
The foreign exchange and over-the-counter derivatives markets in the United Kingdom

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In April this year, the Bank of England conducted its regular survey of turnover in the United Kingdom foreign exchange and over-the-counter (OTC) derivatives markets,⁽¹⁾ as part of the latest worldwide survey organised by the Bank for International Settlements (BIS). The foreign exchange market survey has been conducted triennially since 1986, and a parallel survey of the OTC derivatives markets was first conducted in 1995. This article sets out the results (in US\$ billion), and compares them with the 1995 survey and results for other major centres.⁽²⁾

The survey shows that:

- *Average daily spot and forward foreign exchange turnover for April 1998 was \$637 billion, 37% higher than the \$464 billion per day recorded three years earlier (an annualised growth rate of 11%).*
- *Average daily turnover in the United Kingdom for OTC currency and interest rate derivatives was \$171 billion, 131% higher than the \$74 billion per day recorded three years earlier (an annualised growth rate of 32%).*
- *The United Kingdom has consolidated its position as the world's largest centre for foreign exchange and OTC derivatives business, accounting for 32% and 36% of the global foreign exchange and OTC derivatives markets respectively.*
- *The forward foreign exchange market continued to grow more rapidly than the spot market, which now represents only 35% of total foreign exchange turnover.*
- *US dollar/Deutsche Mark retained its position as the most widely traded currency pair (22% of all spot and forward foreign exchange transactions). The share of sterling trading rose, and sterling/US dollar regained its position as the second most actively traded currency pair (14% of turnover). Cross-trading of ERM currencies generally declined.*
- *The proportion of interest rate OTC derivatives turnover accounted for by swaps increased from 32% to 56%; the proportion accounted for by forward rate agreements (FRAs) fell from 59% to 35%.*
- *ERM currencies dominated the UK interest rate derivatives market, making up 56% of all trades. The Deutsche Mark almost doubled its share of the market, growing from 18% to 32%; all other major currencies lost market share.*

Introduction

The Bank's foreign exchange and derivatives market surveys in April were the latest in a triennial series

co-ordinated globally by the BIS. On this occasion, 43 countries undertook market surveys, and have each reported their results to the BIS, which has produced estimates of the size of the global markets.⁽³⁾ These global

(1) Only interest rate and currency OTC derivatives were covered by the 1998 turnover survey.

(2) Unless specified otherwise, turnover figures published here are adjusted to remove double-counting of trades between UK principals that will have been reported by both parties.

(3) Preliminary figures were released on 19 October 1998 and can be obtained from www.bis.org/press/p981019.htm.

The London survey

Participants

293 banks and securities houses participated in the UK foreign exchange survey (40 with nil returns, ie reporting 'no activity' in April), and 10 foreign exchange brokers. 317 principals took part in the OTC derivatives markets survey (120 with nil returns). As in previous years, the Bank of England asked all banks active in the United Kingdom, and some non-bank financial firms believed to be active in the wholesale markets, to participate in the survey. Other institutions did not take part directly, but their transactions with principals taking part, or through brokers, will have been reported by those institutions. It is reasonable to assume that little trading took place between non-participating entities.

The questionnaire

Survey participants were requested to complete a questionnaire prepared by the Bank of England, based on a standard format agreed with other central banks and produced by the Bank for International Settlements (BIS). Participants were asked to provide details of their gross turnover for the 20 business days in April 1998. Gross turnover is the absolute total value (measured in nominal terms) of all deals contracted; there was no netting of purchases against sales. Data were requested in terms of US dollar equivalents. The basis of reporting was the location of the trade, regardless of where it was booked. The questionnaire asked for data broken down by currency, instrument and type of counterparty.

The survey distinguished the following types of transaction:

Foreign exchange

- *Spot transaction*: single outright transaction involving the exchange of two currencies at a rate agreed on the date of the contract, for value or delivery (cash settlement) within two business days—including same-day and next-day value transactions.

Forwards

- *Outright forward*: similar to a spot deal except that it is for value more than two business days after the deal was struck.
- *Foreign exchange swap*: transaction that involves the actual exchange of two currencies (principal amount only) on a specific date at a rate agreed at the time of the conclusion of the contract (the short leg), and a reverse exchange of the same two currencies at a date further in the future at a rate agreed at the time of the contract (the forward leg). Only the unsettled forward part of the deal was reported, and the spot leg was *not* included as a spot transaction.

OTC derivatives

- *Currency swap*: contract that commits two counterparties to exchange streams of interest payments

in different currencies for an agreed period of time and to exchange principal amounts in different currencies at a pre-agreed exchange rate at maturity.

- *Currency option*: option contract that gives the right to buy or sell a currency with another currency at a specified exchange rate, during a specified period or on a specified date. This category also includes exotic foreign exchange options, such as average rate options and barrier options.
- *Forward rate agreement (FRA)*: interest rate forward contract in which the rate to be paid or received on a specific obligation for a set period of time, beginning at some time in the future, is determined at contract initiation.
- *Interest rate swap*: agreement to exchange periodic payments related to interest rates on a single currency; can be fixed for floating, or floating for floating, based on different indices. This group includes swaps where the notional principal is amortised according to a fixed schedule, independent of interest rates.
- *Interest rate option*: option contract that gives the right to pay or receive a specific interest rate on a predetermined principal for a set period of time. This group includes options written on interest rate securities, interest rate warrants or swaptions and caps, floors, collars, corridors or other synthetic products created by the grouping of different options.

Reporting institutions were asked to distinguish between transactions with *banks and securities firms*, *other financial institutions* (all categories of financial institution other than banks or securities firms) and *non-financial customers*, in each case separating local and cross-border transactions (determined according to the location, rather than nationality, of the counterparty) to permit adjustment for double-counting. Additionally, participants in the foreign exchange survey were asked how much business was done through brokers—including that through automated dealing systems—and to indicate whether they operated netting arrangements (and if so, to provide details). Brokers were also asked how much of their business was done through their own branches and subsidiaries abroad.

The *gross* aggregate responses to the main sections of the questionnaire are reproduced in Tables M, N and O (at the end of this article).⁽¹⁾ The BIS intends to publish an analysis of the global survey results next spring. A survey of global outstanding positions in the derivative markets (measured at the end of June 1998) has also been undertaken, and results for this will be released by the BIS at the same time.

(1) These data can also be obtained in electronic form from the Bank's web site at www.bankofengland.co.uk/pr98100.htm.

results are adjusted for the fact that trades between participants in the surveys reporting to two different central banks will appear in both national surveys (local double-counting is deducted 'at source').

Foreign exchange

Daily turnover in the United Kingdom

Average daily turnover during April 1998 was \$637 billion per day (\$217 billion in the spot market and \$420 billion in the forward market). This was 37% higher than in the previous survey in 1995, a slower rate of growth in dollar terms than the 60% increase reported between 1992 and 1995. However, there have been large exchange rate movements since 1995: in sterling terms, the overall growth was 32%, whereas in Deutsche Mark terms it was 80%.⁽¹⁾

About 47% of firms taking part in the survey thought that the overall level of turnover during the survey period was normal; 5% considered it to be above normal; and 15% below normal. The remaining 33% did not comment.

Global turnover

Table A shows that average daily turnover in the UK market is almost as great as that of the United States, Japan and Singapore combined. The growth of turnover in the United States was marginally faster than in the United Kingdom, partly because of the slower growth of ERM cross-currency and Ecu-denominated trading (which represented 10% of UK turnover in 1995, double that in the United States). The slower growth reported by the Banque de France and the Bundesbank was largely because of a fall in both centres in Deutsche Mark/French franc turnover. Several centres, including Japan, Hong Kong, and Switzerland, reported a fall in foreign exchange turnover in dollar terms. In domestic currency terms, however, turnover in Japan and Switzerland rose by 45% and 25% respectively between 1995 and 1998.

Table A
Average daily foreign exchange turnover

	US\$ billions			Percentage change 1995-98
	1992	1995	1998	
United Kingdom	291	464	637	37
United States	167	244	351	43
Japan	120	161	149	-8
Singapore	74	105	139	32
Germany	55	76	94	24
Switzerland	66	87	82	-5
Hong Kong	60	90	79	-13
France	33	58	72	24

It would be misleading simply to aggregate the individual results from countries to produce a figure for global turnover; this would double-count deals between centres. The BIS estimate of global turnover eliminates such double-counting and shows that global turnover was \$1,490 billion per day in April 1998, an increase of 26% from \$1,190 billion in April 1995. The United Kingdom's share of the global foreign exchange market continued to

rise: it reached 32% in April 1998, compared with 30% in 1995, 27% in 1992, and 26% in 1989.

Types of transactions

Table B shows a further fall in the proportion of foreign exchange business transacted for spot value. Forward transactions made up 65% of total gross turnover, continuing the substantial rise since the first survey in 1986, when the share of forwards stood at 27%. Most of these transactions are swaps, in which neither counterparty assumes currency risk. They are closely linked to money-market deals (most are short-dated), and are often used to hedge currency risk and manage liquidity. A similar trend was evident in the United States, where the proportion of turnover accounted for by forwards rose from 45% to 58% between 1995 and 1998.

Table B
Proportion of gross foreign exchange turnover by transaction type

	1992	1995	1998
Spot	52	41	35
Forward: outright	6	7	7
Forward: swaps	42	52	58
Maturity of forwards:			
Up to and for 7 days	33	42	51
7 days and up to and for 1 month	4	5	5
1 month and up to 6 months	} 10	6	4
3 months up to and for 1 year		6	4
Over 1 year	1	1	1

Note: Percentage shares have been rounded to the nearest whole number.

Currency composition

Table C shows that US dollar/Deutsche Mark retained its position as the most widely traded currency pair. Its share of currency trading has remained stable at around one fifth

Table C
Relative shares of total net turnover by currencies traded

	Per cent					
	1989 Total	1992 Total	1995 Total	1998		
				Spot	Forward	Total
£/US\$	27	17	11	4	10	14
US\$/DM	22	24	22	10	12	22
US\$/¥	15	12	17	5	7	13
US\$/SwFr	10	6	5	1	4	6
US\$/FFr	2	3	5	1	4	5
US\$/Can\$	2	2	2	1	2	2
US\$/Aus\$	2	1	2	1	1	2
US\$/Lit	2	n.a.	3	1	5	6
US\$/Pta	n.a.	n.a.	2	0	2	2
US\$/other ERM	n.a.	9	6	1	8	8
US\$/other	7	3	4	1	5	7
£/DM	3	5	3	3	1	3
£/other	1	1	1	0	0	1
DM/¥	2	2	2	1	0	2
DM/other ERM	n.a.	4	6	2	1	3
Ecu-denominated	2	5	4	0	2	2
Other cross-currencies	3	4	3	2	2	4
Total	100	100	100	34	66	100

n.a. = not available.

Note: Percentage shares have been rounded to the nearest whole number.

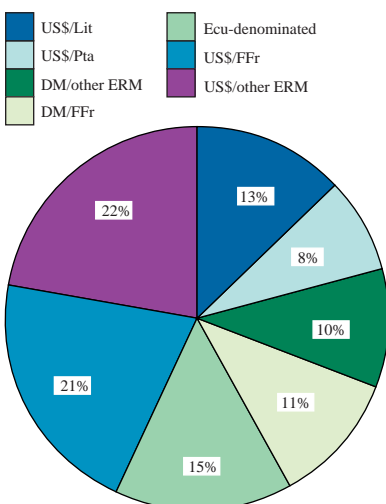
(1) In April 1995, the average rates of sterling and the Deutsche Mark against the US dollar were \$1.61 and DM 1.38 respectively. In April 1998, the comparable figures were \$1.67 and DM 1.81.

since 1986. The importance of US dollar/yen trading diminished, reversing a rise between 1992 and 1995. But the derivatives survey indicates that this currency pair now has the largest share of the currency options market; this may partly reflect higher expected volatility of the US dollar/yen exchange rate. Most activity in Japan was also in the options markets. For example, average daily US dollar/yen turnover fell in Japan, from \$122 billion to \$113 billion, but US dollar/yen volumes in the foreign exchange options market grew by more than 90% over the same period.

The proportion of UK turnover involving sterling increased slightly, from 16% to 18%, largely because of a rise in the share of sterling/US dollar transactions. But the importance of sterling trading to the UK market has declined significantly in the longer term (from 24% of turnover in 1992, and 27% in 1989). Overall, the UK market's reliance on domestic currency business is modest, compared with other major centres. In continental Europe, domestic currency trading represents a much higher proportion of total turnover: the figures for Germany, France and Switzerland are 66%, 41%, and 39% respectively.

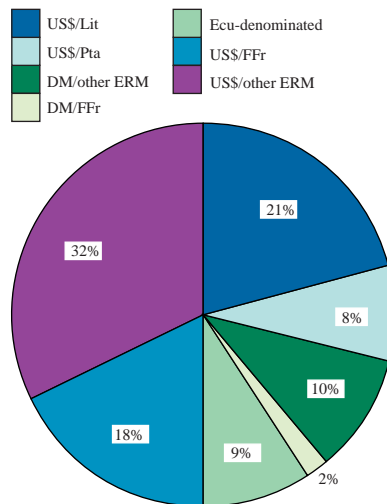
Cross-trading between ERM currencies generally declined, ahead of EMU. Table C illustrates that the proportion of total turnover attributable to trading the Deutsche Mark against other ERM currencies fell to 3%, from 6% in 1995. This was almost entirely attributable to a fall in Deutsche Mark/French franc business, from 3% of turnover to around 1/2%. Currency options business also declined: Deutsche Mark/French franc turnover as a proportion of total currency derivatives business fell from 5% to less than 1%. But Charts 1 and 2 show that the proportion of principals' turnover attributable to US dollar/ERM-currency trading increased (it is standard practice to swap non-dollar currencies using the US dollar as a conduit) and this may partly reflect the integration of national money markets within the prospective euro area.

Chart 1
ERM currencies in 1995



Average daily net turnover: \$123 billion

Chart 2
ERM currencies in 1998



Average daily net turnover: \$165 billion

Trading of the US dollar against 'other currencies' as a proportion of overall turnover increased to 7%, from 4% in 1995. The Federal Reserve Bank of New York reported an identical increase. This is consistent with more rapid growth of emerging market currency trading, relative to overall turnover. By way of background, Table D, reproduced from the BIS's 68th Annual Report, shows that local daily turnover in emerging market currencies rose from around \$25 billion to \$60 billion between April 1995 and October 1997. (Within this total, the dollar value of Asian currency trading generally declined between April 1997 and October 1997; the Thai baht was devalued on 1 July 1997 and other currencies came under pressure soon thereafter.)

Table D
Foreign exchange turnover in emerging markets

Currencies	Turnover (a) US\$ billion per day			
	April 1995	April 1996	April 1997	October 1997
Asia:	13.6	19.0	22.1	20.5
Indonesian rupiah	4.8 (b)	7.8 (b)	8.7 (b)	8.5 (b)
Korean won	3.1	3.2	4.0	3.6
Thai baht	2.6	4.0	4.6	2.5
New Taiwan dollar	1.5	1.6	1.7	2.3
Indian rupee	1.6	1.2	1.7	2.0
Malaysian ringgit	n.a.	1.1	1.2	1.5
Philippine peso	0.02	0.1	0.2	0.1
Latin America:	10.1	12.9	17.5	23.7
New Mexican peso	3.2	4.2	7.1	9.5
Brazilian real	4.3	5.5	6.7	8.5
Argentine peso	1.7	2.0	2.2	3.0
Chilean peso	0.8	1.0	1.1	2.2
Colombian peso	n.a.	0.1	0.2	0.3
Peruvian sol	0.1	0.1	0.2	0.2
Eastern Europe:	1.8	7.5	8.8	15.3
Russian rouble	0.6	2.6	3.7	10.7
Czech koruna	0.6	2.5	3.2	2.1
Polish zloty	0.3 (b)	1.6 (b)	0.9 (b)	1.7 (b)
Hungarian forint	0.3	0.6	0.4	0.6
Slovak koruna	0.03	0.2	0.6	0.2
Total	25.5	39.4	48.4	59.5

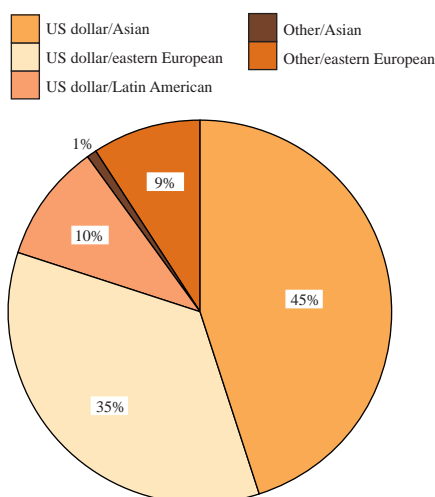
n.a. = not available.

Note: Reproduced from the BIS 68th Annual Report (June 1998), Table VI.5.

(a) Estimates as reported by national central banks, for their respective centres, net of local double-counting, unless otherwise specified. For Thailand, 1995 second-half and 1996 annual averages. For Indonesia and Argentina, 1995 and 1996 annual averages.
(b) Gross.

For the first time, the UK survey included a memorandum item on emerging market currencies. Estimated gross turnover in these currencies was \$12.5 billion per day,⁽¹⁾ compared with aggregate gross turnover of \$798 billion per day. Chart 3 illustrates that UK trading of the US dollar against Asian and eastern European currencies represented four fifths of emerging market turnover. Principals were also asked to identify currencies with turnover exceeding \$100 million during April, equivalent to \$5 million per day. Using this as a guide, the most actively traded currencies at that time were the Czech koruna (20 dealers reported monthly turnover in excess of \$100 million), Malaysian ringgit (19), Thai baht (16), Indonesian rupiah (13), and Polish zloty (12). The ranking for Asian currencies in the New York survey is similar, but eastern European currencies appear to be more actively traded in London, and Latin American currencies in New York.

Chart 3
Turnover in currencies of the emerging market economies



Reporters were asked to include the following currencies:
 Eastern European: Czech koruna, Hungarian forint, Polish zloty, Russian rouble, Slovak koruna, Slovenian tolar.
 Latin American: Argentine peso, Brazilian real, Chilean peso, New Mexican peso, Peruvian sol.
 Asian: Indian rupee, Indonesian rupiah, Korean won, Malaysian ringgit, New Taiwan dollar, Thai baht.

Counterparties

As Table E shows, the proportion of principals' turnover accounted for by domestic and international interbank business rose from 75% to 83%. The rise was attributable to the faster growth of cross-border business. Overall, cross-border transactions accounted for 66% of net turnover. The global results show that cross-border deals account for a relatively high proportion of UK turnover. The comparable figure reported by the BIS was 54% of global turnover.

The share of business with other financial institutions, such as pension funds, fell to 9½%. This reverses the trend between 1989 and 1995. The share of business with non-financial institutions was steady at 7%. The results of the derivatives survey were similar: other financial institutions and non-financial institutions accounted for 13% and 8% respectively of turnover in currency derivatives.

Table E
Average daily turnover by counterparty

US\$ billions; percentage of total net turnover in italics

	1989	1992	1995	1998				
Gross turnover	241	357	571	798.2				
<i>of which:</i>								
Domestic interbank (a)	108	134	215	322.7				
Net domestic turnover (b)	187	290	464	637.3				
<i>of which:</i>								
Other financial institutions	16	9	42	18	60.5	9.5		
Non-financial institutions	10	5	24	8	30	7	46.6	7.3
Cross-border interbank	107	57	158	55	241	52	369.3	57.9
Net domestic interbank	54	29	67	23	108	23	160.9	25.2

(a) Domestic interbank deals are those between two banks located in the United Kingdom.

(b) Net domestic turnover is after adjustment for double-counting of such deals.

Market concentration

The combined market share of the top ten principals, which was stable in the previous survey, rose from 44% to 50%. The top twenty's share—fifteen of which were in the top twenty in 1995—reached 69% (68% in 1995, and 63% in 1992). But the number of firms individually accounting for more than 1% of total turnover has remained stable at around 25 since 1992. So business remains well dispersed among the largest institutions. The results of the US survey were similar. For example, the top ten principals' market share in the United States rose from 48% to 51%. In contrast, other markets are more concentrated than those in either the United Kingdom or the United States: in France, for example, the top ten institutions accounted for four fifths of turnover.

Previous surveys found that business was more widely dispersed in the most actively traded currencies than in others. But Table F shows that the top ten principals' market share in a range of different currencies converged: the range is now between 52%–57%.

Table F
Percentage share of the ten principals most active in individual currency pairs

	1986	1989	1992	1995	1998
£/US\$	40	34	48	50	57
US\$/DM	38	37	43	40	54
US\$/¥	46	39	48	47	52
US\$/SwFr	57	60	66	66	55
US\$/FFr	70	61	54	51	55

Foreign-owned institutions operating in the UK market account for 85% of principals' aggregate turnover in the United Kingdom in 1998, compared with 79% in 1995. North American principals remain the most active, with a 49% market share, and their share rose in all US dollar pairs (see Table G). In contrast, UK principals' share of sterling trading declined, partly reflecting mergers between UK principals and institutions from the rest of the European Union (reducing the number of UK principals). The proportion of turnover transacted by Japanese principals fell from 10% to 7%, and their share of the US dollar/yen market fell from around one third to less than one quarter. A similar trend was evident in Japan: foreign firms' share of customer transactions more than doubled, to 65% of customer business transacted by principals.

(1) It was not possible to eliminate local double-counting for these currencies. The figure may underestimate turnover in emerging market currencies, because not all reporters completed the memorandum item.

Table G
Principals' shares of the London market in different currencies by country grouping

Per cent	US dollar against:					
	£	DM	¥	SwFr	Can\$	Aus\$
Nationality of principal						
United Kingdom	28 38	15 18	11 14	8 13	5 7	15 27
Other European Union	20 13	21 17	11 8	11 7	6 15	8 2
North American	39 33	46 44	46 40	64 54	77 69	41 34
Japan	5 6	8 10	23 30	5 2	1 1	1 1
Other	8 9	10 11	9 8	12 25	11 8	36 36
	Sterling against:		DM against:		Total	
	DM	¥	SwFr			
Nationality of principal						
United Kingdom	26 31	21 23	29 16			15 21
Other European Union	24 14	26 6	16 4			18 15
North American	38 36	26 28	33 42			49 42
Japan	5 7	20 31	3 2			7 10
Other	7 12	8 11	20 37			11 12

Note: Figures for 1995 are in italics.

Brokers

The proportion of principals' total foreign exchange business handled by brokers fell to 27%. In 1995, the proportion of principals' total foreign exchange business transacted by brokers was 35%, little changed from 34% in 1992. The electronic brokers' share of principals' total foreign exchange business rose from 5% to 11% (they were not active at the time of the 1992 survey), and the proportion of business conducted by traditional voice brokers declined from 30% to 16%.⁽¹⁾ The number of voice brokers in the foreign exchange market was little changed from 1995, although several withdrew from the spot market. Overall, the structure of brokers' business, in terms of the relative proportion of spot and forward business transacted by brokers, changed little between 1995–98 (see Table H). The proportion of short-dated swaps business increased, in line with the rise in short-dated swaps' share of total turnover. Table I shows that the proportion of brokered transactions involving a UK principal has declined slightly between 1995–98, from 90% to 86%.⁽²⁾

Table H
Types of transaction—all brokers' turnover

Percentage of total turnover			
	1992	1995	1998
Spot	52	46	46
Forwards: outright	2	1	4
Forwards: swaps	46	53	50
<i>of which:</i>			
Up to and for 7 days	31	35	43
7 days and up to and for 1 month	4	5	4
1 month and up to 6 months	9	8	4
6 months up to and for 1 year	3	5	3
Over 1 year	1	1	0

Electronic brokers now handle 70% of principals' spot deals transacted via brokers. And almost one quarter of spot transactions in the UK market are conducted by the electronic brokers (the proportion is almost one third in the United States). The scope of electronic brokers' business has become more diverse: a wider range of

Table I
Counterparties to all brokers' turnover

Percentage of total turnover				
	1989	1992	1995	1998
Between two principals in the United Kingdom	36	33	38	34
Between a principal in the United Kingdom and a principal abroad	50	49	52	52
Between two principals abroad	13	10	7	12
Other customers	1	8	3	2

currency pairs and products (eg forwards) is available. However, spot trading of the US dollar against the Deutsche Mark and yen still accounts for most of the two electronic brokers' volumes. In contrast, more than 95% of volumes transacted via electronic brokers in certain currency pairs (such as sterling/US dollar and US dollar/Swiss franc) are handled by a single system.

OTC derivatives

Daily turnover in the United Kingdom

Average daily turnover in the United Kingdom for OTC currency and interest rate derivatives was \$171 billion, 131% higher than the \$74 billion recorded by the previous survey. Overall, currency derivatives grew by 218% over the three-year period, compared with 110% for interest rate derivatives. The interest rate derivatives market is still larger, however, now accounting for \$123 billion per day (up from \$59 billion)—some 2½ times the size of the currency derivatives market, at \$48 billion per day (up from \$15 billion).

Just over half the firms taking part in the survey thought that the overall level of turnover during the survey period was normal; 22% considered it to be above normal; and 5% below normal. The remaining 21% did not comment. Some participants reported that they undertook some unusually large interest rate trades in ERM currencies in April, ahead of the decisions at the start of May on the initial members of EMU and the bilateral rates at which they would join. This will have inflated both these firms'

(1) Voice brokers quote prices over lines to principals' dealing rooms. The EBS Partnership and Reuters Transaction Services Ltd provide automated electronic order-matching systems.

(2) The analysis of brokers' business excludes deals between principals abroad transacted by electronic brokers.

turnover values and share of the interest rate markets, and overall UK turnover in ERM interest rate products.

Global turnover

The results from the eight largest centres in 1995 show that the United Kingdom has consolidated its position as the world's largest centre for OTC derivatives business (see Chart 4).

Chart 4
OTC derivatives turnover—UK and other centres

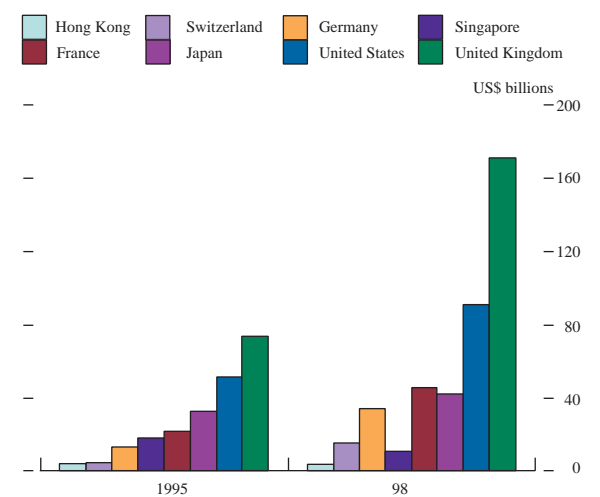


Table J shows that growth between the two surveys was slower outside Europe than within it: the United States and Japan both recorded slower growth than the major European centres, and turnover in both Singapore and Hong Kong fell. Of the eight largest centres, the Swiss market grew most rapidly, although it remains small relative to the UK market. The BIS's estimate of global turnover (which eliminates double-counting between countries) was \$362 billion per day in April 1998, an increase of 85% from \$196 billion in April 1995. The United Kingdom's share of the global OTC currency and interest rate derivatives market rose to 36% in April 1998, compared with 27% in 1995.

Table J
Average daily OTC derivatives turnover in major financial centres

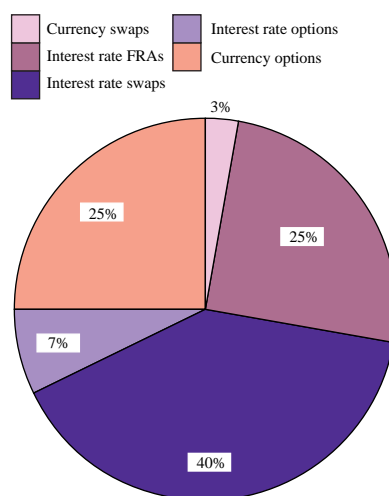
Centre	1995	1998	Percentage change
United Kingdom	74	171	131
United States	52	91	75
France	22	46	107
Japan	33	42	28
Germany	13	34	162
Switzerland	4	16	257
Singapore	18	11	-38
Hong Kong	4	4	-10

By way of comparison, BIS figures⁽¹⁾ show that the value of global turnover in interest rate and currency products on organised derivatives exchanges grew by less than 1% between 1994 and 1997. Average daily turnover of these—typically shorter-maturity—products in 1998 Q1 was \$1,399 billion.

Type of transaction

There has been a significant shift in the balance of business between interest rate swaps and FRAs: in 1998, interest rate swaps dominated the market (see Chart 5), with 40% of turnover (up from 25% in 1995), in contrast with 1995, when FRA business accounted for the largest share, with 47% (this share has now dropped to 25%). The dominance of interest rate swaps in 1998 is not unique to the United Kingdom—there has been a similar change in a number of the other major financial centres (eg Germany, France, Japan and Hong Kong).

Chart 5
OTC derivatives turnover—product breakdown



Average daily turnover: \$171 billion

The overall market shares reflect changes within the interest rate derivatives sector, which accounted for 72% of total turnover in April 1998, compared with 80% in 1995: swaps increased their share of interest rate trading from 32% to 56%, with growth of 271% over the three-year period. Conversely, FRAs' market share dropped from 59% to 35%, though turnover in FRAs grew by 22% between the surveys. The share of interest rate options rose from 9% to 10%.

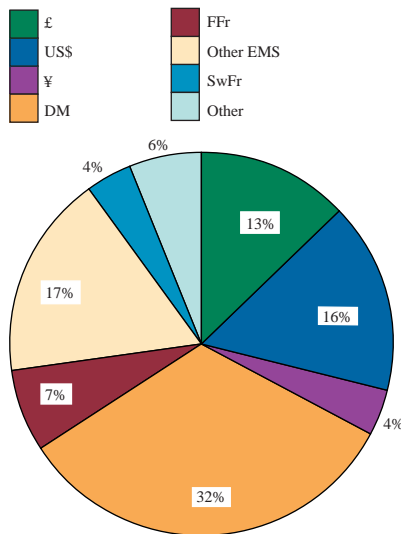
In the currency derivatives sector, there has been little change in the breakdown between instruments: currency options accounted for 89% (down from 91% in 1995) and currency swaps 11% (up from 9% in 1995). Though turnover in currency swaps has grown by 263%, the growth of 213% in currency options—typically with shorter maturities—has contributed most to the absolute increase in turnover in the currency derivatives market.

Currency composition

ERM currencies dominated trading in the UK interest rate derivatives market, accounting for 56% of all business⁽²⁾ (see Chart 6). Within ERM currencies, the Deutsche Mark alone accounted for 32%, almost doubling its share of the interest rate derivatives market since the previous survey. Deutsche Mark business also grew in other centres: in Germany, the

(1) Data obtained from *International Banking and Financial Market Developments*, Bank for International Settlements, Table 20A.
 (2) This figure includes Ecu and Swedish krona business.

Chart 6
OTC interest rate derivatives turnover—currency breakdown



Average daily turnover: \$123 billion

Note: Percentage shares have been rounded to the nearest whole number.

market share of Deutsche Mark interest rate business grew by 10 percentage points, to almost three quarters; in France, Deutsche Mark business grew from 4% to 19% of the market. In the United Kingdom, only the FRA market was not dominated by ERM currencies—in FRAs, the US dollar and sterling accounted for 39% between them, compared with only 24% for interest rate swaps and 27% for interest rate options.

The only currency where the value of interest rate derivatives trading in the United Kingdom fell between 1995 and 1998 was the yen, where total turnover (in US dollar terms) fell by 4%. But this owes much to the decline in the US dollar/yen exchange rate between the two survey periods—in yen terms, turnover rose by 53%.

The picture was different in the currency derivatives market (see Table K), where the US dollar maintained its dominant position and the Deutsche Mark lost market share. In the 1995 survey, the most active currency pairing was the US dollar/Deutsche Mark. This was overtaken between the two surveys by the US dollar/yen pair, which grew particularly strongly in currency options, perhaps reflecting the market's expectation in April that this bilateral rate would become increasingly volatile.

Table K
OTC currency derivatives turnover—currency breakdown

Percentage of the market where the currency constitutes one leg of the trade

	1995	1998
US\$	77	76
DM	51	42
£	12	17

Note: As there are two currency legs to each trade, percentages will add up to more than 100.

As in the foreign exchange market, derivatives trades between the Deutsche Mark and another ERM currency lost market share (falling from 9% to 3%). But in the derivatives market, this was not offset by an increase in US dollar/ERM trading. The US dollar/Deutsche Mark pair fell from 31% to 22% of the currency derivatives market, while US dollar/other ERM maintained a steady 10% of the market. This supports the foreign exchange findings that cross-trading between ERM currencies has declined—doubtless in anticipation of EMU—but suggests that the US dollar/ERM options market (as currency options dominate this sector) has not developed as rapidly as the corresponding spot, forward and swap markets.

Counterparties

Table L shows that the most active counterparties in the interest rate and currency derivatives markets were banks and securities firms, which accounted for 73% (down from 84% in 1995) of the total transactions in April 1998. Correspondingly, the share of business of other financial institutions increased to 21% (up from 10% in 1995). The share of business of non-financial institutions remained relatively steady at 6% (down from 7% in 1995).

Table L
Average daily turnover by counterparty—currency and interest rate derivatives

US\$ billions; *percentage of net turnover in italics*

	Interest rate derivatives		Currency derivatives	
	1995	1998	1995	1998
Gross turnover	77	152	17	60
<i>of which:</i>				
Domestic interbank (a)	36	59	4	25
Net domestic turnover (b)	59	123	15	48
<i>of which:</i>				
Other financial institutions	5 9	30 24	2 12	6 13
Non-financial institutions	3 6	6 5	1 10	4 8
Cross-border interbank	32 55	58 47	10 66	26 53
Net domestic interbank	18 31	29 24	2 12	12 26

(a) Domestic interbank deals are those between two banks located in the United Kingdom.

(b) Net domestic turnover is after adjustment for double-counting of such deals.

The results in the overall market reflect the changes within the interest rate derivatives market. Banks and securities firms transacted most business, although their share fell from 86% to 71% over the three-year period. The share of interest rate business undertaken by other financial institutions grew to 24% (from 9% in 1995). It seems likely that this figure is distorted by a number of unusually large interest rate trades with other financial institutions in the ERM currencies in April, ahead of the May EMU announcements. Non-financial institutions' business was little changed at 5% (down from 6% in 1995).

In the currency derivatives market, there has been little change in the overall breakdown between counterparties. Interbank activity continues to dominate, with 79% (up from 78% in 1995) of the market. The levels of interbank activity undertaken locally and cross-border have, however, changed substantially: interbank cross-border trading still makes up the largest proportion of activity, but fell from 66% of the market in 1995 to 53% in 1998. The decline is

mainly accounted for by the drop from 62% to 48% in the interbank cross-border activity in currency options (which comprise 89% of the currency derivatives market).

Market concentration

Overall, concentration in the UK market has increased since 1995. The top ten principals' combined market share rose from 52% to 67%, and the top twenty's rose from 74% to 82%.

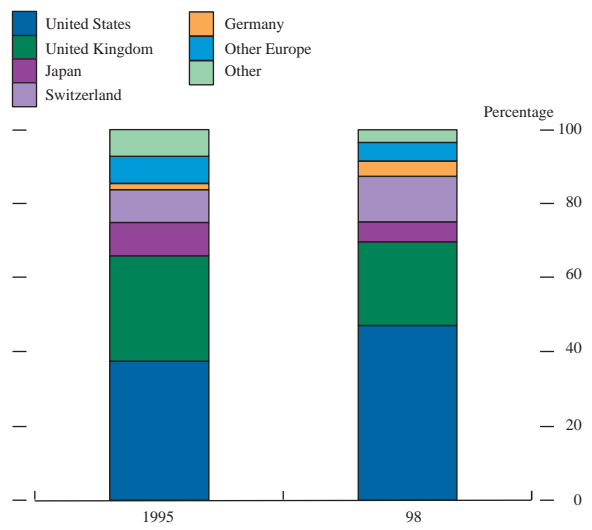
The currency derivatives market appears to be more concentrated than the interest rate market, with a smaller number of participants undertaking currency derivatives business than interest rate derivatives business during April 1998. Although the top five companies in the currency derivatives market hold 51% of the market, compared with 54% in the interest rate market, 20 companies hold 91% of the currency derivatives market, compared with 82% in the interest rate market.

Activity in currency derivatives during April 1998 was reported by 130 firms. 14 firms had 1% or more of the currency market; 7 had between 1%–5%; and 6 had between 5%–10%. Activity in interest rate derivatives during April 1998 was reported by 178 firms. 24 firms had 1% or more of the interest rate market; 19 had between 1%–5%; and 3 had between 5%–10%.

Market share of foreign banks

Chart 7 shows that, as in the foreign exchange survey, foreign-owned institutions dominated the UK OTC derivatives market, with UK firms accounting for only 23% of turnover⁽¹⁾ (down from 28% in 1995). US principals continued to dominate, increasing their market share from 37% to 47%. Continental European firms also gained market share, led mainly by German and Swiss firms. Japanese banks, however, lost market share, falling from 9% to 5%—reflecting both the turbulence experienced by these firms around the time of the survey, and the fact that

Chart 7
Derivatives market by nationality of bank



some Japanese firms consolidated in their home country and pulled out of the UK market in the three years between the two surveys.

There were some interesting developments within the different product types. US firms lost market share in currency derivatives, but compensated for this by increasing their share of the interest rate derivatives market from 37% to 53%. The main beneficiaries of US firms' relative decline in the currency derivatives market were Swiss firms (of which nine are active in the United Kingdom market), which increased their market share from 15% to 32% and now account for as much currency derivatives turnover in the United Kingdom as US firms do. UK principals lost market share (from 30% to 22%) in interest rate derivatives, and were the only major national group (compared with US, German, Japanese and Swiss firms) to have higher turnover in FRAs than in interest rate swaps—possibly suggesting that they have been concentrating their business at the shorter end of the market, which has suffered a relative decline in the period between the two surveys.

(1) All turnover figures in this section are gross.

Table M
Principals' average daily gross foreign exchange turnover

US\$ millions (rounded to the nearest million)

		US dollar against:										Sterling against:				
		DM	¥	Aus\$	SwFr	Can\$	FFr	Pta	Lit	Other EMS currencies	Ecu	Other	US\$	DM	¥	Aus\$
Spot																
Interbank counterparties	Local	32,468	16,407	2,123	5,436	2,343	2,984	939	3,118	1,274	492	3,353	23,314	11,646	315	16
Interbank counterparties	Cross-border	38,917	18,545	1,659	4,779	2,024	1,611	270	2,188	2,073	248	5,345	10,619	8,312	406	7
Other financial institutions	Local	3,408	2,447	283	825	121	568	168	331	672	95	656	1,484	936	129	7
Other financial institutions	Cross-border	2,971	2,059	79	538	72	115	25	150	611	49	512	534	410	88	1
Non-financial institutions	Local	778	758	44	234	59	115	59	64	202	41	99	1,289	483	68	20
Non-financial institutions	Cross-border	2,422	1,324	67	453	91	155	73	79	276	20	217	843	725	36	1
Sub-total		80,964	41,540	4,254	12,266	4,710	5,550	1,535	5,931	5,107	944	10,182	38,084	22,511	1,042	52
Outright forward																
Interbank counterparties	Local	3,525	2,679	203	773	315	796	407	1,030	1,451	462	1,555	4,519	756	87	6
Interbank counterparties	Cross-border	4,398	2,358	384	1,356	1,046	707	329	1,239	1,004	149	2,402	2,047	652	49	2
Other financial institutions	Local	1,117	469	697	160	60	134	222	690	339	29	524	890	263	57	25
Other financial institutions	Cross-border	937	794	99	282	30	105	16	134	218	47	394	290	134	15	3
Non-financial institutions	Local	483	311	61	96	82	134	33	78	111	10	161	874	179	42	25
Non-financial institutions	Cross-border	639	338	18	137	54	117	86	69	151	22	253	429	209	16	5
Sub-total		11,100	6,950	1,462	2,803	1,586	1,992	1,092	3,240	3,275	720	5,289	9,049	2,193	266	65
Foreign exchange swaps																
Interbank counterparties	Local	28,211	19,927	4,433	10,490	5,702	8,499	3,766	14,088	23,462	4,975	13,935	33,014	464	151	4
Interbank counterparties	Cross-border	41,740	24,752	5,103	15,298	7,083	16,277	8,615	17,888	28,068	6,226	19,841	29,040	935	101	7
Other financial institutions	Local	2,749	1,651	170	1,351	293	920	554	1,502	1,772	524	877	4,000	164	105	36
Other financial institutions	Cross-border	2,039	1,694	113	608	304	464	215	696	775	258	375	1,238	58	7	8
Non-financial institutions	Local	1,166	1,040	387	680	145	363	72	216	1,963	756	675	2,714	206	54	56
Non-financial institutions	Cross-border	2,484	2,103	201	1,311	221	811	262	631	1,518	1,607	945	1,977	249	15	2
Sub-total		78,387	51,167	10,408	29,737	13,749	27,335	13,483	35,020	57,558	14,346	36,649	71,983	2,075	433	113
Total		170,451	99,658	16,124	44,806	20,045	34,876	16,110	44,191	65,940	16,011	52,119	119,117	26,779	1,742	230
Maturity of forwards																
Up to and for 7 days		70,042	42,370	9,640	26,119	13,408	23,182	10,254	28,794	49,781	12,965	33,517	63,888	2,666	389	64
Over 7 days up to and for 1 month		7,552	4,361	641	2,387	547	2,638	1,609	3,038	4,802	912	2,669	7,117	436	105	38
Over 1 month up to and for 3 months		5,417	4,720	753	2,390	784	1,871	1,830	2,674	3,113	650	2,639	5,517	563	138	52
Over 3 months up to and for 1 year		5,674	5,483	606	1,356	560	1,425	752	3,604	2,721	498	2,817	4,082	395	52	19
Over 1 year		802	1,183	230	288	36	211	130	151	417	42	296	429	209	16	5

																		Deutsche Mark against:																					
SwFr	Can\$	FFr	Pta	Lit	Other EMS currencies	Ecu	Other	¥	SwFr	FFr	Lit	Pta	Other EMS currencies	Ecu	Other	Ecu/ other currencies	Residual	Total all currencies																					
239	18	166	65	164	67	14	93	4,853	2,280	1,074	1,388	353	1,970	486	1,870	56	292	121,678																					
133	7	115	14	81	109	16	18	4,698	4,377	1,995	2,119	581	3,522	900	2,643	202	625	119,159																					
34	4	21	10	27	47	1	35	318	267	132	382	62	172	29	162	3	61	13,894																					
8	3	20	2	8	13	5	3	208	170	64	95	18	156	33	153	13	133	9,321																					
35	17	70	40	30	116	10	59	98	72	46	39	19	74	4	62	5	77	5,185																					
24	3	21	14	23	67	1	8	263	343	116	128	46	313	29	173	8	142	8,502																					
473	52	412	144	332	420	47	216	10,438	7,509	3,428	4,151	1,078	6,208	1,480	5,065	287	1,330	277,740																					
32	4	83	26	55	113	10	26	363	101	100	146	39	385	37	111	34	69	20,297																					
15	1	115	9	24	51	2	10	509	214	242	210	45	453	88	145	45	737	21,037																					
18	10	22	6	19	66	4	25	67	69	38	35	23	59	5	60	4	58	6,266																					
14	3	16	1	5	32	3	2	66	55	16	38	6	109	2	43	9	158	4,076																					
16	9	75	28	24	107	8	50	43	26	8	12	5	29	2	46	3	61	3,232																					
15	4	21	4	17	48	4	3	73	41	13	31	5	102	13	131	21	117	3,207																					
109	31	330	74	144	419	30	116	1,122	506	418	474	122	1,137	146	537	116	1,200	58,115																					
24	2	67	11	43	45	3	10	176	62	27	107	27	142	28	6,999	145	710	179,748																					
36	4	84	11	104	71	5	11	481	216	345	516	79	391	40	3,398	264	2,094	229,123																					
8	8	17	10	8	62	1	19	28	19	11	23	21	30	2	200	11	74	17,223																					
19	5	7	4	41	40	10	10	96	40	8	40	1	66	9	314	19	153	9,735																					
52	8	103	24	36	194	3	38	56	24	40	8	10	26	2	80	6	88	11,292																					
13	14	61	3	25	49	1	13	36	83	48	64	7	62	21	115	14	229	15,193																					
152	42	339	62	257	462	23	101	874	444	479	758	145	718	102	11,107	459	3,348	462,316																					
734	124	1,082	280	733	1,300	100	433	12,434	8,459	4,324	5,383	1,345	8,062	1,728	16,709	861	5,878	798,171																					
93	30	318	57	142	433	15	105	1,071	570	639	559	106	1,011	150	9,807	315	2,801	405,302																					
78	18	192	29	97	147	16	46	396	149	162	106	58	244	49	992	125	918	42,672																					
59	16	77	23	102	143	10	52	271	99	54	137	60	191	27	378	93	495	35,397																					
16	5	62	22	43	109	9	10	184	91	29	398	38	307	10	337	33	301	32,047																					
15	4	21	4	17	48	4	3	73	41	13	31	5	102	13	131	9	34	5,012																					

Table N
Principals' average daily OTC currency derivatives gross turnover

US\$ millions (rounded to the nearest million)

	Sterling against:											US dollar against:							
	US\$	DM	¥	FFr	SwFr	Can\$	Aus\$	Lit	Pta	Ecu	Other EMS currencies	Other	Total	DM	¥	FFr	SwFr	Can\$	Aus\$
Currency swaps																			
Interbank counterparties	450	60	10	1	8	4	4	6	1	1	11	22	579	483	1,214	253	186	10	30
Local	337	26	9	1	8	0	1	3	0	1	6	7	398	301	644	146	118	5	13
Cross-border	113	34	2	0	0	4	4	3	1	1	4	15	181	182	571	108	68	5	17
Other financial institutions	25	1	0	2	0	0	0	1	136	1	2	6	173	81	140	56	2	4	10
Local	19	0	0	1	0	0	0	0	136	1	2	0	159	8	82	1	0	0	0
Cross-border	6	1	0	1	0	0	0	0	0	0	0	6	14	73	58	55	2	4	10
Non-financial institutions	94	3	6	3	14	0	0	3	0	2	6	0	133	63	72	13	34	7	4
Local	50	1	5	3	14	0	0	3	0	2	2	0	81	3	19	0	1	0	0
Cross-border	45	2	0	0	0	0	0	1	0	0	4	0	52	59	53	13	33	7	4
Sub-total	569	64	16	7	22	4	5	10	137	4	19	28	885	627	1,426	323	222	21	43
OTC options sold																			
Interbank counterparties	1,630	2,455	116	7	151	0	4	26	4	11	25	0	4,428	5,260	5,982	211	731	235	367
Local	920	1,250	81	5	109	0	3	9	3	6	3	0	2,390	2,046	2,554	119	372	33	147
Cross-border	710	1,205	35	2	42	0	1	17	0	4	21	0	2,038	3,215	3,428	92	360	202	220
Other financial institutions	54	83	3	0	19	–	0	7	3	0	1	–	172	510	941	53	114	32	24
Local	2	8	2	0	0	0	0	1	3	0	0	0	16	59	132	1	8	4	4
Cross-border	51	75	1	0	19	–	0	7	0	0	1	–	155	451	808	52	107	28	20
Non-financial institutions	141	121	10	7	4	0	3	1	5	6	6	4	310	267	413	104	81	17	45
Local	45	12	4	3	1	0	1	1	0	0	4	2	73	40	187	0	–	2	6
Cross-border	96	110	6	5	3	0	2	0	5	6	2	2	236	228	226	104	–	15	39
Sub-total	1,825	2,659	128	15	174	–	8	35	12	17	32	–	4,910	6,038	7,335	368	927	285	437
OTC options bought																			
Interbank counterparties	1,510	2,395	108	11	129	5	11	17	1	6	21	3	4,218	5,097	5,914	243	718	243	402
Local	798	1,286	73	7	94	0	5	2	0	0	5	3	2,273	1,931	2,388	96	288	20	152
Cross-border	713	1,109	35	4	36	5	6	15	1	6	16	0	1,945	3,166	3,525	147	430	218	249
Other financial institutions	58	115	15	0	1	0	0	7	2	0	6	0	204	547	1,251	35	98	16	21
Local	5	14	7	0	0	0	0	0	0	0	0	0	26	79	131	0	6	0	3
Cross-border	53	101	9	0	1	0	0	7	2	0	6	0	178	468	1,120	35	93	16	17
Non-financial institutions	150	101	13	3	5	0	3	1	8	0	6	1	289	345	399	113	80	9	31
Local	75	17	9	1	1	0	2	0	1	0	2	0	108	44	204	1	–	1	9
Cross-border	75	84	5	2	4	0	1	0	7	0	3	1	181	301	195	112	–	8	22
Sub-total	1,718	2,611	136	14	135	5	14	24	11	6	33	5	4,710	5,989	7,564	391	897	263	454
Total OTC options	3,542	5,270	264	29	309	–	22	59	23	23	64	–	9,620	12,027	14,899	759	1,824	547	891
Total FX contracts	4,111	5,334	281	36	331	–	26	69	160	27	83	–	10,505	12,654	16,325	1,082	2,046	568	934

Note: – indicates that there were fewer than three reporters and the figures have been suppressed at the request of the reporters.

						Deutsche Mark against:													Total all	
Lit	Pta	Ecu	Other EMS		Total	¥	FFr	SwFr	Can\$	Aus\$	Lit	Pta	Ecu	Other EMS		Total	Ecu/ other		Residual	Total all
			currencies	Other										currencies	Other		currencies	Residual		
511	131	171	545	518	4,055	56	8	17	0	1	42	23	12	15	12	185	46	69	4,934	
228	73	40	230	118	1,916	16	1	1	0	0	3	4	0	6	2	32	28	1	2,375	
283	58	132	315	400	2,139	40	8	16	0	0	39	19	12	9	10	153	18	68	2,559	
37	10	39	101	59	540	4	6	0	0	0	2	7	0	1	2	21	8	18	760	
21	8	26	13	26	186	2	0	0	0	0	0	7	0	1	1	11	0	1	358	
16	1	13	88	34	354	2	6	0	0	0	2	0	0	0	1	10	8	16	402	
14	3	0	51	29	289	10	0	2	8	0	2	0	0	4	18	44	84	96	646	
1	0	0	14	1	38	8	0	0	0	0	0	0	0	1	0	8	0	0	128	
13	3	0	37	29	251	2	0	2	8	0	2	0	0	3	18	36	84	95	518	
562	144	211	698	607	4,884	70	14	19	8	1	46	29	12	20	32	250	138	183	6,339	
2,557	4	8	91	211	15,658	718	44	857	0	18	516	40	27	98	111	2,430	9	564	23,089	
2,528	1	0	10	75	7,884	300	7	379	0	8	273	16	27	28	35	1,075	3	137	11,489	
30	3	8	81	136	7,774	417	37	478	0	10	243	24	0	70	75	1,356	6	428	11,601	
9	1	0	23	24	1,732	288	3	101	0	8	88	9	0	9	76	581	0	18	2,502	
0	0	0	-	-	211	4	0	18	0	0	24	0	0	0	0	46	0	1	275	
9	1	0	-	-	1,520	284	3	83	0	8	64	9	0	9	76	535	0	17	2,227	
12	0	0	13	36	989	81	0	103	0	0	5	0	0	7	19	215	3	19	1,535	
0	-	0	0	2	253	28	0	45	0	0	3	0	0	0	0	76	3	3	408	
12	-	0	13	33	736	58	0	58	0	0	2	0	0	7	19	139	0	16	1,127	
2,578	5	8	127	271	18,378	1,087	48	1,061	0	26	609	49	27	115	205	3,226	11	600	27,126	
2,553	3	5	69	224	15,465	712	38	923	2	21	529	44	0	135	120	2,523	6	285	22,496	
2,526	2	5	7	79	7,494	291	17	471	2	11	263	25	0	54	45	1,180	0	123	11,071	
27	1	0	62	145	7,970	421	21	452	0	10	266	18	0	81	75	1,344	6	161	11,426	
12	8	0	37	18	2,044	280	4	92	4	6	65	0	0	5	59	515	0	26	2,790	
0	-	0	-	1	258	2	0	18	0	0	26	0	0	0	0	46	0	10	341	
12	-	0	-	18	1,786	278	4	74	4	6	39	0	0	5	59	469	0	16	2,449	
7	0	0	14	14	1,013	87	3	111	0	0	6	0	3	9	11	229	17	16	1,564	
-	0	0	0	1	275	37	0	45	0	0	0	0	0	0	0	82	17	1	484	
-	0	0	14	14	738	50	3	66	0	0	6	0	3	9	11	147	0	15	1,080	
2,572	11	5	121	257	18,522	1,079	45	1,127	6	27	600	44	3	149	190	3,268	23	327	26,851	
5,150	16	13	249	527	36,900	2,166	93	2,188	6	53	1,209	92	30	264	395	6,495	34	927	53,977	
5,712	159	223	946	1,134	41,784	2,235	107	2,206	14	53	1,254	121	42	284	427	6,745	172	1,110	60,316	

Table O
Principals' average daily OTC interest rate derivatives gross turnover

US\$ millions (rounded to the nearest million)

	£	US\$	DM	¥	FFr	SwFr	Can\$	Aus\$	Ecu	Other EMS currencies	Other	Total
FRAs												
Interbank counterparties	9,146	9,592	4,918	2,220	989	2,349	1,840	38	173	10,530	2,965	44,760
Local	7,549	4,651	2,671	1,622	315	824	1,471	0	95	5,721	1,532	26,450
Cross-border	1,597	4,941	2,247	598	674	1,525	370	38	79	4,809	1,432	18,309
Other financial institutions	1,740	1,325	3,118	449	72	35	17	294	3	1,299	441	8,793
Local	1,615	1,176	2,936	105	8	0	4	287	0	955	341	7,428
Cross-border	124	149	182	344	64	35	13	8	3	344	100	1,365
Non-financial institutions	436	374	177	156	62	133	34	25	1	491	222	2,112
Local	348	198	78	22	22	48	27	15	1	393	26	1,179
Cross-border	88	176	99	134	39	85	7	10	0	98	196	933
Sub-total	11,322	11,291	8,213	2,825	1,123	2,517	1,891	357	177	12,320	3,628	55,665
Swaps												
Interbank counterparties	8,056	8,824	19,965	2,819	6,846	2,495	896	330	606	8,890	1,492	61,220
Local	5,199	2,984	9,184	973	2,963	1,289	294	78	273	3,550	721	27,507
Cross-border	2,857	5,840	10,781	1,846	3,883	1,206	602	252	333	5,341	771	33,713
Other financial institutions	1,179	1,041	11,792	414	1,505	433	116	58	258	1,418	467	18,679
Local	671	497	4,896	111	1,252	285	87	2	44	611	199	8,655
Cross-border	508	544	6,895	302	253	148	28	56	213	807	268	10,024
Non-financial institutions	682	396	463	347	244	103	8	36	31	277	22	2,609
Local	320	177	129	31	19	4	1	0	0	83	6	770
Cross-border	362	219	334	316	225	99	7	36	31	194	16	1,839
Sub-total	9,917	10,261	32,220	3,580	8,595	3,031	1,020	424	895	10,586	1,980	82,508
OTC options sold												
Interbank counterparties	793	882	2,109	98	215	173	9	0	11	787	106	5,184
Local	557	362	908	27	111	75	0	0	0	283	43	2,366
Cross-border	236	520	1,202	71	104	98	9	0	11	504	63	2,818
Other financial institutions	161	71	571	27	46	8	7	0	0	270	2	1,164
Local	157	13	197	6	18	5	0	0	0	34	1	431
Cross-border	4	58	374	21	28	3	7	0	0	236	2	732
Non-financial institutions	42	88	75	1	31	7	4	0	-	135	-	384
Local	36	17	-	0	0	0	0	0	0	-	-	73
Cross-border	6	71	-	1	31	7	4	0	-	-	0	312
Sub-total	997	1,041	2,755	126	292	188	19	0	-	1,192	-	6,732
OTC options bought												
Interbank counterparties	840	958	2,233	110	199	181	17	0	-	680	-	5,326
Local	666	426	890	31	70	92	4	0	0	282	39	2,498
Cross-border	174	532	1,344	80	130	89	14	0	-	398	-	2,828
Other financial institutions	67	63	686	61	33	17	3	0	0	150	30	1,111
Local	23	19	473	11	26	12	3	0	0	21	4	594
Cross-border	44	44	213	50	7	5	0	0	0	130	25	517
Non-financial institutions	150	108	166	7	34	22	2	0	-	503	-	997
Local	-	72	-	0	3	0	0	0	0	-	4	141
Cross-border	-	36	-	7	31	22	2	0	-	-	-	857
Sub-total	1,057	1,129	3,086	177	266	220	22	0	-	1,333	-	7,434
Total OTC options	2,054	2,170	5,841	303	558	408	41	0	36	2,525	231	14,166
Total FX contracts	23,292	23,723	46,274	6,708	10,276	5,956	2,952	781	1,107	25,430	5,839	152,339