population. [3] Adjusted for the reporting of both currencies; including cross-currency interest rate swaps.

Sources: ISDA, Futures Industry Association, various futures and options exchanges and BIS.

In the interest rate swap market, new business amounted to $8,699 billion (a 39% increase in the notional volume of transactions over 1994). Although there was a notable increase in

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[29] ISDA gathers information on a semi-annual and voluntary basis from its members, who represent a large share of participants in the global swap market, but whose coverage may vary over time. In order to shorten the response and publication time of its data, ISDA recently decided to reduce the scope of its mid-year release but to leave intact the comprehensive report it publishes for year-end data.

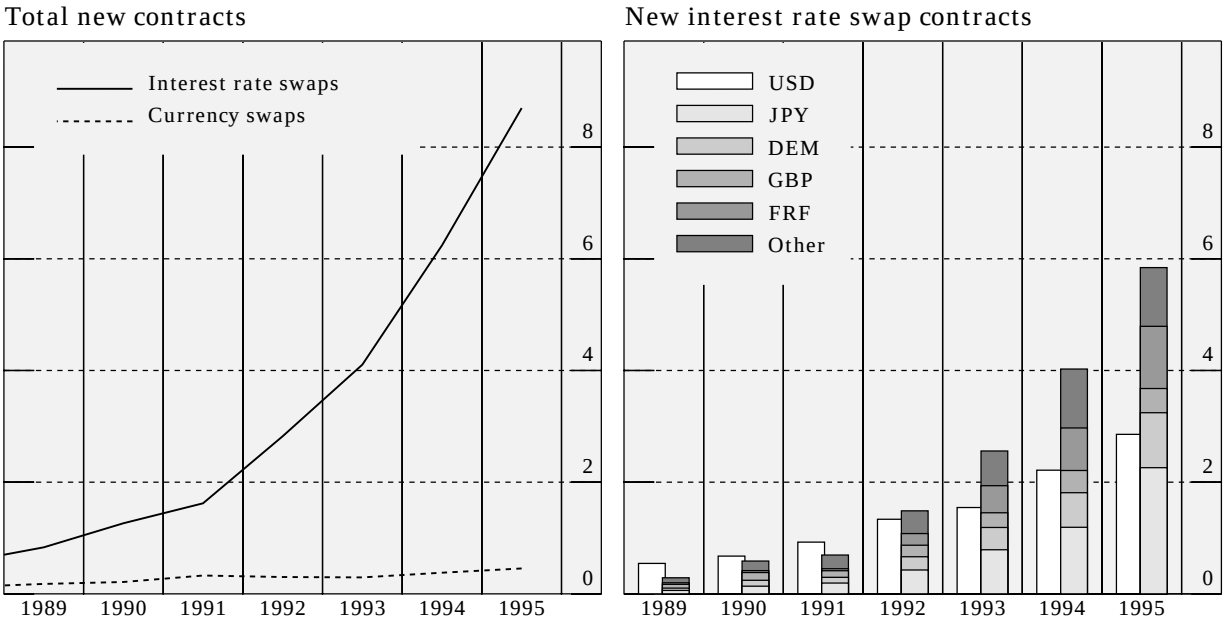
[30] For a more detailed analysis of recent trends in exchange-traded and OTC derivatives markets, see the 66th BIS Annual Report and the "Central Bank Survey of Foreign Exchange and Derivatives Market Activity", Basle, May 1996.

the volatility of US dollar and yen interest rates in the middle of the year, activity took place against a background of generally declining interest rates. The high level of global liquidity and the improvement in the credit quality of core participants appear to have been supportive of the market's expansion. In addition, bull market conditions spurred fixed income issuance and therefore probably generated a higher volume of swap-related business.

An analysis of new contracts by currency of denomination reveals that non dollar transactions expanded by 45%, compared with 29% for those involving the dollar. The US currency now accounts for only 33% of new business, against 74% in 1987 (when ISDA began publishing data). Business in yen was boosted by the volatility of financial market conditions arising from weak economic activity in Japan, the record level of the yen/dollar parity and significant monetary easing by the Bank of Japan. There was also a sharp expansion in several continental European currencies, which in the case of the German mark largely reflected the European benchmark status of German interest rates and active fund-raising by German financial institutions. In the case of the French franc, transactions seem to have been supported by economic uncertainty combined with a greater use of swaps by domestic institutional investors and a reversal of positions taken in earlier periods by non-residents.

Derivative contracts traded over the counter

Notional principal amounts in trillions of US dollars



Sources: ISDA and BIS.

The share of interbank business in total activity increased further (from 51% in 1994 to 57%). This proportion has been rising steadily since 1987, when it accounted for only 32% of total interest rate swap business. While in the early years the market derived much of its business from securities issues and capital market arbitrage, more recently financial institutions have made much more active use of swaps to hedge and trade short-term interest rate exposures. Swaps and related products have been used by a broadening array of economic agents but they have played an instrumental role in the competitive strategy of commercial banks, enabling them to garner new sources of income and to maintain their presence at the core of the financial system at a time when capital markets represent a growing challenge to traditional lending.

The active use of short-maturity swaps in interbank business helps to explain the further increase in the share of swaps with maturities of up to two years (from 49% to 54%) and in the average size of individual contracts (from $38 million to $40 million). This maturity shift occurred largely at the expense of the two to five-year band, whose share declined from 33% to 28%. The share

of swaps of over ten years has increased slightly in recent years but continues to be small (5%). The higher level of capital required to back longer-term instruments (given their higher potential replacement cost and therefore regulatory add-on factors) and the more limited liquidity of long-term securities used to hedge swaps possibly explain the lower volume of such business. One side-effect of the high proportion of short-term swaps is that the outstanding stock of interest rate swaps is expanding less rapidly than is suggested by the large volume of new transactions.

Main features of the interest rate swap market

Notional principal amounts, in billions of US dollars

Counterparty and currency	New swaps arranged							Amounts outstanding	
	1989	1990	1991	1992	1993	1994	1995	at end-1994	at end-1995
Total	**833.5**	**1,264.3**	**1,621.8**	**2,822.6**	**4,104.7**	**6,240.9**	**8,698.8**	**8,815.6**	**12,810.7**
Interbank[1]	318.0	484.5	761.7	1,336.4	2,003.9	3,199.5	4,989.8	4,533.9	7,100.6
Other[2]	515.5	779.7	860.0	1,486.2	2,100.8	3,041.4	3,709.0	4,281.7	5,710.1
US dollar	545.2	676.4	926.4	1,335.8	1,546.1	2,214.9	2,856.5	3,230.1	4,371.7
Japanese yen	61.8	137.4	193.6	427.6	789.8	1,192.0	2,259.3	1,987.4	2,895.9
German mark	41.4	106.0	102.6	237.2	399.3	619.3	984.5	911.7	1,438.9
French franc	27.5	34.2	35.6	209.2	485.1	761.6	1,113.5	461.7	1,219.9
Pound sterling	67.8	138.7	118.2	206.2	263.0	398.0	433.4	674.0	854.0
Other	89.9	171.6	245.4	406.6	621.4	1,055.1	1,051.6	1,550.7	2,030.3

[1] Between ISDA members only. [2] End-user and brokered.

Sources: ISDA and BIS.

Looking at the end-user segment of the interest rate market, business continued to be concentrated in North America and Europe (82% of new contracts). Although the yen is the second most popular currency of denomination, activity by Japanese and other Asian end-users remains modest. This surprising result (given the extent of yen-denominated activity) may arise from the offshore booking of transactions by Japanese users. Another noteworthy observation is that, in addition to their role as market-makers, financial sector entities also participate actively as end-users, accounting for the largest share of business (62% of new contracts with end-users). Corporations are the second most active group of users (32%), but the volume of new contracts barely expanded in 1995, following a sharp increase in 1994. Government entities are not major users of the market in relative terms (6%), with the growth seen last year reportedly deriving largely from contracts written by US government-sponsored lending agencies.

In the currency swaps sector, the recovery continued, following several years of lethargic activity until 1993. New contracts expanded by 20%, to $455 billion. Although end-users continued to account for two-thirds of the total, all of the expansion resulted from more active interbank trading. Transactions involving the US dollar on one of the legs grew by 9%, while others rose by 53%. As in the interest rate swap market, there was an increased concentration of activity in short-term contracts (from 28% to 36% of the total), and at the same time a significant reduction in the share of those ranging between two and five years (from 41% to 35%). There was also a slight decrease in the average size of contracts (from $35 million to $33 million). The lower level of activity in currency swaps than in interest rate swaps probably reflects the higher capital cost of such instruments given that transactions generally involve an exchange of principal. The higher potential credit exposure compared with interest rate swaps may also have limited the range of users to the most creditworthy. In the main, this instrument remains largely tied to primary issuance of securities, with a more limited use for interbank asset and liability management.

Main features of the currency swap market[1]

Notional principal amounts, in billions of US dollars

Counterparty and currency	New swaps arranged							Amounts outstanding	
	1989	1990	1991	1992	1993	1994	1995	at end-1994	at end-1995
Total	**178.1**	**212.8**	**328.4**	**301.9**	**295.2**	**379.3**	**455.1**	**914.8**	**1,197.4**
Interbank[2]	50.6	61.3	104.0	66.2	55.5	81.1	153.8	211.2	310.0
Other[3]	127.5	151.5	224.4	235.7	239.8	298.2	301.3	703.6	887.4
US dollar against other currencies	132.5	131.2	244.2	212.2	218.1	282.8	307.9	643.1	837.8
Between other currencies	45.6	81.6	84.2	89.7	77.1	96.5	147.2	271.7	359.6

[1] Adjusted for the reporting of both currencies involved in the swap transaction. [2] Between ISDA members only. [3] End-users and brokers.

Sources: ISDA and BIS.

Another interesting result of the ISDA survey is the increasing divergence between the pace of activity in OTC and exchange-traded markets. This is particularly true in the case of interest rate products, where the stock of swaps outstanding rose by a multiple of that of interest rate futures and options.[31] With OTC and exchange-traded markets being influenced by similar financial environments, this divergence probably reflects the fact that, following a period of intensive and extensive development, exchange-traded instruments are reaching the mature stage of their life cycle.[32] Structural factors such as the growth of large derivatives portfolios with offsetting exposures (a factor accentuated by the recent wave of mergers and acquisitions in the financial industry) and cash-based hedging strategies (through repos) have meant that exchange-traded markets are increasingly used only at the margin to hedge the net overall residual position of intermediaries. With some market participants expecting a further evolution in the direction of more complex structures, OTC markets could well reinforce their already dominant position.

Lastly, there was a further narrowing of bid/ask spreads on plain vanilla instruments as well as on some more complex structures. This was due to the large number of intermediaries active in OTC markets, the more active market-making role played by non-core participants (such as institutional investors), their growing sophistication and improved transparency resulting from the dissemination of software systems and financial data. Nevertheless, according to market sources, profit margins remain attractive in the case of emerging market instruments, correlation products and structures related to corporate financing transactions (for which fiscal and legal aspects play an important role). In spite of the pressure on margins, a strong presence in plain vanilla instruments is thought essential by most firms because of the opportunities it creates to generate more complex and rewarding business.

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[31] Such comparisons should, however, be made with some degree of caution. OTC trading entails a cumulative build-up of positions because the closing-out or modification of existing positions results in the writing of new contracts, whereas most exchange-traded positions are reversed before contract expiry. The distinction is also becoming somewhat artificial to the extent that financial institutions no longer treat exchange-traded and OTC business as separate activities but as interrelated transactions.

[32] This hypothesis appears to be supported by recent evidence showing that US banks are making less active use of futures but are further increasing their OTC positions.

V

THE MARKET FOR INTERNATIONAL ASSET-BACKED SECURITIES[1]

Introduction

The issuance of international asset-backed securities (ABSs) has experienced a sharp expansion recently.[2] If the trend of the first three quarters of 1996 continues, the volume of issues launched in the year as a whole could reach $90 billion, more than three times the level of activity recorded in 1995. ABSs were first introduced in the US mortgage market in the early 1970s and made their appearance in the public segment of the eurobond market in the mid-1980s. In the second half of the 1980s, most international business consisted of sterling issues launched by UK-based specialist mortgage lenders (see the graphs on pages 44 and 45). There was subsequently some diversification in the assets being securitised, but international activity only began to expand notably in 1995, with a sharp increase in the issuance of global bonds backed predominantly by US-originated credit card and automobile lease receivables. Although several European countries and some Asian countries have in recent years introduced legislation aimed at facilitating ABS issuance, domestic and international business for non-US names remains modest (see the table on page 43). This article focuses on the main features of ABSs launched in the international securities market and considers the factors that have constrained their development outside the United States.[3] It also looks at some of the effects of ABSs on US financial market volatility in early 1994.

The process of securitisation

There are two broad definitions of securitisation. Until the mid-1980s the term was used in connection with the replacement of traditional bank lending by the issuance of securities in the capital markets. It has since been used in a narrower sense to refer to the issuance of asset-backed securities, which are tradable instruments supported by a pool of loans or other financial assets.[4] The interest and principal payments on the loans provide the cash flows required to pay interest and principal to investors. The issuance of such securities is generally conducted through an off-balance-sheet process involving a special-purpose vehicle (SPV).[5] The first stage in this process is the selection by the transaction's originator (the company or financial institution whose business has given rise to the receivables) of a pool of assets from its portfolio. The assets chosen are usually homogeneous with respect to credit quality, maturity profile and interest rate risk, which simplifies the evaluation and pricing of the pool. The second stage involves their sale to the SPV, which creates

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1 This article was prepared by S. Jeanneau of the Monetary and Economic Department of the BIS. G. Glinni and D. Pêtre provided statistical assistance.

2 Throughout this article the term "asset-backed securities" includes securities backed by mortgages as well as non-mortgage assets. This is in contrast to US practice, where it refers to non-mortgage securities only.

3 There is often no clear-cut distinction between domestic and international issues. In some cases, issues are marketed to both domestic and international investors but are documented as international transactions. For example, most UK-originated deals are sold largely to domestic investors but for fiscal and other reasons are structured as eurosterling issues (with stock market listings in either London or Luxembourg). In other cases, issues are domestic in nature but actively distributed offshore.

4 For a more detailed treatment see: "Asset-Backed Securitisation in the United Kingdom", *Bank of England Quarterly Bulletin*, May 1994, pp. 134-141 and *SECURITISATION, An International Perspective*, OECD, Paris, 1995.

5 The process is not always off-balance-sheet: some continental European countries have well-established systems for the on-balance-sheet securitisation of mortgages and local authority receivables. Such securities are issued by specialised financial institutions to fund long-term fixed rate assets. The interest rate risk resulting from interest rate mismatches is shifted to investors.

Ratings and credit enhancement

Issuers of ABSs usually seek a credit rating from at least one of the major rating agencies. The agency will assess an instrument's creditworthiness by assigning a rating reflecting the likelihood of receiving the promised payments of interest and principal on a full and timely basis. Given that ABSs cannot be evaluated on the strength of the originating institution's credit rating, each security must be assessed individually, taking account of a number of factors, including:

- the quality of the assets constituting the collateral. This involves an examination of the historical performance of the receivables and simulations based on a number of stress tests. On this basis, the rating agency will indicate an amount of credit enhancement (explained below) required to obtain a desired rating;
- the solidity of the issue's financial structure, which is scrutinised to determine, inter alia, whether the transformation of payments (say from monthly to quarterly) or prepayment risk on the underlying assets is supported by adequate internal liquidity mechanisms or whether the originator possesses the information systems necessary to accurately track payments and delinquencies;
- the integrity of the structure's legal arrangements, which must be seen to afford investors adequate protection. For example, in the event of delinquency, the position of end-investors relative to other creditors must be sufficiently clear and strong to ensure that contractual payments are made.

Most ABSs include some form of external or internal credit enhancement providing investors with a safeguard in the event that payments due from the underlying borrowers are not received. Such enhancement raises the issuer's credit rating above that which would have been obtained had the underlying assets been rated on their own merit. The rating agency will usually require a degree of protection based on a multiple of the historical loss experience of the particular assets backing the security. In the United States, credit enhancement is provided either by one of the government-sponsored lending agencies or by private sector financial institutions. Because there are no state-sponsored agencies in the euromarket, such protection is achieved through private sector arrangements.

There are a variety of external enhancement methods, including pool insurance, irrevocable letters of credit and cash collateral accounts, as well as internal arrangements such as over-collateralisation and subordination. Under pool insurance, the most common form of external enhancement, a third party, which is often an insurance company, provides an insurance contract underwriting interest and/or principal payments on the pool of assets. The issuer can also arrange a standby letter of credit, which shifts the risk of default to a bank rather than an insurance company. Another external method is the cash collateral account, where a financial institution (often the originating bank, to signal its confidence that a default will not occur) makes a loan to the SPV, with the funds being redeposited by the SPV with the financial institution until required. Rating agencies usually apply the "weak link" principle to such external enhancements, whereby the rating of the security can be no higher than that of the external provider.

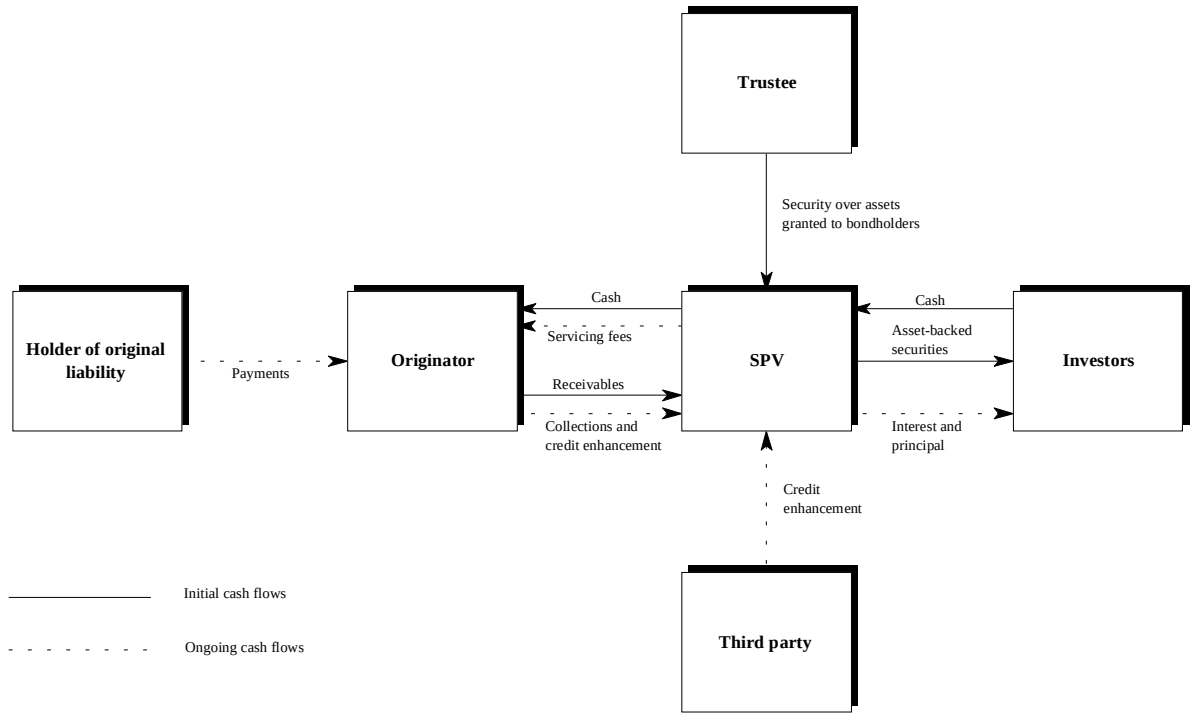
The most common internal technique is subordination, which involves the creation of at least two classes of securities within a given issue, with a senior tranche having a prior claim on the cash flows from the underlying pool of assets. Senior tranches often carry significantly higher credit ratings than subordinated ones and, consequently, offer lower yields. Sometimes the subordinated tranches are retained by the originator or are privately placed with institutional investors.* A similar rationale underlies the alternative technique of over-collateralisation, whereby the value of the underlying assets backing a given security exceeds its face value. The excess collateral is usually held in a special account or a subordinated tranche. Because of their generally favourable repayment histories, conservative financial structures and credit enhancement arrangements, most publicly placed ABS issues enjoy high credit ratings.

* Such structures raise a number of legal and regulatory questions as to whether a "true sale" has really occurred. In some jurisdictions, subordinated tranches may not qualify for off-balance-sheet treatment.

a legal separation of the underlying assets from the originator. In the event of the originator's bankruptcy the pledged assets will remain in place to service the issue on the terms originally agreed (this makes the SPV "bankruptcy remote" in market terminology). The SPV then finances the purchase of the assets by issuing securities to investors, while holding the assets in trust on their behalf.[6] Once the securities have been issued, the interest and principal payments on the underlying

6 The trust ensures, among other tasks, that investors receive the payments to which they are entitled.

The securitisation mechanism



assets are collected and managed for a fee by a "servicer" (often the originator) and are rechannelled to investors through the SPV.[7]

Main features of ABSs

The most widely used assets in off-balance-sheet securitisation are mortgages, consumer and trade receivables, student loans and automobile loans. Although the growing recourse to swaps and other derivatives is providing originators with a greater degree of latitude in restructuring an issue's cash flow, the type of underlying asset remains an important element in the determination of its basic characteristics. Thus, longer-term fixed rate underlying assets are often associated with longer-term fixed rate issues, while assets that are repriced frequently or are acquired on a revolving basis tend to back floating rate issues.

One important feature of ABSs is that the early repayment option given to the holders of the underlying liabilities obliges issuers to include an early call option in the securities issued, thus introducing uncertainty with respect to their final maturity. This is particularly the case for fixed rate loans or mortgages, where a decline in interest rates will typically encourage existing borrowers to seek refinancing at lower rates and thus repay their liabilities ahead of the originally agreed repayment schedule (and vice versa in the event of an increase in interest rates). However, even in the case of floating rate underlyings, where the path followed by interest rates will have a weaker impact on the average maturity of securities, there are other factors influencing their average life, such as turnover in the housing market (resulting in the closing of the original mortgage), corporate mergers and acquisitions (which often lead to a restructuring of outstanding debt) or a rise in delinquency rates (which causes the pool of underlying assets to shrink). Because of the reinvestment risk inherent in these securities, issuers have been obliged to offer investors a premium over non-callable issues of similar credit quality and maturity (the difficulties created by this feature are discussed in the box on page 40).

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7 In addition to the isolation of the receivables, the SPV performs a number of related operations such as the restructuring of cash flows and the arrangement of credit enhancement mechanisms.

Although substantially more complex structures are available, most ABSs can be broadly classified as either "pass-through" or "pay-through" securities. Under pass-through arrangements, the owner of the security owns a pro rata share of the underlying asset pool and the issuer acts essentially as a conduit, collecting payments of interest and principal and distributing them among the investors. The first US mortgage-backed securities (MBSs) were constructed along these lines, but the need to offer investors greater choice and certainty of maturity led to the introduction in 1983 of pay-through structures (also called "collateralised mortgage obligations", or CMOs). These securities are structured to have sequential repayment tranches, with all payments of principal (including prepayments) being initially directed to the first tranche and then successively to the others.[8] Thus, depending on their preferences, investors can choose to purchase either short maturity or long maturity tranches. Prepayment risk has been the main driving force behind the wide assortment of structures that have characterised the MBS market. The pay-through structure is now widely utilised on both mortgage and non-mortgage-backed issues. Other popular transformations of cash flows include the creation of interest-only or principal-only tranches, the conversion of floating into fixed rates (and vice versa) and, as mentioned above, the segregation of tranches by seniority of claims. ABSs enable issuers and intermediaries to perform a complex restructuring of cash flows to match the maturity, liquidity and risk preferences of investors. When used in conjunction with other risk management techniques, such as derivatives, ABSs can greatly enhance a financial institution's control over market and credit risks.

The ABS market has also witnessed further innovation in securitisation techniques, an important factor underlying its diversification into non-mortgage assets. A significant development was the introduction at the beginning of the 1990s of revolving-type structures (known as "Master Trust"), which, once established, permit the ongoing issuance of new tranches of securities through the continuous replenishment of underlying asset pools.[9] Such facilities provide issuers with a more flexible, cheaper and rapid means of managing fluctuating stocks of underlying assets and is particularly well adapted to the securitisation of consumer debt such as credit card receivables. The standardisation of issues offered by Master Trust-type facilities is also beneficial to investors since it facilitates the evaluation of risk. Another important innovation has been the development of asset-backed commercial paper facilities, which use receivables generated by commercial activity (such as trade or consumer debt receivables) to support the issuance of short-term promissory notes. Under such facilities, maturing receivables are continuously replaced by new ones from one or more originators.

Benefits of ABSs

In addition to the above-mentioned benefits, one of the most attractive features of securitisation is that it allows banks and other financial institutions to remove assets from their balance sheets, thus liberating capital or other liabilities for other uses.[10] If the process is repeated, the servicing fees that are earned for managing the underlying assets generate a growing flow of income, helping to boost the originator's return on assets. Indeed, securitisation permits the exploitation of a comparative advantage by institutions who specialise in the origination of loans and those which have the capacity to take on additional assets on their balance sheets. The transformation of previously illiquid assets into tradable securities that are sold to investors also enables financial institutions to make more flexible and efficient use of their balance sheets. In particular, the greater liquidity of traded assets permits better management of credit risk through the reduction of excessive concentration in particular areas or the diversification of exposure into sectors with promising risk/return profiles. ABSs enable originators to remove the market risk resulting from interest rate

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8 Some US CMO issues have comprised more than 100 tranches.

9 Before the introduction of the Master Trust technique, each securitised transaction required the creation of a new trust.

10 Provided, of course, that supervisors are satisfied that investors have no recourse to the originator.

Repayment risk, duration and market volatility

Owing to duration-related effects, the global financial market reversal of early 1994 had a marked impact on volatility and liquidity in the US mortgage-backed securities (MBS) market. Duration is defined as the weighted average life of the present value of all future cash flows (both interest and principal) derived from a fixed income instrument. Of the various measures of duration developed over the years, a commonly used one provides an estimate of the price sensitivity of a fixed income asset to a given change in interest rates.* This estimate is used for standardised comparisons of fixed income instruments' sensitivity and for calculations of the impact of interest rate changes on the aggregate (or component) value of portfolios. Although financial institutions follow widely differing investment and trading strategies, duration is a key operational variable since market participants will often attempt to adjust it in anticipation of interest rate changes. For example, a fund manager expecting interest rates to rise might try to mitigate some of the negative impact of this rise on the value of the portfolio of assets by reducing its duration.

Returning to the MBS market, the unexpectedly sharp increase in US interest rates led to a decline in mortgage refinancing and therefore to a pronounced increase in the duration of outstanding MBSs. It also led to a reduction in the origination of new MBSs. The longer average duration of portfolios containing MBSs obliged banks, investment dealers and institutional investors to take offsetting measures, such as sales of longer-term bonds or interest rate derivatives, in order to bring it back to a desired level. These rebalancing transactions exacerbated the increase in market volatility that accompanied the upward shift in bond market yields.

The bond market reversal also had negative implications for other types of MBSs. Prepayment risk had over the years led intermediaries to develop a whole range of securities dividing principal and/or interest payments, such as principal-only (PO) and interest-only (IO) securities. The creation of securities encompassing stable repayment schedules was often accompanied by tranches of "companion" bonds bearing most of the repayment uncertainty and, consequently, offering significantly higher yields than the stable tranches. POs represent a claim on a stream of mortgage principal payments. They pay no coupons and are sold at a deep discount, with the return resulting from the payment of the par value of mortgages when they are repaid. If prepayments rise, as they do in an environment of declining interest rates, investors are repaid the par value earlier than expected, and the return on the security will be higher than originally projected. This is why they are called "bullish" instruments. However, if prepayments dwindle, investors can be left for long periods with holdings of securities paying no interest. This is what happened in early 1994. Investors were faced with sharp declines in the market value of these securities and found it difficult to liquidate their positions because the secondary market had dried up.

POs have been accompanied by tranches of IO securities. Again, such securities pay no coupon and are sold at a deep discount from a notional principal amount based on a given stock of outstanding mortgages. Because IO tranches pay interest only on the remaining principal outstanding, the repayment profile has an important impact on their return. Rapid repayment leads to a reduction in interest payments, to zero in the extreme case where the whole principal is repaid. Prices of IOs rise when interest rates move up (because prepayments decline) and fall when interest rates go down, making them "bearish" instruments. IOs were battered in 1992 and 1993 by a sharp increase in repayments. They performed strongly in 1994, but reportedly their prices did not rise by as much as they had fallen in the previous two years.

The bond market reversal reminded investors of the peculiar risk profile of asset-backed securities, namely that an extension of duration was as likely as early repayment (something they had seemed to forget during the bull market of the early 1990s), and of the lack of liquidity of many complex structures.** As a result, demand for complex CMOs and other "exotic" structures declined substantially following the first quarter of 1994.

* More specifically, of the percentage change in the price of a security if yields change by 100 basis points. Instruments that have a longer duration are more price-sensitive. ** A feature of these instruments is that because they can be prepaid or extended at any time they have uncertain maturity profiles, an uncertainty which is exacerbated in periods of market volatility. Early repayment or maturity extension also arises at the most inconvenient time for investors. A decline in interest rates will lead to an early call of issues, obliging investors to seek lower-yielding alternatives. Conversely, a rise in interest rates will lead to an extension of duration at a time when investors would prefer to invest in higher-yielding securities.

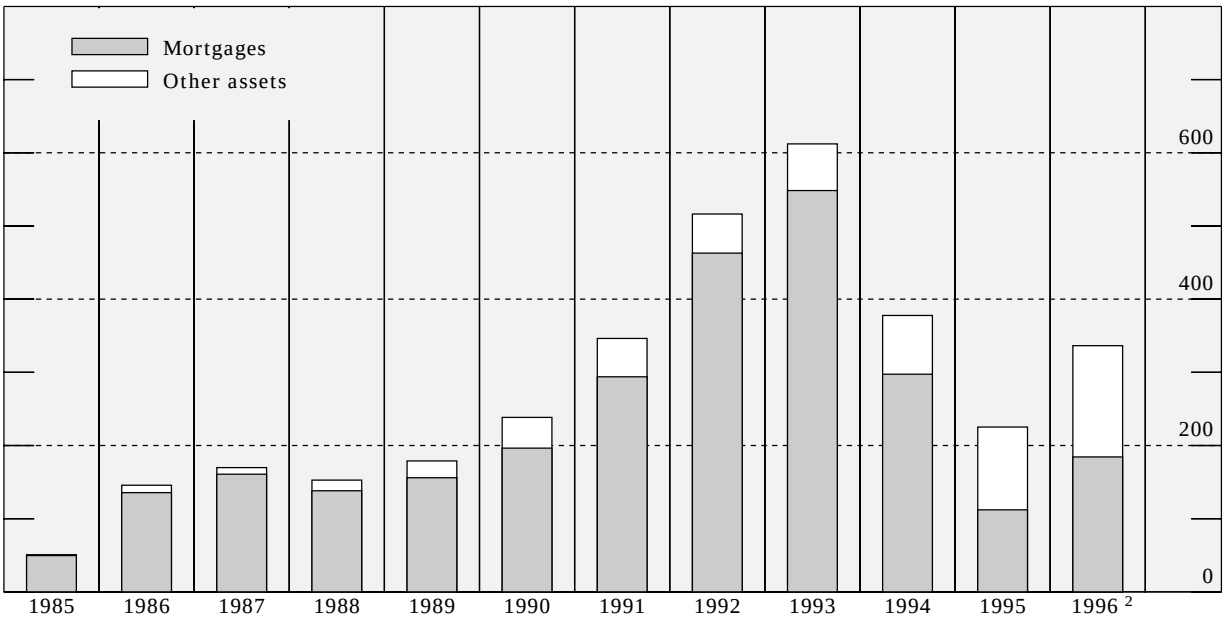
mismatches by transferring it to investors. Securitisation also presents a number of attractive features to investors, with perhaps the most important being collateralisation and the traditionally higher returns relative to other highly rated debt securities. Other benefits to investors include liquidity and portfolio diversification (particularly in market segments where they have had only limited access).

The development of securitisation in the United States

ABSs were introduced in the United States in the 1970s to facilitate mortgage financing. Mortgage-backed securities now play a major role in the US financial system, accounting for more than 50% of US mortgage financing and representing the largest single group of securities outstanding after the US Treasury bond market.[11] From the second half of the 1980s, the techniques developed in the mortgage market were applied to a widening range of US assets (see the graph below). In addition to mortgages, credit card receivables and automobile loans, which make up the bulk of business in the US market, ABSs have been used to securitise numerous other assets such as student loans, boat loans, equipment lease receivables, inventory promissory notes, trade receivables and aircraft lease receivables. The ABS structure has also been used to repackage outstanding securities such as high-yielding corporate bonds for resale to investors. Commercial paper (CP) programmes have also become highly popular since their introduction in 1983, with asset-backed notes reported to have accounted for a substantial share of the growth of the outstanding stock of US CP in recent years. US banks have taken a leading role in developing the asset-backed CP market through the establishment of programmes backed by credit card receivables and the provision of credit enhancements such as letters of credit or liquidity support facilities.

Announced asset-backed bonds in the US domestic market [1]

In billions of US dollars



[1] Includes public and privately-placed issues. [2] First three quarters of 1996 annualised.

Sources: Duff and Phelps, Salomon Brothers and BIS.

The rapid development of securitisation in the United States resulted from a unique combination of conjunctural, structural and idiosyncratic factors, including restrictions on interstate banking (and, related to this, a large number of geographically dispersed banks), the establishment of government-sponsored lending agencies,[12] a favourable legal environment, temporarily high interest

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11 *SECURITISATION, An International Perspective*, page 23.

12 Government or government-sponsored agencies created by the US Congress to facilitate the financing of certain economic agents such as farmers, homeowners and students. These agencies purchase assets such as loans and mortgages and repackage them into securities that are sold directly to investors. Some, such as the Federal Home Loan Bank System and the Student Loan Marketing Association, operate primarily as portfolio lenders, while others, such as the Federal National Mortgage Association and the Federal Home Loan Mortgage Corporation, guarantee residential mortgages for fees and use the mortgages as collateral to support mortgage-backed securities.

rate volatility (particularly in the 1970s and the early 1980s), the growing importance of institutional investors and capital market financing, and strong pressures in the 1980s on the balance sheets of banks and thrifts.[13] These factors encouraged banks, in particular, to shift the emphasis of their activity away from traditional lending and towards fee-earning business. Banks suffering from a downgrading of their credit ratings but still able to originate high-quality assets found securitisation to be an increasingly cost-effective means of funding relative to wholesale market borrowing.

The spread of securitisation outside the United States

ABSs made their appearance in the public segment of the eurobond market in the latter part of the 1980s in the form of eurosterling issues launched by UK-based specialist mortgage lenders (SMLs)[14] on the basis of techniques first perfected in the United States. Business expanded briskly until mid-1989, fuelled by buoyancy in the UK housing market, increased mortgage lending competition and the favourable differential then prevailing between mortgage and interbank lending rates (the main initial source of profits for SMLs). The volume of new business originated in the United Kingdom then expanded at a fairly sustained pace until 1991, with the quarterly pattern of activity being influenced largely by the mortgage/interbank rate differential. There was, however, a drying-up of business in 1992 and 1993, chiefly reflecting the decline in new mortgage commitments resulting from the sharp drop in the UK real estate market. Investor confidence was also affected by the financial difficulties faced by a prominent SML and the downgrading of insurance companies providing pool insurance. An announcement by the Bank of England that, in order to conform with the Capital Adequacy Directive, banks would face a less favourable risk weighting on their holdings of mortgage-backed securities than on mortgage assets (although this was not implemented) created further uncertainty for potential bank originators. As investors' doubts about the viability of SMLs grew, banks came to supplant these entities as originators. Since then activity in the UK mortgage-related market has been patchy. The limited expansion in the securitisation of sterling mortgages reflects, inter alia, the fact that the strong capital position of UK banks has weakened the incentive to seek alternative sources of finance. Another deterrent may have been the high cost of securitisation relative to banks' cost of wholesale funds.

It is important to note, however, that the less favourable economic climate prevailing in the industrial world in the early 1990s had a negative impact on ABS issuance in some other market segments as well, either domestic or international. Nevertheless, as from 1990 there was some diversification in the type of assets being securitised in the euromarket, away from UK-originated residential mortgages and towards US-originated (and therefore dollar-denominated) credit card receivables, automobile loans, student loans and high-yielding bonds of various national sources. Much of the notable expansion seen in the euromarket since 1995 has taken place in those market segments. Some large issues have also been related to European corporate debt restructuring arrangements. Reflecting the origin of the underlying assets, the US dollar accounted for 80% of total issuance in the first three quarters of 1996, followed at a considerable distance by sterling (6%). Although diversification outside these two currencies has so far been limited, deals have nevertheless been denominated in several other currencies.[15] There has also been further evidence of diversification away from US and UK originators, with structures arranged for a growing number of

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[13] Arising from the non-performance of assets and the deregulation of interest rates offered on large deposits.

[14] Financial institutions specialising in certain segments of the mortgage market and financing themselves in the wholesale market.

[15] It should be borne in mind that the currency of denomination of transactions has not always been directly related to the securitisation of claims in that currency's country of issue. For example, the few German mark denominated issues launched since 1993 have generally been created by US, Netherlands or Luxembourg-based vehicles and structured on high-yielding non-German sovereign or corporate loans and securities, and more recently on US credit card receivables.

Announced asset-backed bonds in the domestic and international markets

In billions of US dollars

	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996[1]
US												
Domestic	50.8	145.7	169.8	152.7	178.9	238.4	346.3	516.3	612.1	377.7	225.2	336.4
International	1.1	0.7	0.8	0.2	1.3	10.1	7.7	2.0	5.4	6.4	19.8	64.7
Canada												
Domestic			0.3	0.6	1.6	1.9	4.5	6.0	6.6	3.6	1.7	1.6
International	0.2	0.5	0.0	0.1	0.2	0.0	0.0	0.0	0.0	0.4	0.0	0.1
UK[2]												
Domestic			–	–	–	–	–	–	–	–	–	–
International			1.4	5.9	4.1	3.8	5.9	1.1	3.2	4.9	1.9	4.8
France[3]												
Domestic					0.1	0.5	1.3	1.0	1.0	0.5	1.9	12.8
International									0.3	2.1	0.5	0.0
Sweden												
Domestic						–	–	–	–	–	–	–
International						0.2	0.2	0.8	0.3	0.5	0.2	0.0
Germany												
Domestic						0.2	0.0	0.0	0.0	0.0	0.0	2.7
International									0.2	0.1	0.9	0.9
Italy												
Domestic						0.2	0.1	0.2	0.0	0.8	0.1	0.5
International											0.7	0.0
Spain												
Domestic							0.1	0.0	1.3	0.5	0.1	0.0
International										0.1	0.7	2.3
Ireland												
Domestic										0.2	0.0	0.0
International								0.5	0.0	0.8	0.7	5.9

[1] First three quarters of 1996 annualised. [2] All sterling issues have been launched in the euromarkets. [3] French issues exclude domestic repackagings of interbank loans.

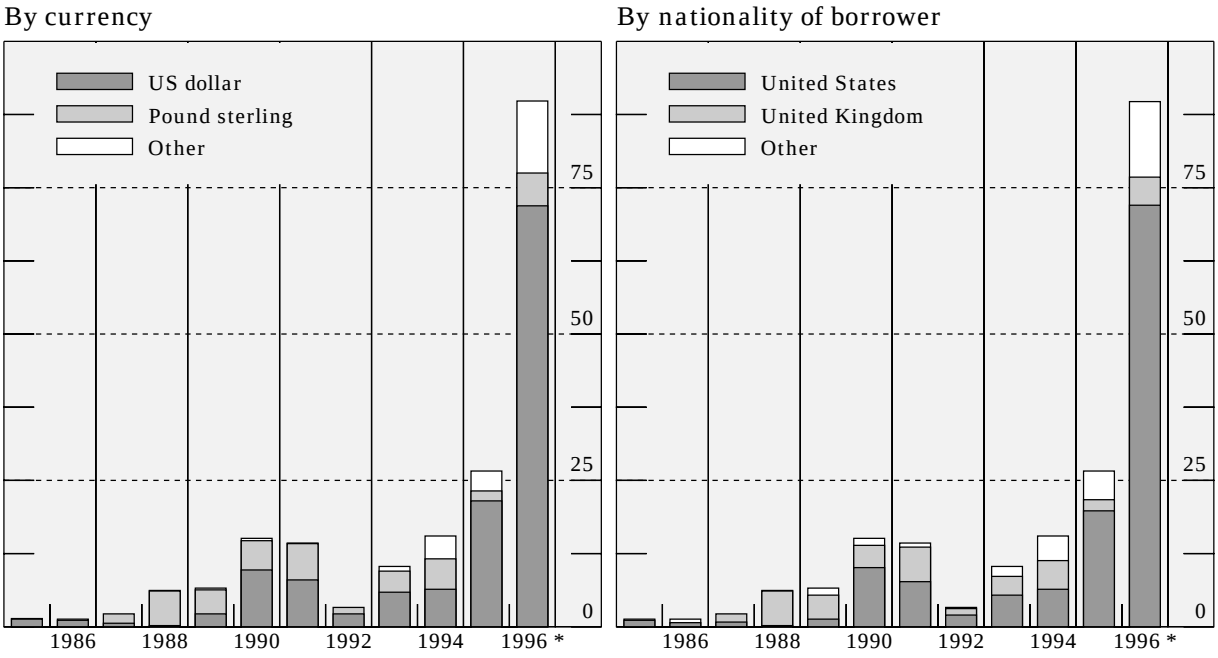
Sources: Bank of England, Bear Stearns, Duff and Phelps, Euromoney, IFR, Salomon Brothers, Standard and Poor's, TD Securities and BIS.

Establishing accurate statistics on asset-backed securities is a complex undertaking since market participants do not always distinguish between issues made in the domestic and the international markets. Observers have also raised a number of questions concerning the extent to which some issues represent the result of a "true" securitisation process and whether others are truly international. For example, in the early days of the French ABS market much of the activity consisted in the repackaging of interbank loans rather than the securitisation of diversified pools of loans to non-bank entities. In the case of the recent expansion of ABS issuance in the euromarket, some participants have argued that the "global"[*] label given to many issues is misleading since much of the distribution takes place in the United States or represents purchases made by US institutional investors under Rule 144a.[**] This means that the regulatory and market practices followed in the various countries can have an important influence on the relative share of domestic and international issues in different currencies. Statistical coverage is also complicated by the fact that securitisation in international markets can take a variety of forms, such as traditional publicly and privately placed eurobonds, euro-medium-term notes (EMTNs) and euro-commercial paper (ECP), not all of which can always be clearly identified as asset-backed. The wide variety of structures has made it difficult to establish market trends. The analysis in this article focuses on bond issues made in the international market, but for purposes of comparison available data on domestic activity are also presented.

[*] Global bonds were introduced by the World Bank in 1989 as large primary market offerings made through international syndicates in Asia, Europe and North America. Key features of such issues include exemption from US seasoning requirements and withholding tax, and provisions for easy cross-market trading and clearing. [**] Rule adopted by the US Securities and Exchange Commission (SEC) in 1990 and establishing conditions under which private placements can be freely traded among sophisticated investors without endangering their exemption from SEC registration.

Announced international asset-backed bonds

In billions of US dollars



* First three quarters of 1996 annualised.

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

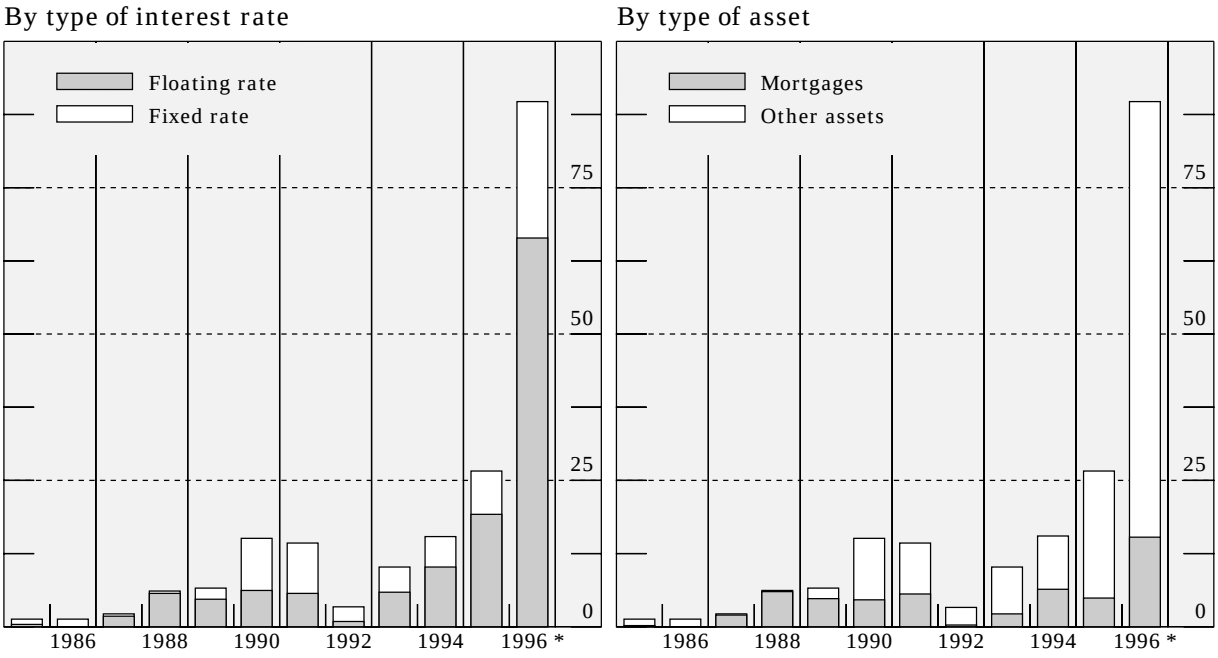
continental European issuers (including the first deals for a German non-financial firm) and the introduction of such instruments in Asia (most notably for borrowers from China, Hong Kong, Indonesia, Japan and Thailand).

Non-mortgage assets accounted for over 83% of international ABS issuance in the first three quarters of 1996. Of the $67.3 billion of ABSs launched in the international market over that period, issues backed by credit card receivables represented more than 40% ($29.1 billion), followed by mortgage-related issues ($11.5 billion), bonds backed by automobile leases ($8.1 billion) and student loan structures ($6.8 billion). The remainder ($11.8 billion) consisted of issues backed by a variety of assets such as outstanding high-yielding developed and developing country securities, foreign currency receivables (under structures established by Latin American securitisation vehicles), second mortgages, aircraft leases, consumer and corporate loans, and a unique Spanish issue securitising debt related to the country's nuclear industry. Strong euromarket investor demand in 1996 for highly rated floating rate assets created a fertile ground for the introduction of floating rate structures, with the result that almost three quarters of the mortgage and other asset-backed issues launched over that period were made on that basis. Global bonds accounted for 75% of the total, but the small size of many such issues (launched either on a stand-alone basis or as part of multi-tranche offerings) and their sale to Rule 144a market participants raises questions concerning the true extent of their international distribution.

In spite of euromarket investors' reported aversion to complex structures and features such as prepayment risk, there are signs that such securities are now meeting with a better reception. This was illustrated in 1996 by the launch of a large number of sizable issues (in excess of $500 million). These included a $4 billion multi-tranche deal for an aircraft leasing company, with a floating rate portion of $3.3 billion, which was the largest ABS ever launched in the international market. Spreads over benchmark rates on new US dollar issues have also narrowed appreciably relative to highly rated plain vanilla securities (to as low as 7 basis points on some recent FRNs),

Announced international asset-backed bonds

In billions of US dollars



* First three quarters of 1996 annualised.

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

while the notional and effective duration of issues backed by credit card receivables and other "novel" types of asset has lengthened. Spreads are unlikely to disappear entirely, however, because of the greater perceived market and liquidity risks of such complex transactions.

Factors explaining the modest volume of business outside the United States

Although domestic and/or international ABSs have emerged in a growing number of countries in recent years, activity outside the United States has so far been modest, and much of the increase in international business has resulted from the export of US-originated assets to the euromarkets. Moreover, even in countries where activity has expanded the most it still affects only a small fraction of the assets that can potentially be securitised. Some of the forces conducive to securitisation have been present in several countries, but it appears that the particular confluence of supportive factors found in the United States has not been seen elsewhere. The limited popularity of securitisation outside the United States reflects both structural and cyclical factors.

- Firstly, as recently as the early 1990s few countries had established a legal and regulatory infrastructure favourable to securitisation. Although significant progress has since been made in this area, the framework adopted by a number of countries continues to contain provisions that inhibit a large-scale development of securitisation or retains legal ambiguities that are sufficient to act as a barrier to transactions. Equally important has been the heterogeneity of legal and regulatory arrangements. This has been of particular relevance for European securitisation, where the potential size of the market has been further fragmented by the variety of national currencies. The lack of homogeneity and the resulting customisation of transactions have reduced the potential economies of scale available to originators and constrained secondary market liquidity.[16] The absence of US-style state-sponsored lending agencies may also have been an inhibiting factor.

[16] For example, documentation on such debt is generally not standardised and reliable historical data on payments are often not available. The high cost of cross-currency swaps in some of the less liquid currencies has also acted as a deterrent.

- Secondly, the need for off-balance-sheet securitisation has been dampened in some countries (particularly in continental Europe) by the prevalence of strong universal banking systems, the limited role played by institutional investors and the correspondingly modest importance of private sector capital market financing. This has been compounded by the existence of well-developed and state-supported local mortgage financing systems.
- Thirdly, even in countries where the infrastructure has been supportive of securitisation (such as Australia, Canada and the United Kingdom), and where capital market financing is highly developed, market participants have not sought to use the technique on a large scale. This lack of interest in securitisation is largely explained by the relatively strong balance-sheet position of these countries' financial institutions and thus weaker funding pressures. Other idiosyncratic features of their financial systems have also been mentioned, such as the prevalence of adjustable rate mortgages or the high concentration of banking systems.
- Fourthly, the range of underlying assets that can be securitised is generally narrower in continental Europe than in English-speaking countries. This is particularly the case for consumer debt, where the generation of credit card receivables is limited owing to the predominance of debit cards or to the existence of credit cards with short repayment periods.
- Fifthly, conjunctural factors restricting securitisation outside the English-speaking countries have included the recent slowdown in economic activity, the depressed condition of real estate markets and weak private sector demand for credit.
- Lastly, the reported conservatism of many euromarket investors, who tend to focus predominantly on well-known names, has curbed demand for complex and often less liquid securities.

Overall, it appears that banks and other financial institutions outside the United States have in recent years not experienced the combination of capital and funding pressures which could have acted as a catalyst for issuance within a favourable legal and regulatory environment.

The future of the market

In spite of the uneven development of the ABS market outside the United States, there are reasons for believing that the market will experience further expansion in the coming years. On the supply side, recognition by the authorities of the advantages offered by securitisation should lead to a lifting of remaining legal or regulatory barriers. The liberalisation of financial systems and, in particular, reduced state participation in the provision of credit and financial services are likely to lead to further competitive pressure on the banking systems of certain European and Asian countries. This will probably induce financial institutions to attach greater importance to methods designed to increase the return on capital. Even in countries where financial systems are facing a lower degree of pressure, the flexibility offered by ABSs for asset/liability management purposes is likely to be increasingly appreciated. Much will also depend on the extent to which financial institutions judge securitisation to be a cost-effective financing technique. The opportunity given by ABSs to keep relationships and ancillary business without tying up capital in a context of low margins on loans to creditworthy borrowers is already providing a renewed incentive to securitise, as illustrated by the recent securitisation of $5 billion worth of corporate loans by a UK clearing bank. Securitisation may also be used as a competitive tool by new specialised lenders to enter markets dominated by traditional bank lenders. On the demand side, the growth of institutional investors and their willingness to diversify their portfolios into new types of asset offering various degrees of risk may well create demand for ABSs. Greater investor familiarity with such structures should also be a positive element.