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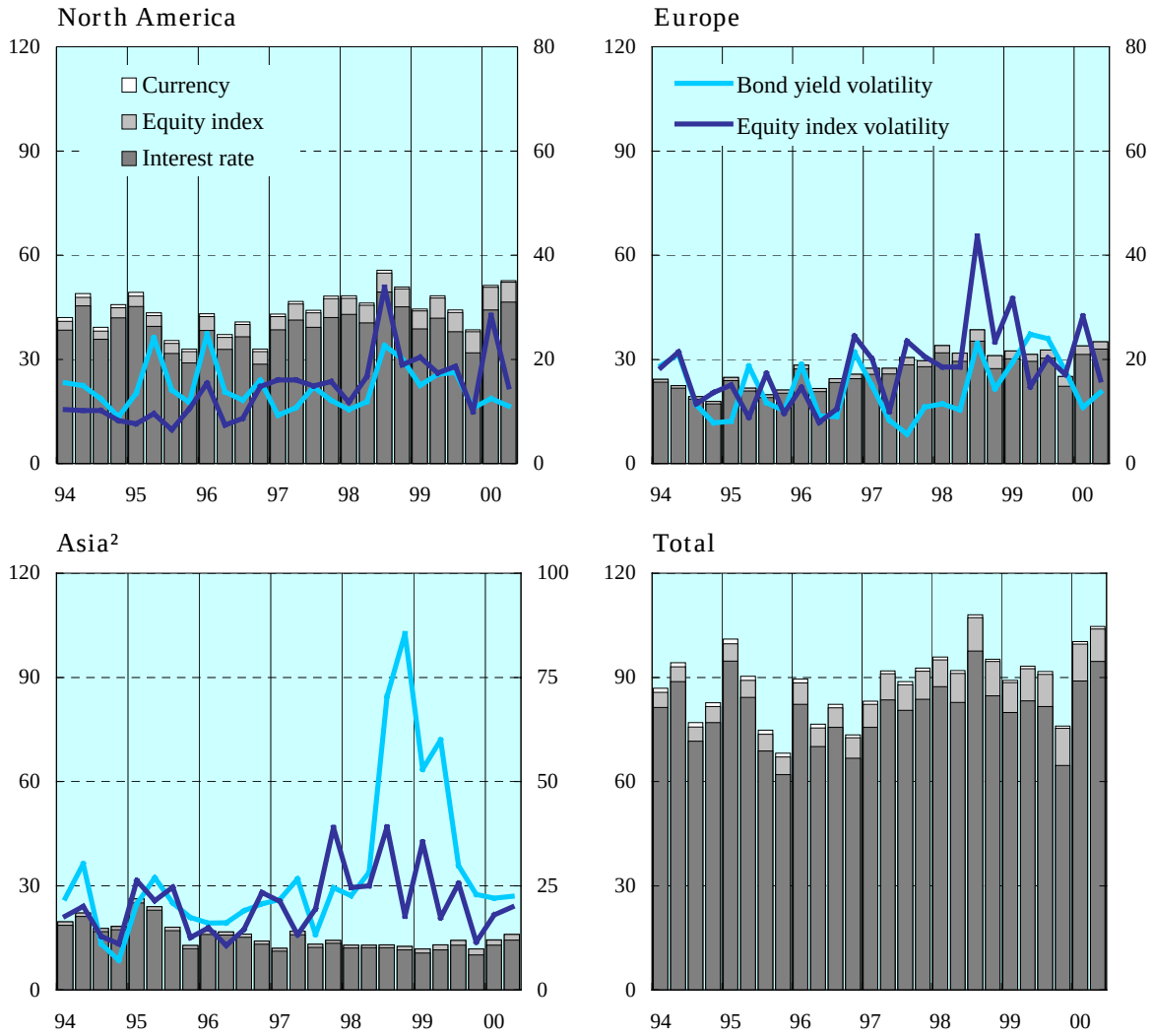
3. Derivatives markets

After declining in 1999, turnover in exchange-traded derivatives markets recovered strongly in the first half of 2000. The introduction of the euro and concerns about liquidity ahead of the transition to the new millennium had contributed to the reduction in activity last year (see the box at the end of this section), and with these factors no longer playing a role, turnover in the second quarter reached the

Graph II.3.1

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)



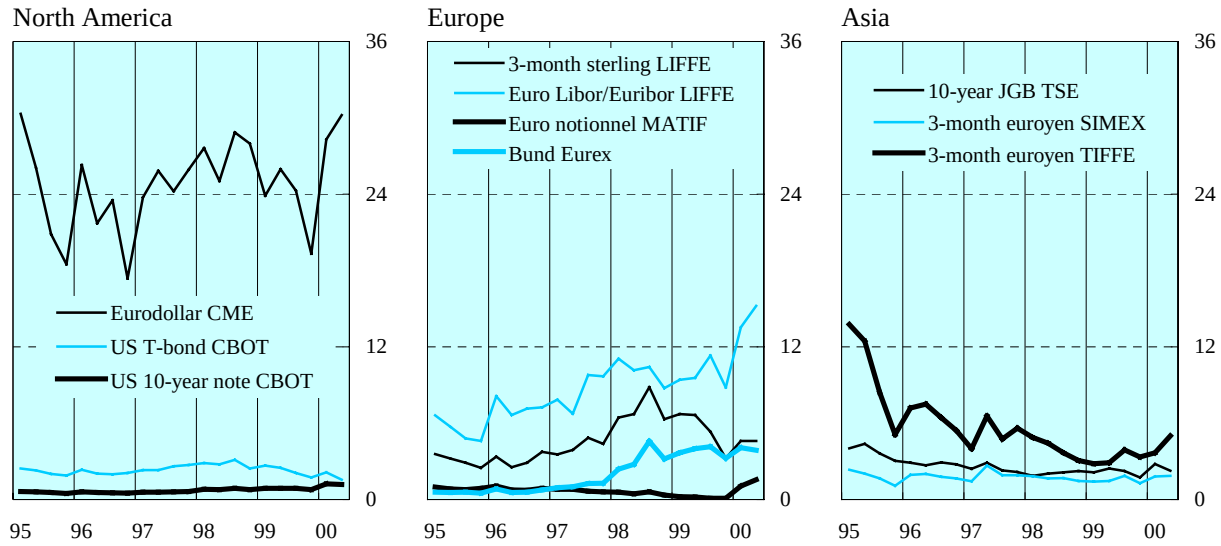
[1] Annualised standard deviation of daily percentage changes in 10-year government bond yields and equity indices of US, German and Japanese markets for North America, Europe and Asia respectively. [2] Including Australia and New Zealand.

Sources: FOW TRADEdata; Futures Industry Association; BIS.

Graph II.3.2

Turnover of major interest rate futures

Quarterly data, in trillions of US dollars



Sources: FOW TRADEdata; Futures Industry Association; BIS.

highest level since the record-breaking third quarter of 1998. Noteworthy developments in the second quarter included the continued decline in the turnover of contracts on US Treasury bonds and the further recovery of futures trading on French government bonds.

Exchange-traded instruments: contrasting trends in a context of slower market expansion

Activity in exchange-traded derivatives markets expanded further in the second quarter of 2000, albeit at a slower pace than in the first quarter. The dollar value of turnover rose by 4%, to $104.6 trillion.[8] This was the second most active quarter ever after the third quarter of 1998, when turnover had reached $107.5 trillion. Interest rate instruments expanded by 6%, while equity index and currency contracts declined by 11% and 12% respectively. Growth was more pronounced in Asia, in part owing to a significant rebound in the turnover of some equity index contracts and the further rapid expansion of activity on some recently established futures exchanges.

One of the most notable developments in the quarter was the contrasting trend seen in the turnover of contracts on US government bonds. While activity on all US Treasury instruments declined during the review period, a longer-term analysis shows that turnover on 30-year US Treasury bonds (the "long bond") has followed a downward trend since mid-1998, to the benefit of the 10-year Treasury note contract. This pattern of activity follows that seen in the underlying market. The emergence of fiscal surpluses in the United States has translated into reduced overall issuance of Treasuries, while efforts by the US Treasury to reduce the average duration of government debt have led to a proportionately sharper reduction in long-term issues. The correspondingly lower volume of secondary market transactions has had a negative impact on market liquidity in both the cash and exchange-traded derivatives markets. As a result, traders have shifted part of their hedging activity to the swaps market (see overview).

[8] The analysis is based on the dollar value of trading in fixed income, currency and equity index contracts. Value-based reporting reduces the impact on the aggregate figures of fluctuations in the turnover of small contracts and removes the distortions resulting from sudden changes in the unit value of contracts. However, such reporting has not yet been extended to commodity contracts or to options on single equities.

At the same time, the shrinking supply of US government debt has encouraged large issuers to introduce alternative trading benchmarks. This was reflected in March in the introduction by the CBOT and the CME of contracts on the debt securities of US government-sponsored financing agencies. Activity on such instruments has expanded rapidly, with the CBOT taking the lead.

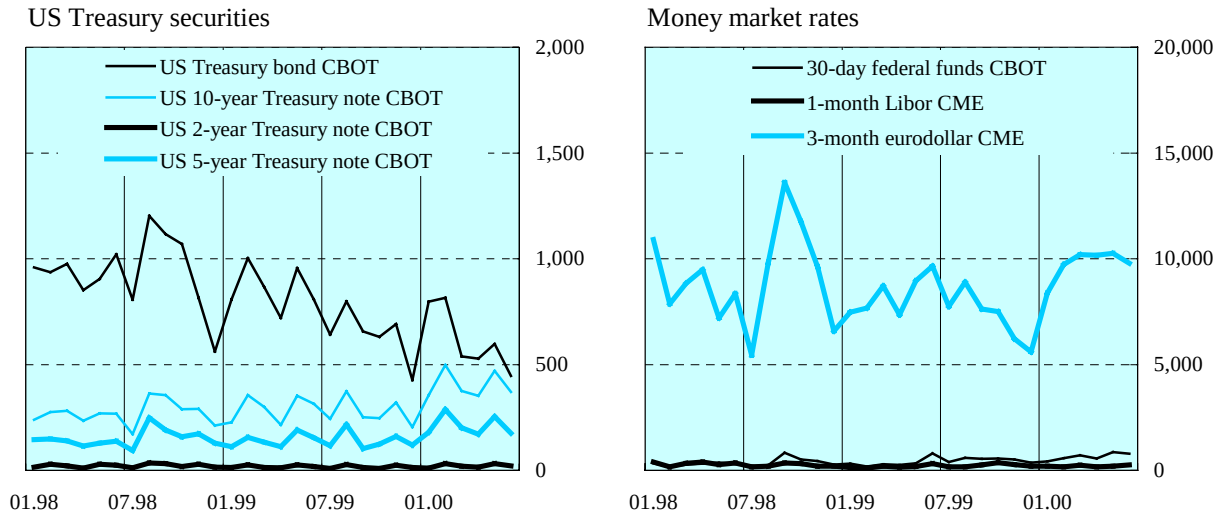
Another noteworthy development was the further recovery of futures trading on French government bonds (the notionnel) on the MATIF. The main factor in this rebound appears to have been the establishment of a market-making scheme by French banks active on the MATIF. Another contributory element was the temporary reappearance of arbitrage opportunities between French and German government bond yields in the wake of a widening of yield spreads between those assets. The turnover of futures contracts on French government bonds has nearly caught up with that on US Treasury bonds (almost $1.6 trillion), although it remains well below that on German government bonds ($4 trillion). Moreover, the trading of options on French government bonds has remained stagnant, and there were few open positions, showing that intraday activity continues to dominate.

In the market for equity index contracts, the second most important category after the fixed income segment, the sharp drop of most major indices in April was accompanied by a rise in volatility and a high level of turnover. However, with trading in North America and Europe contracting sharply in May and June, overall activity dropped relative to the first quarter. The rather slow expansion of the largest equity index contracts in North America and Europe probably reflects their inadequacy in dealing with the risks of particular companies or sectors subject to sharp market swings, particularly given investors' difficulty in evaluating "new economy" stocks. In contrast, equity-related business in Asia was more sustained. Although the reshuffling of the Nikkei 225 index seems to have briefly disrupted trading in related contracts,[9] this was more than offset by the rebound of turnover on the Osaka Stock Exchange and the further rapid expansion of activity in recently introduced futures contracts on the Korea Stock Exchange.

Graph II.3.3

Turnover of US futures contracts

Quarterly, in billions of US dollars



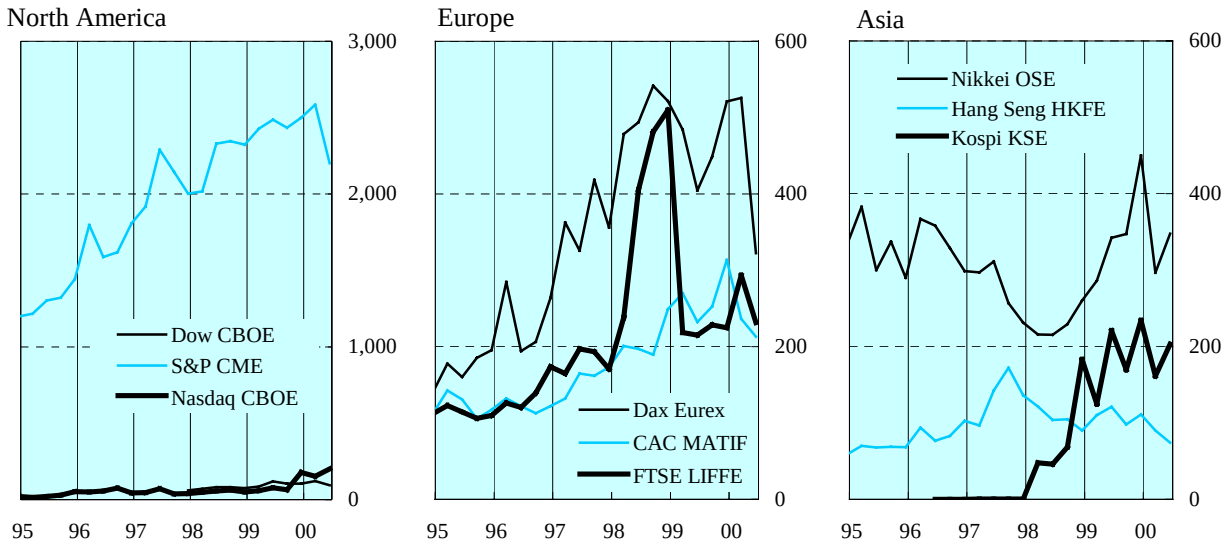
Sources: FOW TRADEdata; Futures Industry Association.

[9] In April the Nikkei 225 index was updated by the replacement of 30 "old economy" shares with 30 "new economy" ones.

Graph II.3.4

Turnover of major equity futures

Quarterly data, in billions of US dollars



Sources: Futures Industry Association; FOW TRADEdata.

Derivatives exchanges continued to explore new business areas, such as the trading and clearing of cash market securities and OTC contracts. For example, Eurex announced that it would establish a company for the electronic trading of fixed income securities, and NYMEX that it would launch a subsidiary to trade swaps on physical commodities. Meanwhile, LIFFE, which is positioning itself as an information technology company, announced that it had formed a joint venture with two US venture capital firms to create new derivatives markets for non-financial products, such as telecommunication bandwidth, semiconductors or natural gas.

Derivatives markets in 1999

Robert Scott

Organised exchanges

The year 1999 witnessed the first reduction in overall exchange-traded derivatives activity since 1996, down from a turnover of $390 trillion in 1998 to $350 trillion. The decline was widespread across regions. North America registered the largest decrease with a 12% drop, followed by Europe and Asia with contractions of 10% and 1% respectively. The overall decline was due to a 12% reduction in trading of interest rate derivatives. Stock index derivatives trading rose substantially, while foreign exchange trading remained flat.

Two main factors contributed to the drop in interest rate volumes. First, the introduction of the euro induced a pause in trading in the first quarter as some market participants waited for consolidation in European interest rate instruments, while the disappearance of intra-European currency movements made related currency products redundant. Second, Y2K liquidity concerns led market participants to scale down trading in contracts with maturities spanning the year-end. Concerns about some institutions' readiness to handle potential computer problems had boosted the cost of short-term financing. This increase and the unwillingness of some market participants to undertake Y2K risks led to a reduction in the trading volume for most large short-term interest rate contracts. The millennium spread (see the June 1999 issue of the *BIS Quarterly Review*) reflected the extent of concerns, particularly in the short-term interest rate futures and options markets. In contrast to the decline in the turnover of interest rate derivatives, equity index derivatives business increased markedly. This was largely due to the increase in both index values and volatility, particularly in the fourth quarter of 1999.

The introduction of the euro and mergers between several exchanges produced a polarisation in exchange-traded derivatives markets in Europe. LIFFE gained in short-term contracts, while Eurex increased its share of long-term interest rate contracts. These gains were at the expense of MATIF, which saw volumes on its Pibor and 10-year notionnel contract continue their declining trend (although the latter contract has experienced a recovery this year). The eurodollar contract traded on the CME maintained its hold as the most actively traded contract in the world in value terms, but nonetheless experienced a contraction in 1999. In Asia, the major equity index contracts enjoyed a strong rebound in activity. This coincided with a recovery in the level of Asian equity indices and a sharp increase in activity on a new exchange in Korea.

The OTC market

In contrast to turnover in exchange-traded derivatives, the notional amounts of OTC contracts outstanding grew in 1999 in spite of the consolidation resulting from European monetary union. The introduction of the euro took its toll on foreign exchange derivatives, reducing the stock of euro-denominated foreign exchange instruments by almost 40%. In contrast to foreign exchange contracts, the stock of euro-denominated interest rate products outstanding increased substantially in 1999.

Box Table II.3.1

Financial derivative instruments traded on organised exchanges

Turnover in notional amounts, in trillions of US dollars

Instruments	1993	1994	1995	1996	1997	1998	1999
Interest rate futures	177.3	271.9	266.4	253.6	274.8	296.6	263.8
On short-term instruments	138.9	222.4	218.2	204.9	223.4	241.4	213.5
On long-term instruments	38.5	49.6	48.2	48.7	51.4	55.2	50.3
Interest rate options	32.8	46.7	43.3	41.0	48.6	55.8	45.6
Currency futures	2.8	3.3	3.2	2.6	2.7	2.5	2.6
Currency options	1.4	1.4	1.3	1.3	0.9	0.5	0.3
Stock market index futures	7.1	9.4	10.6	12.9	16.4	19.6	21.7
Stock market index options	6.3	8.0	9.3	10.2	13.1	14.7	16.1
Total	**227.8**	**340.7**	**334.2**	**321.7**	**356.4**	**389.7**	**350.1**
In North America	113.1	175.9	161.1	153.9	182.0	200.9	175.4
In Europe	61.4	83.9	87.5	100.1	114.9	133.9	121.5
In Asia	53.0	77.8	81.1	63.8	56.3	51.4	50.7
Other	0.4	3.2	4.6	3.9	3.2	3.5	2.4

Box Table II.3.2

Markets for selected financial derivative instruments

Notional amounts outstanding at year-end, in billions of US dollars

Instruments	1993	1994	1995	1996	1997	1998	1999
Exchange-traded instruments	**7,775.7**	**8,897.7**	**9,282.8**	**10,018.1**	**12,402.9**	**13,931.7**	**13,521.6**
Interest rate futures	4,960.4	5,807.6	5,876.2	5,978.8	7,580.8	8,019.9	7,913.9
Interest rate options	2,362.4	2,623.6	2,741.8	3,277.8	3,639.8	4,623.5	3,755.5
Currency futures	34.7	40.4	33.8	37.7	42.3	31.7	36.7
Currency options	75.6	55.6	120.4	133.1	118.6	49.2	22.4
Stock market index futures	110.0	127.7	172.4	195.8	211.4	290.7	334.3
Stock market index options	232.5	242.8	338.3	394.9	810.0	916.8	1,458.8
OTC instruments[1]	***8,474.6***	***11,303.2***	***17,712.6***	***25,453.1***	***29,035.0***	**80,317.0**	**88,201.0**
Interest rate swaps	*6,177.3*	*8,815.6*	*12,810.7*	*19,170.9*	*22,291.3*	36,262.0	43,936.0
Interest rate options	*1,397.6*	*1,572.8*	*3,704.5*	*4,722.6*	*4,920.1*	7,997.0	9,380.0
Currency swaps	*899.6*	*914.8*	*1,197.4*	*1,559.6*	*1,823.6*	2,253.0	2,444.0
Currency options						3,695.0	2,307.0
Other instruments and adjustments[2]						30,110.0	30,134.0

[1] Data for 1993-97 collected by ISDA. Data for 1998-99 from BIS regular OTC derivatives statistics. [2] FRAs, foreign exchange forwards and swaps, equity and commodity instruments, and estimates for less than complete coverage.

Market participants increased their usage of interest rate products because of the growth of the European swaps market and a substantial rise in corporate bond issuance for which swaps are used to hedge interest payments.

The commodities-based derivatives markets in general experienced an upswing in notional amounts outstanding. The increase coincided with a broad-based recovery in commodity prices. In 1999 episodes of high volatility in the gold market contributed to the 34% increase in gold contracts outstanding.

Total gross market values of foreign exchange and interest rate contracts declined in 1999. In contrast, the gross market values of equity contracts rose considerably owing in large part to the increase in volatility in the fourth quarter of 1999 and the growing popularity of index-linked equity products. Gross credit exposures (ie gross market values adjusted for bilateral netting agreements) also fell substantially, suggesting the market turmoil that followed the Russian debt moratorium led market participants to conduct significant offsetting transactions.

Box Table II.3.3

Gross market values and credit exposure

In billions of US dollars

	Total contracts	Foreign exchange	Interest rate	Equity	Commodity	Other[1]
Gross market values						
end-1998	3,231	786	1,675	236	43	492
end-1999	2,813	662	1,304	359	59	429
Gross credit exposure[2]						
end-1998	1,329					
end-1999	1,023					

[1] Estimates for less than complete coverage. [2] Gross market values after taking into account legally enforceable bilateral netting agreements.