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3. Derivatives markets

The most recent data published by the BIS on over-the-counter (OTC) market activity show a further significant increase in notional amounts outstanding in the first half of 2000. This was in sharp contrast with the pattern of activity seen on exchanges, where open interest increased modestly over the same period. Turnover on exchanges has generally been subdued since the third quarter of 1998, when the announcement of a debt moratorium by Russia led to turbulence in financial markets. It should be noted, however, that the divergence observed between exchange-traded and OTC business is not a recent development; the gap between the two markets has been growing since the early 1990s. While this dichotomy probably reflects the comparative advantage of OTC markets in the structuring of specially tailored risk management products, it may also have been related to the changing nature of global capital market financing and hedging activity (see below).[17] Lastly, more recent data on exchange-traded derivatives markets show that turnover contracted sharply in the third quarter of 2000, owing in part to calmer market conditions in the early part of the quarter.

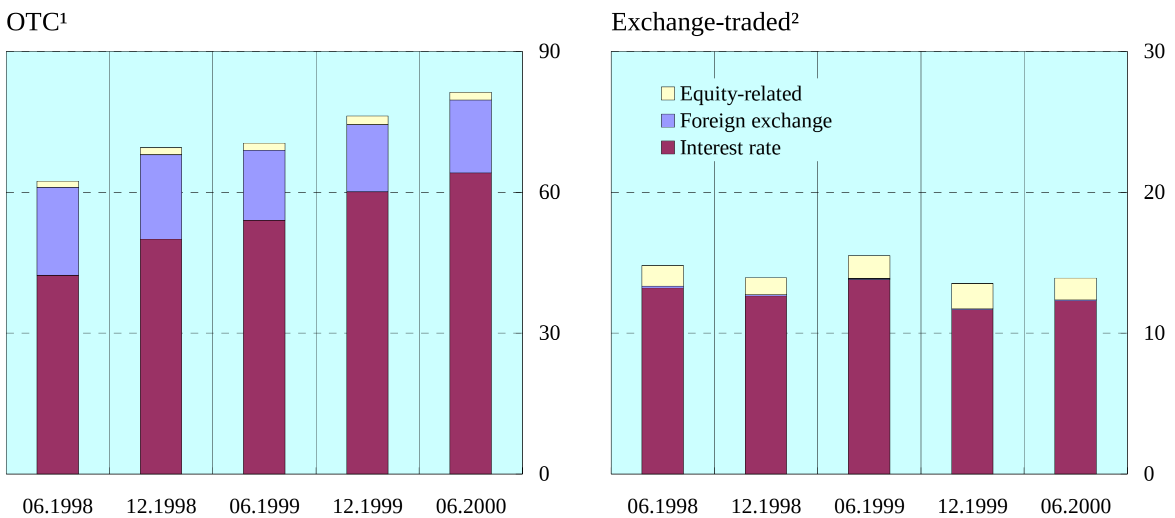
Exchange-traded instruments: slowdown highlights growing divergence with OTC market

Activity in exchange-traded markets fell sharply in the third quarter of 2000, with the dollar value of turnover declining (by 18%, to $85.7 trillion). This represented the most pronounced contraction since the fourth quarter of 1999, when business was affected by the changeover to the new

Graph II.3.1

Positions in global derivatives markets

In trillions of US dollars



¹ Notional amounts outstanding. ² Open interest.

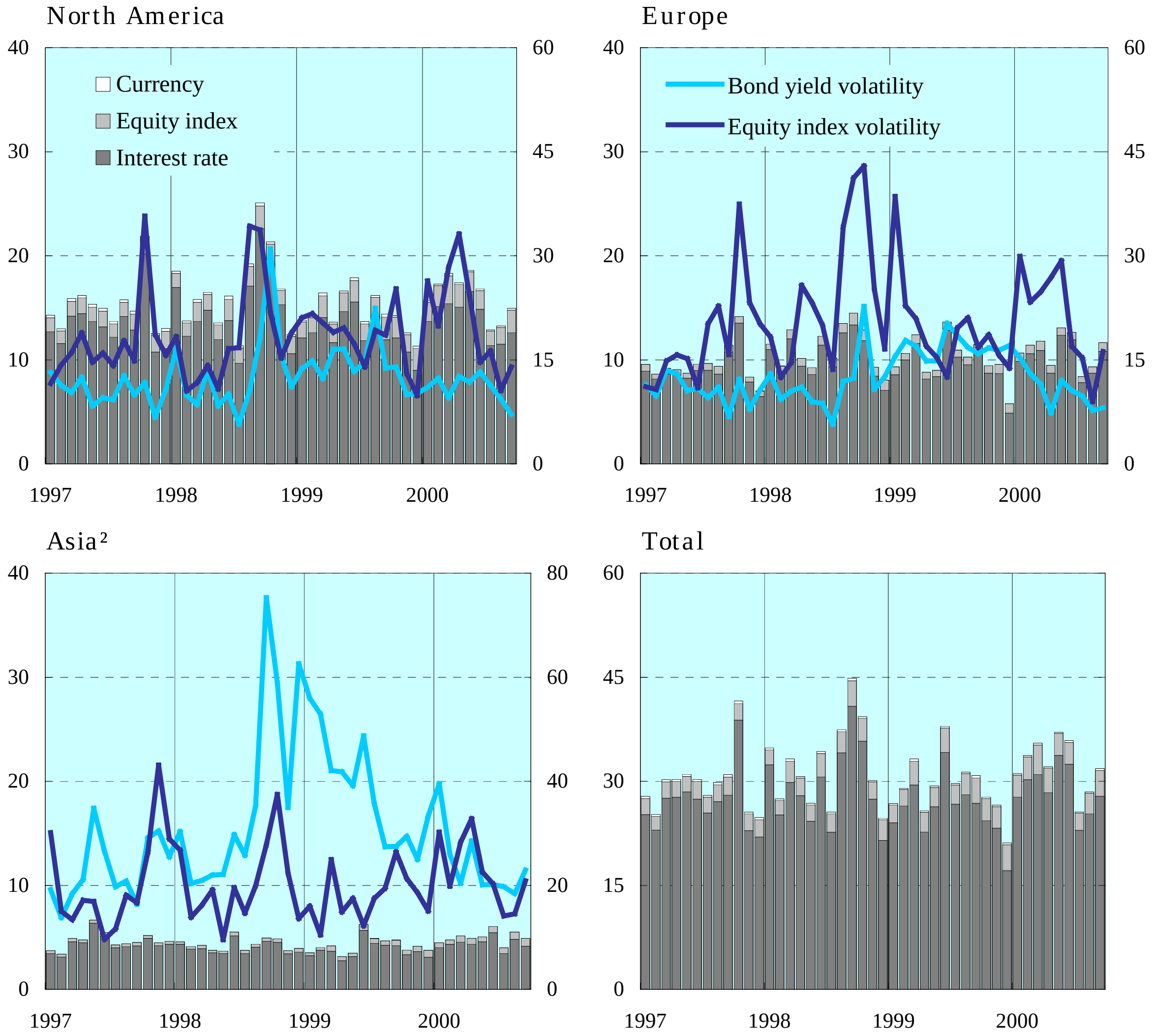
Sources: FOW TRADEdata; central banks; BIS.

[17] The divergence between the two markets has been analysed in various issues of the BIS *Annual Report*.

Graph II.3.2

Turnover of exchange-traded options and futures and bond yield and equity index volatilities[1]

Quarterly data, in trillions of US dollars (left-hand scale) and percentages (right-hand scale)



[1] Annualised standard deviation of daily percentage changes in 10-year government bond yields and equity indices of US, German and Japanese markets for North America, Europe and Asia respectively. [2] Including Australia and New Zealand.

Sources: FOW TRADEdata; Futures Industry Association; BIS.

millennium. The slowdown was spread across instruments, with a particularly sharp decline in both short-and long-term interest rate contracts. Lower activity appears to have been primarily related to calmer conditions in financial markets in July, although an upsurge of volatility in major equity and currency markets in September was associated with an overall increase in turnover. While most industrialised countries experienced a decline in turnover, business expanded significantly in some emerging market countries, including South Africa and South Korea.

Exchange-traded markets have in fact failed to expand since the record volume of activity reached in the third quarter of 1998. This subdued pattern of activity seems to reflect a longer-term trend. Indeed, a growing gap has been observed between exchange-traded and OTC market activity since the early 1990s. Exchanges have been able to provide a high degree of liquidity in a fairly narrow range of benchmark contracts, but they have not been able to compete with the wide variety of tailor-made risk management products supplied by the OTC market. The greater flexibility of OTC instruments probably explains much of the divergence. This trend has been reinforced recently by changing patterns of issuance in global securities markets. A declining volume of government bond issuance or buybacks in some of the major reporting countries (such as the United Kingdom and the United States) have led to a decline in secondary market turnover and dampened activity in related derivatives markets.

Changes in the pattern of fixed income issuance in financial markets have also encouraged market participants to consider the creation of better hedging tools for corporate securities.[18] In September, the US Bond Market Association formed a task force to develop proposals for the introduction of a corporate bond futures contract. Members of the task force have suggested that such a contract would be likely to focus on an index of 10-year BBB or A-rated securities. Attempts in the 1980s to list corporate bond contracts failed because of low liquidity of the underlying securities and difficulties in creating a representative basket. The corporate bond market is now much larger and more liquid than in the 1980s (particularly with the trend to issue very large benchmark securities), although liquidity remains concentrated in the largest issues.

Meanwhile, faced with the success of electronic trading in many countries, the members of traditional US exchanges have increasingly come to question the future of open outcry trading. This was particularly evident on the CBOT, where the introduction at the end of August of a/c/e (for Alliance/CBOT/Eurex), an electronic platform for the trading of futures contracts on US Treasury securities, was highly successful. By the end of September, the facility's first full month of existence, it had captured 22% of activity in US Treasury note contracts.

Over-the-counter instruments: continued market expansion

Data from the BIS survey on the global over-the-counter (OTC) derivatives market show continued growth in the first half of 2000. The total estimated *notional amount* of outstanding OTC contracts stood at $94 trillion at end-June 2000, a 7% increase over end-December 1999 and a 30% increase since end-June 1998, when the BIS survey was initiated. At the same time, the ratio of *gross market values* to notional amounts outstanding continued its downward trend.

Growth in the first half of 2000 was led by activity in forward-type contracts, particularly interest rate swaps, outright forwards and foreign exchange swaps. In terms of broad market risk categories, interest rate, foreign exchange and commodity contracts expanded at about the same pace, while equity contracts declined.[19] The new data reveal a number of developments cutting across the different risk categories. For example, they show a continued rise in the share of euro-denominated transactions, particularly in interest rate swaps, where the euro has extended its lead as the largest currency segment. At the same time, the rate of expansion of yen-denominated contracts slowed down considerably relative to the previous review period. In addition, business with non-financial customers expanded fastest in all risk categories, although it remains much smaller than that among reporting dealers and other financial sector entities.

The *interest rate segment* expanded by 7%, to $64.1 trillion. With the stock of forward rate agreements (FRAs) and options stagnating, growth was concentrated in swaps (by 9%, to $48 trillion). Swaps have increased at a more robust pace than other interest rate instruments over the past decade. This may have been related to several factors. First, the growing variety of structures on offer has enabled the swaps market to respond in a more flexible way to the risk management requirements of market participants than exchange-traded markets. More recently, the introduction of the euro has led to a rapid expansion of European capital market issuance, with some of the resulting exposure likely to

[18] Contracts on US Treasury securities have recently become less reliable hedging instruments for corporate securities, as discussed in recent issues of the *BIS Quarterly Review*.

[19] Credit derivatives are not identified in this survey. Data on such instruments will be collected at the time of the next triennial survey of foreign exchange and derivatives activity at end-June 2001.

Table II.3.1

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

Amounts outstanding in billions of US dollars

	Notional amounts				Gross market values			
	End-Dec 1998	**End-June 1999**	**End-Dec 1999**	**End-June 2000**	**End-Dec 1998**	**End-June 1999**	**End-Dec 1999**	**End-June 2000**
Grand total	**80,317**	**81,458**	**88,201**	**94,037**	**3,231**	**2,628**	**2,813**	**2,581**
A. Foreign exchange contracts	**18,011**	**14,899**	**14,344**	**15,494**	**786**	**582**	**662**	**578**
Outright forwards and forex swaps	12,063	9,541	9,593	10,504	491	329	352	283
Currency swaps	2,253	2,350	2,444	2,605	200	192	250	239
Options	3,695	3,009	2,307	2,385	96	61	60	55
B. Interest rate contracts[2]	**50,015**	**54,072**	**60,091**	**64,125**	**1,675**	**1,357**	**1,304**	**1,230**
FRAs	5,756	7,137	6,775	6,771	15	12	12	13
Swaps	36,262	38,372	43,936	47,993	1,509	1,222	1,150	1,072
Options	7,997	8,562	9,380	9,361	152	123	141	145
C. Equity-linked contracts	**1,488**	**1,511**	**1,809**	**1,671**	**236**	**244**	**359**	**293**
Forwards and swaps	146	198	283	348	44	52	71	62
Options	1,342	1,313	1,527	1,323	192	193	288	231
D. Commodity contracts[3]	**415**	**441**	**548**	**584**	**43**	**44**	**59**	**80**
Gold	182	189	243	262	13	23	23	19
Other	233	252	305	323	30	22	37	61
Forwards and swaps	137	127	163	169	..	..	..	..
Options	97	125	143	154	..	..	..	..
E. Other[4]	**10,388**	**10,536**	**11,408**	**12,163**	**492**	**400**	**429**	**400**
Gross credit exposure[5]					**1,329**	**1,119**	**1,023**	**937**
Memorandum item: Exchange-traded contracts[6]	*13,920*	*15,488*	*13,497*	*13,904*	..	..	..	..

[1] All figures are adjusted for double-counting. Notional amounts outstanding have been adjusted by halving positions vis-à-vis other reporting dealers. Gross market values have been calculated as the sum of the total gross positive market value of contracts and the absolute value of the gross negative market value of contracts with non-reporting counterparties. [2] Single-currency contracts only. [3] Adjustments for double-counting estimated. [4] Estimated positions of non-regular reporting institutions. [5] Gross market values after taking into account legally enforceable bilateral netting agreements. [6] Sources: FOW TRADEdata; Futures Industry Association; various futures and options exchanges.

have been hedged in the interest rate swaps market. Finally, buybacks or reduced net issuance of securities by central governments in some of the major reporting countries (with the notable exception of Japan) have affected the liquidity of certain government securities and the effectiveness of traditional hedging vehicles, such as government bond futures. This has encouraged market participants to switch to more effective hedging instruments, such as interest rate swaps.

In the area of *currency instruments*, the value of contracts outstanding increased by 8%, to \$15.5 trillion, following a slight decline in the previous reporting period. All types of instrument shared in the expansion, with outright forward and forex swap contracts rising most rapidly (by 9%), followed by currency swaps (7%) and options (3%). Some of the increase in outright forwards and forex swaps may have been related to the upsurge of activity seen in the international interbank market since the second half of 1999.[20] In the case of options, this was the first increase in business following

[20] See the section on the international banking market in the August 2000 issue of the *BIS Quarterly Review*.

four consecutive half-yearly declines. One of the most striking developments was the very sharp rise in currency contracts involving the euro (26%). The review period was marked by rising volatility of the dollar/euro currency pair, which may have fuelled related business. Contracts involving the US dollar and sterling also grew at a robust pace (by 9% and 11% respectively).

Activity in the *equity-linked sector* declined by 8%, to $1.7 trillion. Much of the drop was accounted for by contracts on US equities held by non-financial market participants. In spite of press reports highlighting the rapid growth of retail-targeted equity index products (which often combine fixed income assets and call options), the OTC equity-linked market has not expanded much in recent periods. It remains considerably smaller than the foreign exchange or interest rate market segments, being comparable in size to the exchange-traded equity index market ($1.5 trillion at end-June 2000).

Commodity derivatives markets expanded by 7%, to $0.6 trillion. The rate of expansion of gold contracts, the largest single group in that market segment, slowed relative to the previous review period (to 8% from 29%).

Estimated *gross market values* declined by $232 billion, to $2.6 trillion. The ratio of gross market values to notional amounts outstanding fell to 2.7% at end-June 2000 from 3.2% at end-December 1999, maintaining the downward trend observed since the BIS began collecting OTC market data. Lower ratios were recorded in all market risk categories, with the exception of the commodity-linked segment, which saw an increase. The most pronounced decline took place in foreign exchange instruments (to 3.7% from 4.6%). Much of the reduction was accounted for by contracts involving the yen, which is consistent with the lower volatility of the underlying market during the review period. The decline was less substantial for interest rate instruments (to 1.9% from 2.2%) but was nevertheless notable in the euro segment (to 2% from 2.4%) and the yen sector (to 1.6% from 1.9%), probably also reflecting the lower volatility of underlying markets. It should be noted that gross market values exaggerate actual credit exposures since they exclude netting and other risk reducing arrangements. Allowing for netting, the derivatives-related credit exposure of reporting institutions was considerably smaller ($937 billion, or less than 1% of notional amounts outstanding).

Recent developments in the credit derivatives market

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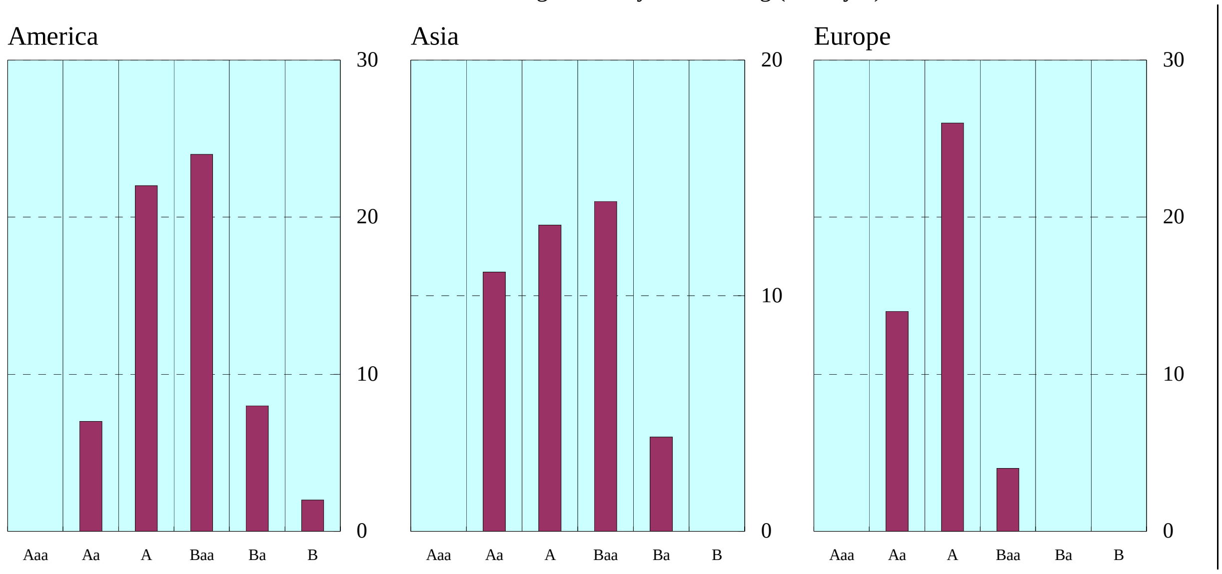
Credit derivatives are not separately identified in the most recent BIS statistics.[1] However, in July this year, the British Bankers' Association (BBA) released a survey of the global credit derivatives market showing that the notional amount of outstanding transactions had reached $586 billion at end-1999 (compared with an estimated $350 billion at end-1998). Set against the BIS data on the notional amounts outstanding of OTC contracts at end-1999, credit derivatives accounted for less than 1% of the total market. Among the major trends, the survey indicated a growing diversification of products, the development of hybrid instruments and a blurring of distinctions between product lines. It noted a particularly rapid increase in portfolio products[2] and credit-linked obligations. Together, these instruments accounted for 18% of contracts outstanding at the end of 1999, compared with 38% for plain vanilla credit default contracts. The data also revealed that banks continue to be the main buyers and sellers of credit protection, accounting for 63% of the buy side and 47% of the sell side. However, the market is expanding beyond transactions aimed at the restructuring of banks' balance sheets. New participants, such as insurance companies, are increasingly entering the market as sellers of protection. Insurance companies accounted for 23% of the sell side in the latest survey.

There was also a notable increase in the proportion of credit derivatives written against corporate assets and a decline of contracts on sovereign ones. Contracts written on corporate assets accounted for 55% of the market in 1999, while those written on sovereign assets amounted to 20%. Part of the increase was attributed by market practitioners to the development of synthetic securitisation.[3] More recent data on the ratings distribution of underlying assets in credit derivatives transactions show a fairly even dispersion in America and Asia, with Baa being the most prevalent, but some skewing towards higher-rated issues in Europe. The higher quality of underlying assets in European credit derivatives structures reflects the higher average ratings of large issues made in recent periods in European capital markets. The market is likely to draw further support in 2000 from the ongoing wave of M&A financing and the heavy volume of loans and securities issues arranged by telecommunications companies. Improvements in market infrastructure, such as the introduction of better documentation and the development of new swap return indices, should also be supportive.

Ratings distribution of credit derivatives (as of 27 September 2000)

Number of outstanding issues[1] by credit rating (Moody's)



[1] For which credit derivatives are traded.

Source: JP Morgan.

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[1] Data on such instruments will be collected at the time of the next triennial survey of foreign exchange and derivatives activity at end-June 2001. [2] Whereby protection can be purchased or sold on a whole portfolio of loans or securities. [3] Synthetic securitisation involves the use of credit derivatives in the transfer of credit risk in securisation structures. One of its main advantages is that it eliminates the need for the physical transfer of securities to a special purpose vehicle.