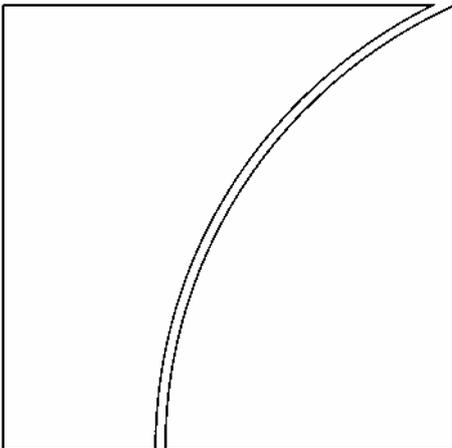




BANK FOR INTERNATIONAL SETTLEMENTS

Monetary and Economic  
Department

## OTC derivatives market activity in the second half of 2003



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### Notations used in this release

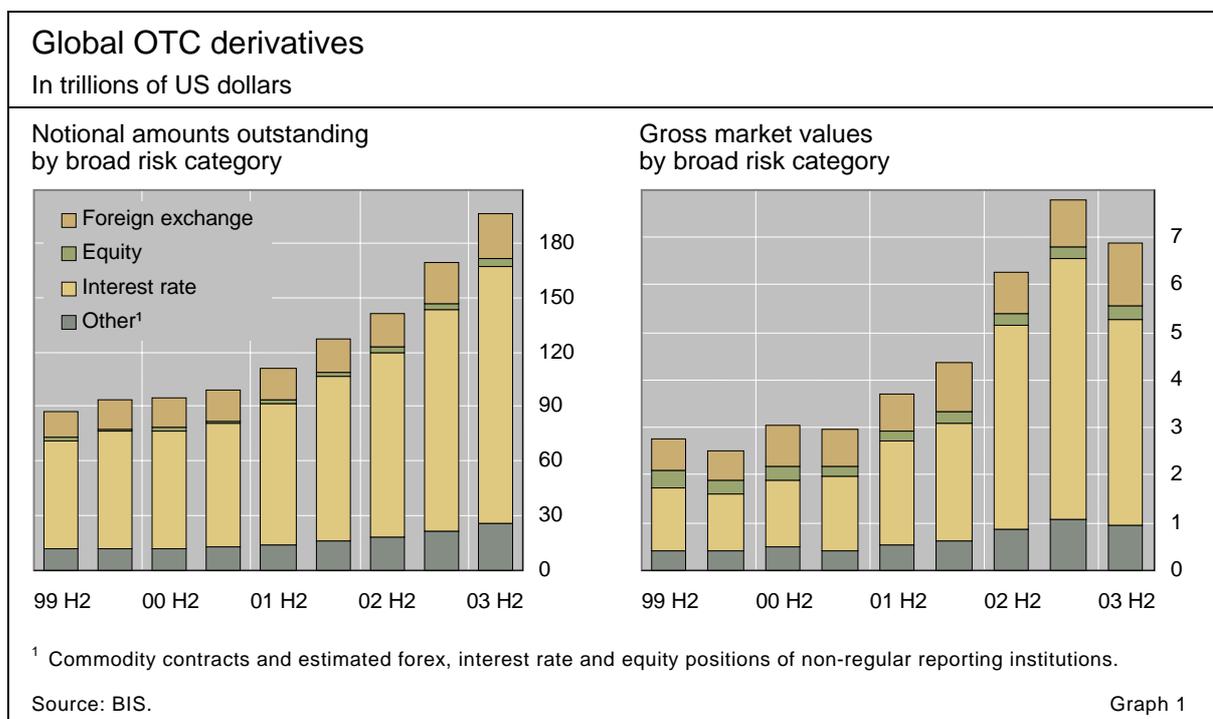
billion	thousand million
...	not available
.	not applicable
\$	US dollar unless specified otherwise

Differences in totals are due to rounding.



## I. Market developments in the second half of 2003

The data released by the BIS on positions in the global over-the-counter (OTC) derivatives market point to sustained growth in interest rate swap contracts in the second half of 2003. As a result, the total estimated notional amount of outstanding OTC contracts stood at \$197.1 trillion (Graph 1) at the end of December 2003, a 16% increase from end-June 2003. This compares with a 20% rise in the previous half-year period. Gross market values, however, fell significantly by 12% to \$7.0 trillion, contrasting with a 24% increase in the first half of 2003.



### 1. Growth in notional amounts across all risk categories

The strong growth in notional amounts outstanding was visible in all market risk categories.<sup>1</sup> The interest rate product segment as a whole posted an advance of 17% in amounts outstanding versus a 20% rise in the first half of 2003, reaching \$142.0 trillion (see Table 1). However, despite the continued popularity of interest rate swaps (+18% since the first half of 2003), the growth in forward rate agreements (FRAs) moderated in the second half of 2003 (+5%) from an expansion of 17% to the end of June, whilst the interest rate options category showed an increase of 18%.

Overall business in OTC foreign exchange markets maintained double digit growth. Outstanding contracts rose by 11% in the second half of 2003 for this risk category. Currency options and swaps provided the main impetus, with growth of 25% and 24% respectively. This was readily apparent in the inter-dealer market, where the use of currency options has grown by 59% year on year.

Equity-linked OTC derivatives have also been especially popular in the current climate, posting a 35% increase in amounts outstanding versus a 21% increase in the previous period. What was primarily a European phenomenon in the preceding half-year appears to have spread globally with the rise of equity markets across all major continents.

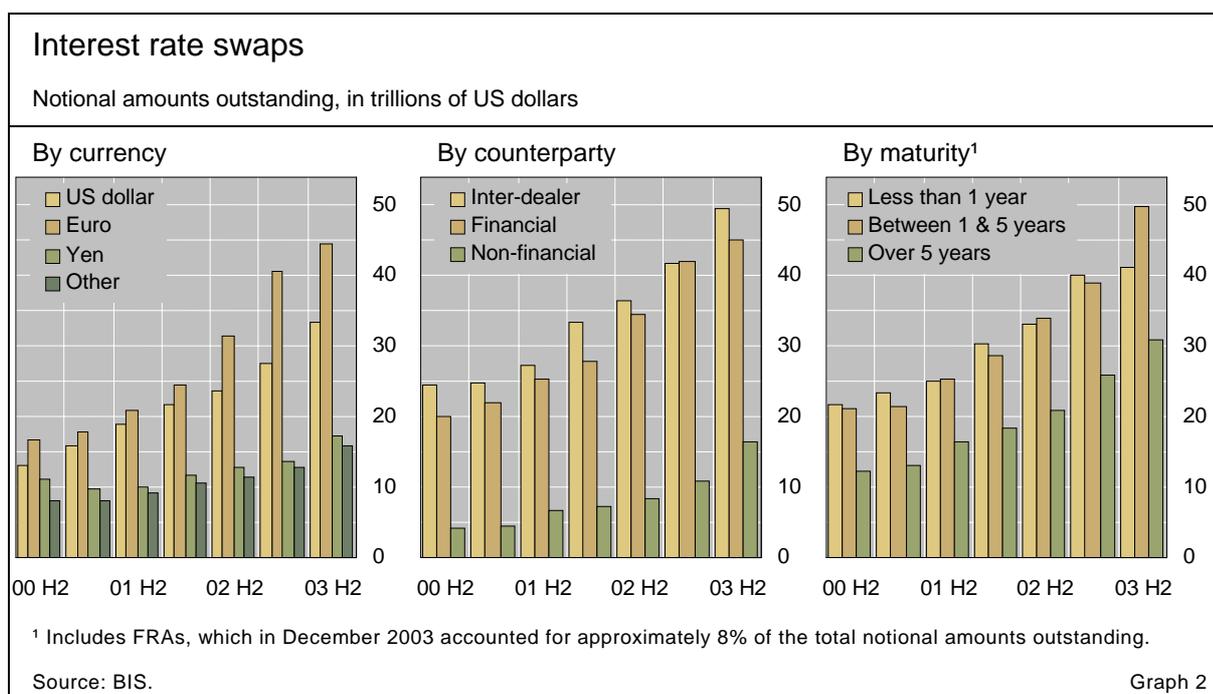
<sup>1</sup> Caution should be exercised in interpreting the figures on notional amounts outstanding over time. Some of this period's increase was due to the inclusion of a new reporter as of end-2003. However, the broad characterisation of the market as exhibiting strong growth remains accurate.

## 2. Yen-denominated swaps regain their appeal

With \$111 trillion in notional amounts outstanding, interest rate swaps remain the largest single group of products in the OTC derivatives market (see Tables 1 and 3), representing 56% of the overall OTC market. The US dollar-denominated interest rate swap market grew by 21% in the second half of 2003, with outstanding contracts rising to \$33.4 trillion. Although short-term rates were relatively stable over the period in question, US dollar swap contracts were popular given the high volatility of longer-term yields coupled with increasing expectations of rising short-term rates, especially after the Federal Reserve's decision in late June to cut its target rate by less than expected and a positive US third quarter GDP report released later in October.

Even with the continued appreciation of the euro over the second half of the year versus the dollar, the euro-denominated swap market was no longer the strongest performing segment, growing at 10% in US dollar terms (1% in constant currency). Euro area short rates had remained unchanged since the first half of the year and there was no indication of a potential change from the ECB. With interest rates not expected to move sharply in either direction, the growth in new contracts slowed. Notional outstanding contracts stood at \$44.7 trillion by the year-end.

In contrast, yen swaps rose by 29% to \$17.4 trillion (18% in constant currency) after long-term yields moved in a similar manner to the United States and news releases pointed to more favourable prospects for the Japanese economy and its other Asian partners (see the *BIS Quarterly Review* of December 2003). This was a sea change compared to the first half of the year, when growth forecasts from Japan were flat (at below 1%) and yen swaps had only grown by 6%.



As illustrated in Graph 2, the growth in notional amounts outstanding in absolute terms was no longer purely driven by the increased use of swaps by other (non-dealer) financial counterparties.<sup>2</sup> The growth in this counterparty segment slowed to 8% period on period. Note also that those swaps with a remaining maturity of less than a year barely increased at all (+3%) – in contrast to the other maturity segments, which grew more than 20%.

<sup>2</sup> See *BIS Quarterly Review*, September 2003, page 6.

### **3. Foreign exchange options have an active year**

2003 was an active year for the OTC foreign exchange market (see Table 2). Forex options in particular were popular, showing 42% growth in notional amounts for the first half of the year and 25% for the second. Notional amounts outstanding of contracts involving the US dollar expanded by 30%, those involving the euro fell by 3% (10% at constant exchange rates), and there was a noticeable acceleration of growth relative to the first half of 2003 in yen options. These increased by 27% (16% in constant currency terms). The weakening of the dollar versus the yen became pronounced from 16 September onwards in anticipation of comments from a meeting of G7 ministers in Dubai favouring more flexible Asian exchange rates. The dollar/yen rate's fall below 115 yen for the first time since early 2001 led to higher implied volatilities in the forex market and encouraged more active usage of currency options.

### **4. Gross market values fall**

The first half of 2003 had seen an exceptional rise in gross market values, primarily because of the significant valuation shifts for interest rate contracts (see Graph 1 and Table 1). Long-term interest rates had reached their lowest point on 13 June 2003 after several years of decline, and the gross market value of long-term contracts was correspondingly high. This had the effect of increasing the overall ratio of gross market values to notional amounts outstanding (for all risk categories) from a stable 2001 level of 3.5% to 4.5% of total OTC derivatives market activity by the end of 2002. This was maintained through the first half of 2003 (4.7%).<sup>3</sup> There followed a sharp reversal across the globe in long-term rates (150 bp or more in the United States and Japan by 2 September), while short rates remained flat, and the market value of outstanding contracts fell. As a result, the ratio of gross market values to notional amounts outstanding had receded to 3.5% by the end of the year.

After taking into account bilateral netting arrangements, the derivatives-related gross credit exposures of reporting institutions grew to \$2 trillion at the end of 2003, a 13.5% increase period on period.

### **5. OTC markets catch up with the exchanges**

The notional amounts of contracts held at organised exchanges declined versus the OTC market, with a 3.8% reduction in amounts outstanding in the second half of 2003, compared with a 16% rise for OTC.<sup>4</sup> This contrasts with the first half of 2003, when the stock of OTC contracts had increased by 20% whilst the exchanges had boomed (+60%). The strong increase in activity on exchanges in the first half of the year had been boosted by trading of fixed income exchange-traded option contracts, in part related to mortgage hedging activity and the short-term uncertainty created over US macroeconomic policy in a period of extremely low rates.

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<sup>3</sup> A change in the differential between short- and long-term interest rates will lead to an increase in the value of interest rate swap contracts for some counterparties and a symmetrical decrease in value for others. A significantly large change will be reflected in gross market values.

<sup>4</sup> It should be noted, however, that activity in the two types of markets cannot be directly compared owing to inherent differences in the characteristics and uses of products. In exchange-based derivatives markets, the reversal of an initial position leads to a decline in open interest because of the offsetting of contracts through a central counterparty. In OTC derivatives markets, such a reversal involves the writing of new positions, which leads to an increase in notional amounts outstanding.

## II. Statistical notes

### 1. Coverage

**Overall coverage:** As from end-June 1998, the central banks of the G10 countries have collected statistics on OTC derivatives on a semiannual basis. The data are reported by major derivatives dealers, and compiled and published by the BIS. Prior to that date, the BIS used to compile and publish OTC derivatives data based on information provided by the International Swaps and Derivatives Association (ISDA). The latter were limited to data on turnover and contracts outstanding in notional amounts of currency and interest rate swaps and swap-related transactions, such as caps, collars, floors and swaptions, as provided by a restricted number of reporting dealers.

The current semiannual OTC derivatives market statistics provide comprehensive data not only on notional amounts but also on gross market values outstanding of forwards, swaps and options of foreign exchange, interest rate, equity and commodity derivatives. However, in contrast to the exchange-traded derivatives statistics, data are only available on amounts outstanding and not on turnover of contracts. All published figures are adjusted for double-counting resulting from positions between reporting institutions. Notional amounts outstanding are adjusted by halving positions vis-à-vis other reporting dealers. Gross market values are adjusted by adding the total gross positive market value of contracts to the gross negative market value of contracts with non-reporting counterparties only.

**Reporting:** The regular OTC derivatives market statistics are currently reported by 61 major reporting dealers in the G10 countries. The overall coverage of the market is fairly comprehensive, as OTC derivatives activity is highly concentrated. Moreover, the reporting dealers are requested to report their transactions on a worldwide consolidated basis inclusive of the activity of their foreign affiliates. Deals between affiliates of the same institution are excluded. All data are reported to the BIS in US dollars. Positions in other currencies of individual segments or instruments are converted into US dollars by reporting dealers at the exchange rate prevailing at the end of each reporting period. Data are broken down by market risk category, type of instrument, counterparty, currency and remaining maturity.

### 2. Definitions

**Notional amounts outstanding:** Nominal or notional amounts outstanding are defined as the gross nominal or notional value of all deals concluded and not yet settled at the reporting date. For contracts with *variable nominal or notional principal amounts*, the basis for reporting is the nominal or notional principal amount at the time of reporting.

Nominal or notional amounts outstanding provide a measure of market size and a reference from which contractual payments are determined in derivatives markets. However, such amounts are generally not those truly at risk. The amounts at risk in derivatives contracts are a function of the price level and/or volatility of the financial reference index used in the determination of contract payments, the duration and liquidity of contracts, and the creditworthiness of counterparties. They are also a function of whether an exchange of notional principal takes place between counterparties.

**Gross positive and negative market values:** Gross market values are defined as the sum of the absolute values of all open contracts with either positive or negative replacement values evaluated at market prices prevailing at the reporting date. Replacement values stand for the price to be received or paid if the instrument were sold in the market at the time of reporting. Market values are the amounts at which a contract could be exchanged in a current transaction between willing parties, other than in a forced or liquidation sale.

The term gross is used to indicate that contracts with positive and negative replacement values with the same counterparty are not netted. Nor are the sums of positive and negative contract values within a market risk category such as foreign exchange, interest rate contracts, equities and commodities set off against one another.

Gross market values supply information about the scale of gross transfer of price risk in derivatives transactions. Furthermore, gross market value at current market prices provides a measure of derivatives market size and economic significance that is readily comparable across markets and products.

**Current credit exposure and liabilities:** Current credit exposure represents the gross value of contracts that have a positive market value after taking account of legally enforceable bilateral netting agreements. Liabilities arising from OTC derivatives contracts represent the gross value of contracts that have a negative market value taking account of legally enforceable bilateral netting agreements.

### **3. Data availability**

The aggregate data from end-June 1998 onwards are available, with their main breakdowns, on the BIS website under <http://www.bis.org/statistics/derstats.htm>

### **4. Next publication dates**

The next OTC derivatives statistics covering the first half of 2004 will be released no later than end-November 2004.

### III. Statistical tables

Table 1

#### The global OTC derivatives market<sup>1</sup>

Amounts outstanding, in billions of US dollars

	Notional amounts				Gross market values			
	End– Jun 2002	End– Dec 2002	End– Jun 2003	End– Dec 2003	End– Jun 2002	End– Dec 2002	End– Jun 2003	End– Dec 2003
<b>GRAND TOTAL</b>	<b>127,509</b>	<b>141,679</b>	<b>169,678</b>	<b>197,177</b>	<b>4,450</b>	<b>6,360</b>	<b>7,908</b>	<b>6,987</b>
<b>Foreign exchange contracts</b>	<b>18,068</b>	<b>18,460</b>	<b>22,088</b>	<b>24,484</b>	<b>1,052</b>	<b>881</b>	<b>996</b>	<b>1,301</b>
Outright forwards and forex swaps	10,426	10,719	12,332	12,387	615	468	476	607
Currency swaps	4,215	4,503	5,159	6,371	340	337	419	557
Options	3,427	3,238	4,597	5,726	97	76	101	136
<b>Interest rate contracts<sup>2</sup></b>	<b>89,955</b>	<b>101,658</b>	<b>121,799</b>	<b>141,991</b>	<b>2,467</b>	<b>4,266</b>	<b>5,459</b>	<b>4,328</b>
FRA	9,146	8,792	10,270	10,769	19	22	20	19
Swaps	68,234	79,120	94,583	111,209	2,213	3,864	5,004	3,918
Options	12,575	13,746	16,946	20,012	235	381	434	391
<b>Equity-linked contracts</b>	<b>2,214</b>	<b>2,309</b>	<b>2,799</b>	<b>3,787</b>	<b>243</b>	<b>255</b>	<b>260</b>	<b>274</b>
Forwards and swaps	386	364	488	601	62	61	67	57
Options	1,828	1,944	2,311	3,186	181	194	193	217
<b>Commodity contracts<sup>3</sup></b>	<b>777</b>	<b>923</b>	<b>1,040</b>	<b>1,406</b>	<b>79</b>	<b>86</b>	<b>110</b>	<b>128</b>
Gold	279	315	304	344	28	28	22	39
Other	498	608	736	1,062	51	58	88	88
Forwards and swaps	290	402	458	420	...	...	...	...
Options	208	206	279	642	...	...	...	...
<b>Other<sup>4</sup></b>	<b>16,496</b>	<b>18,330</b>	<b>21,952</b>	<b>25,510</b>	<b>609</b>	<b>871</b>	<b>1,083</b>	<b>957</b>
<b>Gross credit exposure<sup>5</sup></b>	<b>.</b>	<b>.</b>	<b>.</b>	<b>.</b>	<b>1,317</b>	<b>1,511</b>	<b>1,750</b>	<b>1,986</b>
<i>Memo:</i> Exchange-traded contracts <sup>6</sup>	24,037	23,815	38,193	36,750	.	.	.	.

<sup>1</sup> 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 gross negative market value of contracts with non-reporting counterparties. <sup>2</sup> Single currency contracts only. <sup>3</sup> Adjustments for double-counting estimated. <sup>4</sup> Estimated positions of non-regular reporting institutions. <sup>5</sup> Gross market values after taking into account legally enforceable bilateral netting agreements. <sup>6</sup> Sources: FOW TRADEdata; Futures Industry Association; various futures and options exchanges.

Table 2

**The global OTC foreign exchange derivatives market<sup>1,2</sup>**

Amounts outstanding, in billions of US dollars

	Notional amounts				Gross market values			
	End– Jun 2002	End– Dec 2002	End– Jun 2003	End– Dec 2003	End– Jun 2002	End– Dec 2002	End– Jun 2003	End– Dec 2003
<b>TOTAL CONTRACTS</b>	<b>18,068</b>	<b>18,460</b>	<b>22,088</b>	<b>24,484</b>	<b>1,052</b>	<b>881</b>	<b>996</b>	<b>1,301</b>
With reporting dealers	6,602	6,845	7,960	8,663	372	285	284	395
With other financial institutions	7,210	7,602	8,955	9,455	421	377	427	535
With non-financial customers	4,256	4,012	5,172	6,366	259	220	286	370
Up to one year <sup>3</sup>	14,401	14,533	17,561	18,847	...	...	...	...
Between one and five years <sup>3</sup>	2,537	2,719	3,128	3,903	...	...	...	...
Over five years <sup>3</sup>	1,130	1,208	1,399	1,735	...	...	...	...
US dollar	15,973	16,500	19,401	21,429	948	813	891	1,212
Euro	7,297	7,818	9,914	10,145	445	429	526	665
Japanese yen	4,454	4,791	4,907	5,500	254	189	165	217
Pound sterling	2,522	2,462	3,093	4,286	112	98	114	179
Swiss franc	861	936	1,244	1,333	50	49	42	56
Canadian dollar	746	701	991	1,019	32	22	57	58
Swedish krona	766	708	749	821	48	31	26	36
Other	3,517	3,004	3,878	4,436	214	132	172	179
<i>Memo: Exchange-traded contracts<sup>4</sup></i>	79	74	105	118	.	.	.	.

<sup>1</sup> See footnote 1 to Table 1. <sup>2</sup> Counting both currency sides of every foreign exchange transaction means that the currency breakdown sums to 200% of the aggregate. <sup>3</sup> Residual maturity. <sup>4</sup> See footnote 6 to Table 1.

Table 3

**The global OTC interest rate derivatives market<sup>1</sup>**

Amounts outstanding, in billions of US dollars

	Notional amounts				Gross market values			
	End– Jun 2002	End– Dec 2002	End– Jun 2003	End– Dec 2003	End– Jun 2002	End– Dec 2002	End– Jun 2003	End– Dec 2003
<b>TOTAL CONTRACTS</b>	<b>89,955</b>	<b>101,658</b>	<b>121,799</b>	<b>141,991</b>	<b>2,467</b>	<b>4,266</b>	<b>5,459</b>	<b>4,328</b>
With reporting dealers	43,340	46,722	53,622	63,579	1,081	1,848	2,266	1,872
With other financial institutions	36,310	43,607	53,133	57,564	1,025	1,845	2,482	1,768
With non-financial customers	10,304	11,328	15,044	20,847	361	573	710	687
Up to one year <sup>2</sup>	33,674	36,938	44,927	46,474	...	...	...	...
Between one and five years <sup>2</sup>	34,437	40,137	46,646	58,914	...	...	...	...
Over five years <sup>2</sup>	21,844	24,583	30,226	36,603	...	...	...	...
US dollar	32,178	34,399	40,110	46,178	1,127	1,917	2,286	1,734
Euro	30,671	38,429	50,000	55,793	710	1,499	2,178	1,730
Japanese yen	13,433	14,650	15,270	19,526	326	378	405	358
Pound sterling	6,978	7,442	8,322	9,884	151	252	315	228
Swiss franc	1,591	1,726	1,962	2,444	33	71	72	73
Canadian dollar	859	828	1,136	1,302	24	31	37	36
Swedish krona	1,070	1,094	1,136	1,520	14	26	36	33
Other	3,175	3,090	3,862	5,344	82	93	129	135
<i>Memo: Exchange-traded contracts<sup>3</sup></i>	<i>21,893</i>	<i>21,710</i>	<i>35,482</i>	<i>33,917</i>	<i>.</i>	<i>.</i>	<i>.</i>	<i>.</i>

<sup>1</sup> See footnote 1 to Table 1. <sup>2</sup> Residual maturity. <sup>3</sup> See footnote 6 to Table 1.