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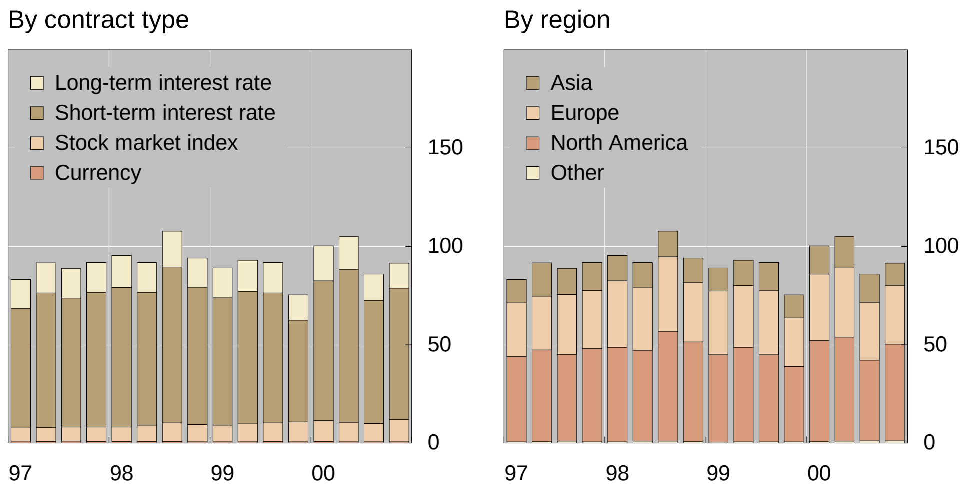
3. Derivatives markets

The dollar value of exchange-traded activity increased moderately in the fourth quarter of 2000, with equity contracts leading the expansion. In the fixed income segment, an increase in the turnover of money market contracts more than offset a decline in government bond contracts, leading to a modest increase in business. Aggregate activity in fixed income instruments seems to have remained on a plateau since the third quarter of 1998, with some benchmark contracts gaining at the expense of others. Activity for the year 2000 as a whole shows a recovery in turnover following a slowdown in 1999.

Exchange-traded activity rises moderately

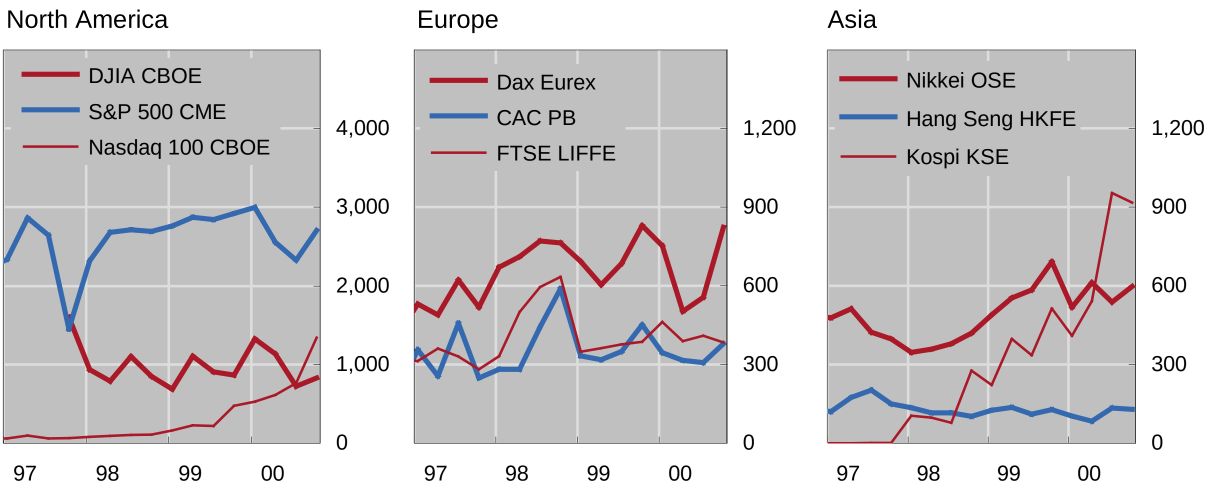
Activity in exchange-traded markets expanded in the fourth quarter, with the dollar value of turnover of contracts monitored by the BIS rising by 6%, to $91.5 trillion. While this increase followed a sharp contraction in the third quarter, such a pattern of activity contrasted with that of the previous two years, when activity had tended to decline in the fourth quarter.

Turnover of exchange-traded futures and options
Quarterly data, in trillions of US dollars



Sources: FOW TRADEdata; Futures Industry Association; BIS calculations. Graph II.3.1

Turnover of major equity futures and options
Quarterly data, in trillions of US dollars



Sources: FOW TRADEdata; Futures Industry Association. Graph II.3.2

Equity index contracts lead growth

Developments in global equity markets appear to have been a major factor in the quarter's upswing. Indeed, much of the overall increase in the dollar value of turnover was accounted for by equity index contracts (up by 22%, to $11.4 trillion), as sharp rises in North American and European turnover more than offset declines in other geographical areas. Renewed downward pressures in global equity markets lifted actual and implied volatilities, apparently prompting investors to hedge their positions (see the Overview section for a more detailed analysis).[6] Such pressures were related to market participants' concerns about an economic slowdown in the United States and evidence of less favourable earnings and growth prospects for technology firms. Within the equity-related market, trading in technology stock indices was particularly buoyant. For example, the value of turnover on the CBOE's Nasdaq 100 contract (which tracks technology stocks) expanded by 77% in the fourth quarter. In addition, business grew briskly on some recently established derivatives marketplaces such as the Korea Stock Exchange.

Weak equity markets prompt investors to hedge

Money market contracts show strength

Meanwhile, there was a less pronounced increase in the turnover of fixed income instruments (by 4%, to $79.4 trillion), with a fairly substantial expansion in North America counterbalancing declines in Europe and Asia. A reduction in

[6] Overall activity in equity-related instruments could well have been higher than reported in the BIS aggregate statistics because trading in options on single equities is not included in the aggregates. Such activity represents a growing proportion of trading in equity-related instruments but the lack of data on their dollar values precludes the inclusion of these instruments in the BIS statistics.

the value of transactions on government bonds (down by 5%, to \$12.7 trillion) was more than offset by stronger activity in money market contracts (up 6%, to \$66.7 trillion). Here again, evidence of a US economic slowdown strengthened expectations of US monetary easing, leading to lively trading in US money market contracts (with a rise of 20%). Trading in money market instruments is also likely to have been supported by the continued expansion of the interest rate swap market, since eurodollar futures and options, the most actively used short-term contracts, are commonly used in the hedging of interest rate swaps and swaptions.

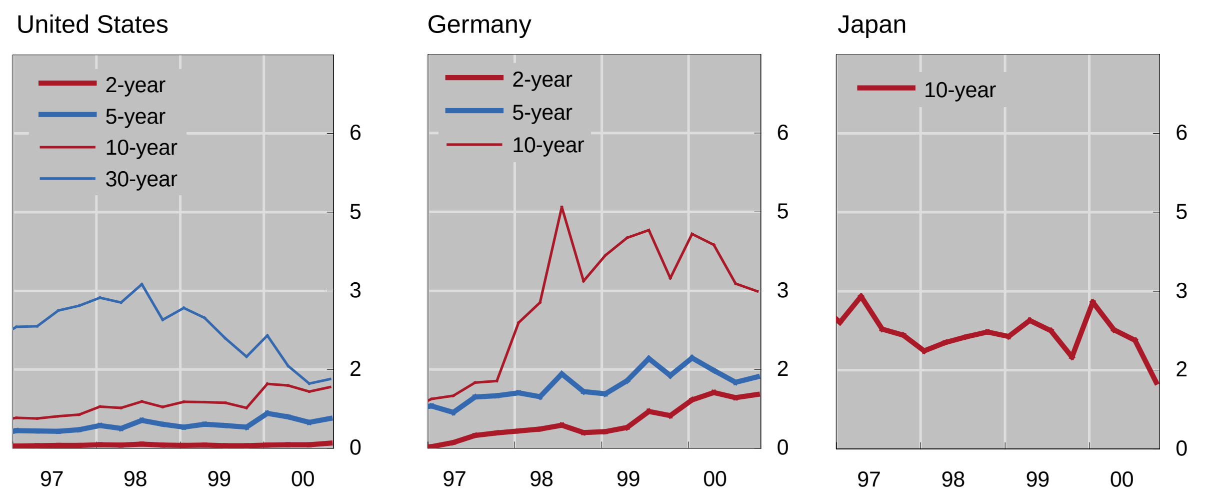
Expectations of US monetary easing lead to lively trading in money market contracts

Benchmarks shift in fixed income instruments

Faced with strong competition from the OTC market, fixed income business on exchanges appears to have remained on a plateau since the record volume of activity seen in the third quarter of 1998.[7] Few of the contracts introduced by established marketplaces in recent years have met with an enthusiastic response and the gains enjoyed by some contracts have largely reflected a reallocation of business away from traditional benchmarks. This has been particularly true of the US market, where net repayments of government debt combined with a shift of issuance to intermediate maturities have affected the liquidity of the Treasury bond contract, leading to its near displacement by the 10-year Treasury note contract (see the special feature "Benchmark tipping in the money and bond markets" on pages 39-45 for a more detailed discussion of changing benchmarks in bond and money markets).

Some contracts gain from a reallocation away from traditional benchmarks

Turnover in government bond contracts
Quarterly futures contract turnover, in trillions of US dollars



Sources: FOW TRADEdata; Futures Industry Association. Graph II.3.3

[7] See the November 2000 issue of the *BIS Quarterly Review* for a more detailed treatment.

A reallocation of activity also took place in Europe in the late 1990s, with Eurex capturing business in the long-term segment of the euro yield curve and LIFFE achieving domination in the short-term area. The gains recorded by the two exchanges in their respective niches have reflected the broad-based acceptance of their contracts as euro zone benchmarks. Moreover, a reallocation similar to that seen in the US market seems to have been taking place on Eurex in recent periods, with growth in the short-term euroschatz contract partially offsetting a decline in the eurobund contract.

Buybacks of government debt in North America and lower net issuance in Europe, combined with growing parastatal and private sector financing, are likely to have further implications for activity in fixed income instruments. First, the growing weight of non-government issuance is likely to encourage exchanges to introduce contracts based on underlying assets such as corporate and asset-backed securities. For example, in September 2000 the US Bond Market Association formed a task force to develop proposals for a corporate bond futures contract, while the CBOT announced the forthcoming introduction of contracts on mortgage-backed securities. Second, exchanges might attempt to introduce instruments based on broader fixed income indices rather than on specific government or corporate securities. Investment banks have introduced a large number of such indices in recent years. Broad indices on US securities have existed since the 1980s, but the new indices offer global coverage.

Reduced issuance of government securities leads to innovation

In contrast, no such reallocation of business has been observed or seems likely in Asia. Activity in Japanese fixed income instruments has remained concentrated in the 10-year Japanese government bond contract, with very modest business in other government bond instruments. Activity in Japanese government bond contracts has been flat in recent years, perhaps owing to the fairly widespread view that long-term interest rates will evolve in a narrow range.

Activity in Japanese government bond contracts remains concentrated

Exchange-traded activity recovers in 2000 as a whole

For the year 2000 as a whole, the aggregate value of turnover in exchange-traded financial products monitored by the BIS recovered relative to 1999, with a 10% rise, to $383 trillion. Of this total, business in equity index contracts expanded the most rapidly (by 12%, to $41 trillion). It should be noted that data on the turnover of equity index contracts are likely to understate the overall expansion of equity-related business because the BIS value data do not capture all market activity (eg the turnover of commodity contracts and of options on single equities is not included). Meanwhile, the value of transactions in interest rate products also grew at a strong pace (by 10%, to $339 trillion). Much of this increase was accounted for by money market contracts. In contrast, activity in currency contracts continued its long-term decline, with the value of turnover falling by 8%, to $2.6 trillion. With currency risk management remaining the preserve of the over-the-counter market, such business accounts for only a marginal share of exchange-traded activity.

Activity on the major exchanges in 2000

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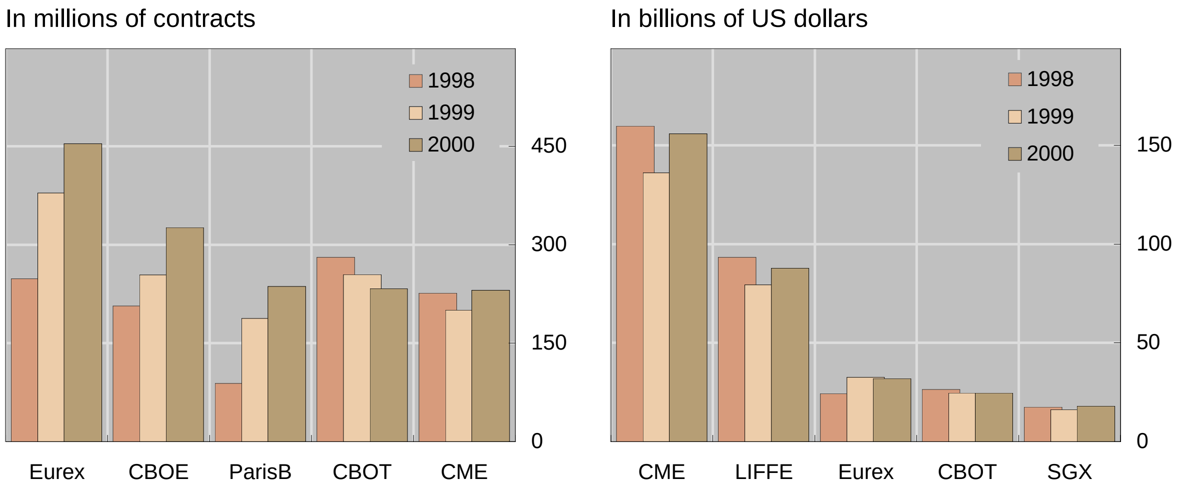
Comparing activity between exchanges is not straightforward since business can be measured in terms of both the number of contracts traded and the dollar value of transactions. Most exchanges tend to report market activity in number of contracts traded. This is the simplest way of establishing the relative levels of activity on exchanges but it is also somewhat imprecise since the size of contracts can vary significantly within exchanges, between them and over time. In contrast to the section on derivatives markets in the main text, much of the analysis in this box follows industry practice, focusing on the number of contracts traded rather than on the dollar value of turnover. This permits a cross-market comparison with contracts for which no value calculations are readily available (principally options on single equities and commodity contracts). However, an attempt is also made to compare value-based activity between exchanges. Such a comparison reveals a very different pattern.

One of the most notable features of 2000 was the further strengthening of Eurex's position as the most active marketplace in the world, with business rising by 21%, to 445 million contracts. The exchange greatly benefited in 1999 from the introduction of the euro, which led to a concentration of liquidity in German government bond contracts. More recently, it has also capitalised on the growing weight of retail participation in European equity markets by launching new equity index contracts and a variety of new single equity options on German and other European companies. Moreover, Eurex's creation out of the merger of the Deutsche Terminbörse and SOFFEX in autumn 1998 resulted in larger aggregate activity in that marketplace. Meanwhile, the CBOE replaced the CBOT as second most active exchange in the world. Rapid growth in options on single equities helped boost the CBOE's turnover by 28%, to 326 million contracts.

Volumes on major exchanges



Sources: FOW TRADEdata; Futures Industry Association; BIS calculations.

The MATIF/ParisBourse became the third most active exchange in 2000, from fifth in 1999, with turnover rising by 26%, to 236 million units. Much of the increase in turnover seen in Paris in recent years stems from a consolidation of local marketplaces into a single entity and from a reduction in the nominal size of equity contracts. Activity on the exchange was also boosted by the recovery of its euronotionnel futures contract, partly in the wake of efforts by French banks to revive it from the weak levels of activity observed in 1998 and 1999.

The CBOT remained to be the fourth most active exchange in terms of turnover, albeit by a narrow margin, despite a second consecutive year of declining activity, with a fall of 8%, to 233 million contracts. The CBOT's Treasury bond contract, the exchange's long-standing flagship instrument, was affected by the combined impact of a reduction in net issuance of US Treasury securities and a policy shift to intermediate maturity issues. Meanwhile, the CME was the fifth most active exchange globally, with turnover rising by 15%, to 231 million contracts. The recovery of activity on that exchange was related to uncertainty over the course of US economic activity and monetary policy, which led to brisk turnover in its key eurodollar contract. The continuing growth of the interest rate swap market may well have been an additional factor supporting turnover in that contract. Turnover was also boosted by the exchange's retail-targeted equity contracts.

An analysis based on the dollar value of transactions changes the picture radically. While there is currently no such comparison of the relative volume of activity on exchanges, the BIS does compile value-based data on a subset of financial contracts, specifically interest rate, stock index and currency contracts.[①] These numbers reveal that overall turnover on exchanges active in trading money market instruments is much higher than on those specialising in government bonds or equity indices. Thus the CME and LIFFE were by far the first and second most active exchanges in the world in 2000.[②] Such a difference in relative size is explained by the fact that money market contracts tend to have larger notional values than government bond contracts or equity instruments. In common with other aspects of contract specification, the nominal value of a contract is designed by exchanges to create as large a market as possible for the instrument and reflects a judgment about market participants' hedging and risk-taking behaviour as well as the cost of transacting a given amount. Because the impact of a given change in interest rates is smaller on the price of short- than long-maturity securities, the less volatile short-term futures are generally crafted to have larger nominal amounts than futures on long-term assets.

It should be noted, however, that a move to value-based reporting would not necessarily facilitate the comparison of activity between exchanges. As the discussion of contract design in fixed income instruments shows, wide differences in the duration of underlying assets mean that, even within a broad market risk category, contracts cannot simply be compared or summed up in dollar terms. Comparisons of activity across exchanges should probably focus on similar types of contracts.

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① These numbers do not include contracts on single equities or commodities. ② In contrast, Eurex and the CBOT were only third and fourth respectively, while the MATIF was ninth. The Singapore Exchange (SGX) ranked fifth on the back of active trading of money market instruments.