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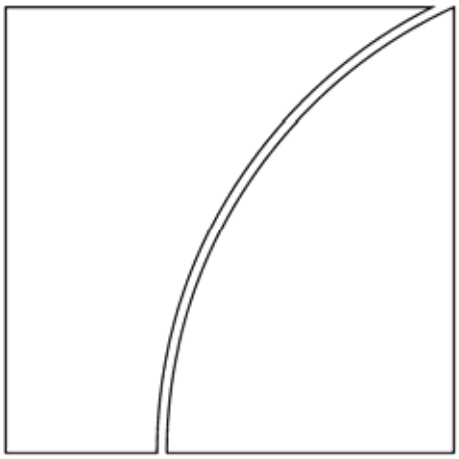

Monetary and Economic Department

Triennial Central Bank Survey of Foreign Exchange and Derivatives Market Activity in April 2007

Preliminary global results

September 2007

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Contents

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. Results for April 2007

In April this year, 54 central banks and monetary authorities participated in the Triennial Central Bank Survey of Foreign Exchange and Derivatives Market Activity. They collected data on turnover in traditional foreign exchange markets – those for spot transactions, outright forwards and foreign exchange swaps – and in over-the-counter (OTC) currency and interest rate derivatives. This was the seventh global survey since April 1989 of foreign exchange market activity and the fifth survey since April 1995 additionally covering OTC derivatives market activity. Today participating central banks and monetary authorities are publishing their national survey results and the BIS is releasing preliminary global aggregates from the survey.[1]

The BIS plans to publish a more detailed analysis of the results for the traditional foreign exchange markets in the December 2007 *BIS Quarterly Review*. In addition, the BIS will release the preliminary global results from the second part of the triennial survey covering open contracts outstanding in OTC derivatives markets at end-June 2007 in November 2007, and a final report with global results on foreign exchange market turnover and on OTC derivatives market turnover and amounts outstanding in December 2007.

1. Traditional foreign exchange markets

The 2007 survey shows an unprecedented rise in activity in traditional foreign exchange markets compared to 2004. Average daily turnover rose to $3.2 trillion in April 2007, an increase of 71% at current exchange rates and 65% at constant exchange rates (Table 1). This increase was much stronger than the one observed between 2001 and 2004 and, in addition to valuation effects, was arguably driven by several factors. Against the background of low levels of financial market volatility and risk aversion, market participants point to a significant expansion in the activity of investor groups including hedge funds, which was partly facilitated by substantial growth in the use of prime brokerage, and retail investors. A trend for institutional investors with a longer-term investment horizon towards holding more internationally diversified portfolios might also have been a factor. A marked increase in the levels of technical trading – most notably algorithmic trading – is also likely to have boosted turnover in the spot market.

Turnover rose across instruments but the growth in the FX swap markets was particularly large.[2] This is in contrast to the period between 2001 and 2004, for which growth in FX swaps was significantly lower than that in spot contracts and outright forwards. Changes in hedging activity may have been one factor underlying this trend.

While turnover with all types of counterparties grew between 2004 and 2007, trading between reporting dealers and other financial institutions continued to increase particularly strongly, consistent with trends noted above. Its share in total turnover increased from 33% to 40% (Table 2). The share of trading between reporting dealers and non-financial customers also rose, reaching 17%, possibly reflecting high merger

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[1] National results are adjusted for local inter-dealer double-counting, while global results are adjusted for both local and cross-border inter-dealer double-counting and for estimated gaps in reporting.

[2] Definitions of foreign exchange and OTC derivative instruments are provided on pages 16–17.

and acquisition and hedging activity. By contrast, the share of interbank trading continued to fall. In 2007, trading between reporting dealers captured 43% of the total market, compared to 64% in 1998. The shrinking interbank market might reflect the continuing consolidation in the banking industry.

Over the past three years, the currency composition of turnover changed only slightly (Table 3). The share of the main currencies fell: for the US dollar and the yen, the fall in share can mostly be attributed to valuation effects driven by the depreciation of these currencies between 2004 and 2007. Several currencies that have been used as targets in carry trade strategies, in particular the Australian and New Zealand dollars, saw their share increase, even abstracting from significant positive valuation effects.[3] The increase in the Hong Kong dollar's share was also visible, possibly reflecting Hong Kong's links with China. Overall, the share of emerging market currencies increased: these currencies were involved in almost 20% of all transactions in April 2007.

The geographical distribution of foreign exchange trading typically changes slowly over time, and the 2007 results are no exception (Table 5). Among countries with major financial centres, the United Kingdom, Switzerland and Singapore gained market share, while the shares of the United States and Japan dropped. In some cases, changing shares reflected the relocation of desks. The higher share for Australia (up from 3.4% to 4.2%) may partly stem from carry trade activity in the Australian dollar, while the increased share held by Hong Kong (up from 4.2% to 4.4%) is likely to reflect the burgeoning importance of China. Among emerging markets where trading rose, the growth of India was noteworthy, and possibly reflected Indian authorities' efforts to relax controls on capital movements.

2. OTC derivatives markets

Activity in the OTC derivatives market continued to expand at a rapid pace. Average daily turnover of interest rate and non-traditional foreign exchange derivative contracts reached $2.1 trillion in April 2007, 71% higher than in April 2004 (Table 6). This corresponds to an annual compound rate of growth of 20%, which is in line with the growth recorded since the derivatives part of the triennial survey was started in 1995.

Growth was particularly strong in the FX segment, where average daily turnover in cross-currency swaps and foreign exchange options increased by 111% to $0.3 trillion in April 2007, thus outstripping growth in "traditional" instruments such as spot trades, forwards and plain FX swaps (71%). While options remained the main "non-traditional" FX instrument in the OTC market, accounting for slightly less than three quarters of total turnover, the instrument with the fastest rate of growth (281%) was actually cross-currency swaps, whose turnover increased to $0.1 trillion. In part, this growth could be explained by the hedging of foreign currency bonds. April 2007 saw a large issuance of dollar-denominated bonds by non-resident issuers, some of whom may have hedged their obligations in the swap market.

[3] The shares of some currencies, in particular the Swedish krona and the Australian dollar, have also benefited at the margin from a refinement in the data collection process, which encouraged reporting banks to report turnover for a more comprehensive set of currency pairs.

More moderate growth was recorded in the much larger interest rate segment, where average daily turnover increased by 64% to $1.7 trillion. While the volumes traded in the OTC market increased at almost twice the rate recorded on organised exchanges, turnover in listed contracts nevertheless far exceeded trading in OTC contracts. This contrasts with the FX segment, where turnover in exchange-traded derivatives was much smaller than turnover in the OTC market, despite very rapid growth in FX futures and options.

The euro remained the leading currency in the interest rate segment of the OTC derivatives market. In the reporting period, 39% of turnover took place in contracts denominated in euros, and 32% in dollars (Table 9). The high share of the euro is related mainly to the importance of the euro swap market, where turnover increased to $0.5 trillion. This compares to an average daily turnover of $0.3 trillion in dollar-denominated interest rate swaps. By contrast, forward rate agreements (FRAs) and options play a much more important role in the dollar than in the euro segment. Indeed, turnover in euro-denominated FRAs fell by 43% between April 2004 and April 2007. While this is in line with anecdotal evidence that these instruments have lost their importance as a tool to trade short-term interest rate risk to overnight interest rate swaps, the extent of the decline is quite large. Moreover, a comparison with another source of data[4] suggests that the drop took place almost entirely in the second half of 2006 and in early 2007. One explanation could be that turnover in FRAs was more affected by the relative paucity of news on euro area monetary policy during the reporting month.

While the dollar and euro clearly dominate activity in OTC interest rate derivatives, their combined share has fallen by nearly 10 percentage points since the 2004 survey, to 70% in April 2007, as turnover growth in several non-core markets outstripped that in the two leading currencies. For example, average daily trading volumes of sterling-denominated interest rate derivatives increased by 91%, compared to rates of growth of 42% and 53%, respectively, in the euro and the dollar. Turnover in contracts denominated in yen almost tripled, bringing the Japanese currency's share in total turnover to over 8%, from 4.5% three years before. To some extent, rapid growth in the yen market reflects a catching-up, since for many years activity in that market had been hampered by low and stable interest rates.

The trend towards more cross-border transactions in OTC derivatives continued. In April 2007, such transactions accounted for two thirds of total turnover, up from 60% three years previously (Table 7). In the non-traditional FX segment, their share in total turnover was highest in inter-dealer transactions (77%) and lowest in transactions between reporting dealers and non-financial customers (53%). In the interest rate market, the share of cross-border deals was actually lower in the inter-dealer market (61%) than in the client market (71% for trades with other financial institutions and 73% for trades with non-financials), perhaps reflecting a strong position of local dealers in particular currencies.

Turnover in OTC derivatives was even more concentrated in a small number of financial centres than trading in "traditional" FX contracts. Almost two thirds of total turnover took place in only two countries, compared to approximately one half in the "traditional" FX

[4] European Central Bank, *Euro Money Market Study 2006*.

market. With a share of 42.5% of worldwide sales, the United Kingdom was the most important location for OTC derivatives trading, followed by the United States with a share of 23.8% (Table 10). Outside these two centres, most trades took place in Europe, primarily in France (7.2%), Germany (3.7%), Ireland (3.4%) and Switzerland (2.9%). Apart from the United States, the only non-European countries to record sizeable trading in OTC derivatives were Japan and Singapore, which were ranked fifth and eighth in terms of turnover.

II. Statistical tables

Table 1

Global foreign exchange market turnover[1]

Daily averages in April, in billions of US dollars

Instrument	1992	1995	1998	2001	2004	2007
Spot transactions	394	494	568	386	621	1,005
Outright forwards	58	97	128	130	208	362
Foreign exchange swaps	324	546	734	656	944	1,714
Estimated gaps in reporting	43	53	61	28	107	129
Total "traditional" turnover	**820**	**1,190**	**1,490**	**1,200**	**1,880**	**3,210**
Turnover at April 2007 exchange rates[2]	*880*	*1,150*	*1,650*	*1,420*	*1,950*	*3,210*

[1] Adjusted for local and cross-border double-counting. [2] Non-US dollar legs of foreign currency transactions were converted into original currency amounts at average exchange rates for April of each survey year and then reconverted into US dollar amounts at average April 2007 exchange rates.

Table 2

Foreign exchange market turnover by instrument, counterparty and maturity[1]

Daily averages in April, in billions of US dollars and percentages

Instrument/counterparty	1998		2001		2004		2007	
	Amount	% share	Amount	% share	Amount	% share	Amount	% share
Spot	**568**	**40**	**386**	**33**	**621**	**35**	**1,005**	**33**
with reporting dealers	348	61	216	56	300	48	427	42
with other financial institutions	121	21	111	29	213	34	394	39
with non-financial customers	99	17	58	15	108	17	184	18
Outright forwards	**128**	**9**	**130**	**11**	**208**	**12**	**362**	**12**
with reporting dealers	49	38	52	40	73	35	96	27
with other financial institutions	34	27	41	31	80	38	159	44
with non-financial customers	44	35	37	29	56	27	107	30
Up to 7 days	65	51	51	39	92	44	154	43
Over 7 days and up to 1 year	57	45	76	58	111	53	200	55
Over 1 year	5	4	4	3	5	3	7	2
Foreign exchange swaps	**734**	**51**	**656**	**56**	**944**	**53**	**1,714**	**56**
with reporting dealers	511	70	419	64	562	60	796	46
with other financial institutions	124	17	177	27	293	31	682	40
with non-financial customers	98	13	60	9	89	9	236	14
Up to 7 days	528	72	451	69	692	73	1,329	78
Over 7 days and up to 1 year	192	26	196	30	240	25	365	21
Over 1 year	10	1	8	1	10	1	18	1
Total[2]	**1,429**	**100**	**1,172**	**100**	**1,773**	**100**	**3,081**	**100**
with reporting dealers	908	64	688	59	936	53	1,319	43
with other financial institutions	279	20	329	28	585	33	1,235	40
with non-financial customers	242	17	156	13	252	14	527	17
Local	657	46	499	43	674	38	1,185	38
Cross-border	772	54	673	57	1,099	62	1,896	62

[1] Adjusted for local and cross-border double-counting. [2] Excludes the estimated gaps in reporting shown in Table 1.

Table 3
Currency distribution of foreign exchange market turnover[1]

Percentage shares of average daily turnover in April

Currency	1992	1995	1998	2001	2004	2007
US dollar	82.0	83.3	87.3	90.3	88.7	86.3
Euro	…	…	…	37.6	37.2	37.0
Deutsche mark	39.6	36.1	30.1	…	...	...
French franc	3.8	7.9	5.1	…	...	...
ECU and other EMS currencies	11.8	15.7	17.3	…	...	...
Japanese yen	23.4	24.1	20.2	22.7	20.3	16.5
Pound sterling	13.6	9.4	11.0	13.2	16.9	15.0
Swiss franc	8.4	7.3	7.1	6.1	6.1	6.8
Australian dollar	2.5	2.7	3.1	4.2	5.5	6.7
Canadian dollar	3.3	3.4	3.6	4.5	4.2	4.2
Swedish krona[2]	1.3	0.6	0.4	2.6	2.3	2.8
Hong Kong dollar[3]	1.1	0.9	1.3	2.3	1.9	2.8
Norwegian krone[3]	0.3	0.2	0.4	1.5	1.5	2.2
New Zealand dollar[3]	0.2	0.2	0.3	0.6	1.0	1.9
Mexican peso[3]	…	…	0.6	0.9	1.1	1.3
Singapore dollar[3]	0.3	0.3	1.2	1.1	1.0	1.2
Korean won[3]	…	…	0.2	0.8	1.2	1.1
South African rand[3]	0.3	0.2	0.5	1.0	0.8	0.9
Danish krone[3]	0.5	0.6	0.4	1.2	0.9	0.9
Russian rouble[3]	…	…	0.3	0.4	0.7	0.8
Polish zloty[3]	…	…	0.1	0.5	0.4	0.8
Indian rupee[3]	…	…	0.1	0.2	0.3	0.7
Chinese Renminbi	...	...	0.0	0.0	0.1	0.5
Taiwan dollar[3]	…	…	0.1	0.3	0.4	0.4
Brazilian real[3]	…	…	0.4	0.4	0.2	0.4
Hungarian forint[3]	…	…	0.0	0.0	0.2	0.3
Czech koruna[3]	…	…	0.3	0.2	0.2	0.2
Thai baht[3]	…	…	0.2	0.2	0.2	0.2
Israeli New Shekel[4]	...	...	...	0.1	0.1	0.2
Turkish New Lira[4]	...	...	...	0.0	0.1	0.2
Malaysian ringgit[4]	…	…	0.0	0.1	0.1	0.1
Chilean peso[4]	…	…	0.1	0.2	0.1	0.1
Philippine Peso[4]	...	...	0.0	0.0	0.0	0.1
Indonesian Rupiah[4]	...	...	0.1	0.0	0.1	0.1
Slovak Koruna[4]	...	...	...	0.0	0.0	0.1
Saudi Riyal[4]	...	...	0.1	0.1	0.0	0.1
Colombian Peso[4]	...	...	...	0.0	0.0	0.1
Other currencies	7.7	7.1	8.2	6.5	6.2	7.3
All currencies	**200.0**	**200.0**	**200.0**	**200.0**	**200.0**	**200.0**

[1] Because two currencies are involved in each transaction, the sum of the percentage shares of individual currencies totals 200% instead of 100%. The figures relate to reported "net-net" turnover, ie they are adjusted for both local and cross-border double-counting. [2] From 1992 to 1998, the data cover local home currency trading only. Included as main currency from 2007. [3] From 1992 to 1998, the data cover local home currency trading only. [4] Data previous to 2007 cover local home currency trading only.

Table 4

Foreign exchange market turnover by currency pair[1]

Daily averages in April, in billions of US dollars and percentages

Currency pair	1995		1998		2001		2004		2007	
	Amount	% share	Amount	% share	Amount	% share	Amount	% share	Amount	% share
USD/EUR	.	.	.	.	354	30	501	28	840	27
USD/DEM	254	22	290	20	.	.	.	.	.	.
USD/FRF	51	4	58	4	.	.	.	.	.	.
USD/XEU	18	2	17	1	.	.	.	.	.	.
USD/OthEMS	104	9	172	12	.	.	.	.	.	.
USD/JPY	242	21	256	18	231	20	296	17	397	13
USD/GBP	78	7	117	8	125	11	245	14	361	12
USD/CHF	61	5	79	6	57	5	78	4	143	5
USD/CAD	38	3	50	3	50	4	71	4	115	4
USD/AUD	29	3	42	3	47	4	90	5	175	6
USD/SEK[2]	4	0	3	0	6	1	7	0	56	2
USD/Oth	68	6	164	11	189	16	286	16	572	19
EUR/JPY	.	.	.	.	30	3	51	3	70	2
EUR/GBP	.	.	.	.	24	2	43	2	64	2
EUR/CHF	.	.	.	.	12	1	26	1	54	2
EUR/Oth	.	.	.	.	21	2	39	2	112	4
DEM/JPY	24	2	24	2	.	.	.	.	.	.
DEM/GBP	21	2	31	2	.	.	.	.	.	.
DEM/CHF	18	2	18	1	.	.	.	.	.	.
DEM/FRF	34	3	10	1	.	.	.	.	.	.
DEM/XEU	6	1	3	0	.	.	.	.	.	.
DEM/OthEMS	38	3	34	2	.	.	.	.	.	.
DEM/Oth	16	1	20	1	.	.	.	.	.	.
OthEMS[3]	3	0	4	0	.	.	.	.	.	.
Other pairs	30	3	38	3	26	2	41	2	122	4
All currency pairs	1,137	100	1,430	100	1,174	100	1,773	100	3,081	100

[1] Adjusted for local and cross-border double-counting. [2] Included as main currency pair from 2007. [3] OthEMS/OthEMS: the data cover local home currency trading only.

Table 5

Geographical distribution of foreign exchange market turnover[1]

Daily averages in April, in billions of US dollars and percentages

Country	1995		1998		2001		2004		2007	
	Amount	%share	Amount	%share	Amount	%share	Amount	%share	Amount	%share
Argentina	…	…	2	0.1	…	…	1	0.0	1	0.0
Australia	40	2.5	47	2.4	52	3.2	81	3.4	170	4.2
Austria	13	0.8	11	0.6	8	0.5	13	0.6	18	0.4
Bahrain	3	0.2	2	0.1	3	0.2	3	0.2	3	0.1
Belgium	28	1.8	27	1.4	10	0.6	20	0.8	48	1.2
Brazil[2]	…	…	5	0.3	5	0.3	3	0.1	5	0.1
Bulgaria	…	…	…	…	…	…	…	…	1	0.0
Canada	30	1.9	37	1.9	42	2.6	54	2.2	60	1.5
Chile	…	…	1	0.1	2	0.1	2	0.1	4	0.1
China[3]	…	…	0	0.0	0	0.0	1	0.0	9	0.2
Colombia	…	…	…	…	0	0.0	1	0.0	2	0.0
Czech Republic	…	…	5	0.3	2	0.1	2	0.1	5	0.1
Denmark	31	2.0	27	1.4	23	1.4	41	1.7	86	2.2
Estonia	…	…	…	…	…	…	0	0.0	1	0.0
Finland	5	0.3	4	0.2	2	0.1	2	0.1	8	0.2
France	58	3.7	72	3.7	48	3.0	64	2.7	120	3.0
Germany	76	4.8	94	4.8	88	5.5	118	4.9	99	2.5
Greece	3	0.2	7	0.4	5	0.3	4	0.2	5	0.1
Hong Kong SAR	90	5.7	79	4.0	67	4.1	102	4.2	175	4.4
Hungary	…	…	1	0.1	1	0.0	3	0.1	7	0.2
India	…	…	2	0.1	3	0.2	7	0.3	34	0.9
Indonesia	…	…	2	0.1	4	0.2	2	0.1	3	0.1
Ireland	5	0.3	10	0.5	8	0.5	7	0.3	11	0.3
Israel	…	…	…	…	1	0.1	5	0.2	8	0.2
Italy	23	1.5	28	1.4	17	1.0	20	0.8	36	0.9
Japan	161	10.3	136	6.9	147	9.1	199	8.3	238	6.0
Korea	…	…	4	0.2	10	0.6	20	0.8	33	0.8
Latvia	…	…	…	…	…	…	2	0.1	3	0.1
Lithuania	…	…	…	…	…	…	1	0.0	1	0.0
Luxembourg	19	1.2	22	1.1	13	0.8	14	0.6	43	1.1
Malaysia	…	…	1	0.1	1	0.1	2	0.1	3	0.1
Mexico	…	…	9	0.5	9	0.5	15	0.6	15	0.4
Netherlands	26	1.7	41	2.1	30	1.9	49	2.0	24	0.6
New Zealand	7	0.4	7	0.4	4	0.2	7	0.3	12	0.3
Norway	8	0.5	9	0.5	13	0.8	14	0.6	32	0.8
Peru	…	0.0	…	…	0	0.0	0	0.0	1	0.0
Philippines	…	…	1	0.1	1	0.1	1	0.0	2	0.1
Poland	…	…	3	0.2	5	0.3	6	0.3	9	0.2
Portugal	2	0.1	4	0.2	2	0.1	2	0.1	3	0.1
Romania	…	…	…	…	…	…	…	…	3	0.1
Russia	…	…	7	0.4	10	0.6	30	1.2	50	1.3
Saudi Arabia	…	…	2	0.1	2	0.1	2	0.1	4	0.1
Singapore	105	6.7	139	7.1	101	6.2	125	5.2	231	5.8
Slovakia	…	…	…	…	1	0.0	2	0.1	3	0.1
Slovenia	…	…	…	…	0	0.0	0	0.0	0	0.0
South Africa	5	0.3	9	0.5	10	0.6	10	0.4	14	0.4
Spain	18	1.1	19	1.0	8	0.5	14	0.6	16	0.4
Sweden	20	1.3	15	0.8	24	1.5	31	1.3	42	1.1
Switzerland	87	5.5	82	4.2	71	4.4	79	3.3	242	6.1
Taiwan, China	…	…	5	0.3	4	0.3	8	0.3	15	0.4
Thailand	…	…	3	0.2	2	0.1	3	0.1	6	0.2
Turkey	…	…	…	…	1	0.1	3	0.1	3	0.1
United Kingdom	464	29.5	637	32.4	504	31.2	753	31.3	1,359	34.1
United States	244	15.5	351	17.9	254	15.7	461	19.2	664	16.6
Total	**1,572**	**100.0**	**1,969**	**100.0**	**1,616**	**100.0**	**2,408**	**100.0**	**3,989**	**100.0**

[1] Adjusted for local double-counting ("net-gross"). Tables 1, 2, 3 and 4 are expressed on a "net-net" basis. Estimated coverage of the foreign exchange market ranged between 90% and 100% in most countries. [2] Data for 1998 only cover spot transactions. [3] Data from 1998 to 2004 only cover spot transactions.

Table 6
Global OTC derivatives market turnover by instrument[1]

Average daily turnover in April, in billions of US dollars

Instrument	1998	2001	2004	2007
A. Foreign exchange instruments	**97**	**67**	**140**	**291**
Currency swaps	10	7	21	80
Options	87	60	117	212
Other	0	0	2	0
B. Interest rate instruments[2]	**265**	**489**	**1,025**	**1,686**
FRAs	74	129	233	258
Swaps	155	331	621	1,210
Options	36	29	171	215
Other	0	0	0	1
C. Estimated gaps in reporting	**13**	**19**	**55**	**113**
D. Total	**375**	**575**	**1,220**	**2,090**
Memo:				
Turnover at April 2007 exchange rates[3]	*440*	*735*	*1,290*	*2,090*
Exchange-traded derivatives[4]	*1,382*	*2,198*	*4,547*	*6,173*
Currency instruments	*11*	*10*	*22*	*72*
Interest rate instruments	*1,371*	*2,188*	*4,524*	*6,101*

[1] Adjusted for local and cross-border double-counting. [2] Single currency interest rate contracts only. [3] Non-US dollar legs of foreign currency transactions were converted into original currency amounts at average exchange rates for April of each survey year and then reconverted into US dollar amounts at average April 2007 exchange rates. [4] Sources: FOW TRADEdata; Futures Industry Association; various futures and options exchanges.

Table 7

OTC derivatives turnover by counterparty[1]

Daily averages in April, in billions of US dollars

Counterparty	Total				Foreign exchange[2]				Interest rates[3]			
	98	01	04	07	98	01	04	07	98	01	04	07
With reporting dealers	203	354	556	903	53	32	61	103	150	323	494	800
Local	91	146	210	337	20	10	22	24	71	135	188	313
Cross-border	111	209	345	566	33	22	39	79	78	187	306	487
With other financial institutions	109	159	499	870	20	17	49	123	89	142	450	747
Local	53	63	211	247	8	7	16	33	46	57	195	213
Cross-border	56	96	288	623	12	10	32	89	44	85	256	534
With non-financial customers	50	42	103	202	24	18	24	66	27	25	79	136
Local	30	24	42	68	13	10	10	31	16	15	32	37
Cross-border	21	18	62	134	10	8	14	35	10	10	47	99
Total[4]	**362**	**556**	**1,165**	**1,977**	**97**	**67**	**140**	**291**	**265**	**489**	**1,025**	**1,686**

[1] Adjusted for local and cross-border double-counting. [2] Currency swaps and options. [3] Single currency interest rate contracts only. [4] For 2004, includes turnover data for which no counterparty breakdown has been reported.

Table 8

OTC foreign exchange derivatives turnover by currency pair[1]

Daily averages in April, in billions of US dollars

Currency pair	Total				Currency swaps				Options			
	98	01	04	07	98	01	04	07	98	01	04	07
US dollar vs other currencies	77	54	110	233	9	6	18	76	68	48	92	158
Euro	.	17	38	78	.	1	7	35	.	16	31	43
Deutsche mark	18	.	.	.	1	.	.	.	17	.	.	.
Other EMS currencies	8	.	.	.	2	.	.	.	6	.	.	.
Japanese yen	36	19	30	56	3	2	3	18	33	17	27	38
Pound sterling	5	4	11	28	1	1	3	9	4	3	9	19
Other	10	14	31	71	2	2	5	14	8	12	26	57
Euro vs other currencies[2]	.	10	23	41	.	1	3	3	.	9	20	37
Japanese yen	.	6	10	16	.	0	0	0	.	6	10	16
Pound sterling	.	2	4	5	.	0	2	1	.	2	3	4
Swiss franc	.	.	4	8	.	.	0	0	.	.	4	8
Other	.	1	5	11	.	0	1	1	.	1	4	10
Deutsche mark vs other currencies[2]	17	.	.	.	1	.	.	.	16	.	.	.
Japanese yen	5	.	.	.	0	.	.	.	5	.	.	.
Pound sterling	5	.	.	.	0	.	.	.	5	.	.	.
Other EMS currencies	2	.	.	.	0	.	.	.	2	.	.	.
Other	4	.	.	.	0	.	.	.	4	.	.	.
Other currency pairs[3]	4	3	5	17	1	0	1	1	3	3	5	16
All currency pairs	**97**	**67**	**140**	**291**	**10**	**7**	**21**	**80**	**87**	**60**	**117**	**212**

[1] Adjusted for local and cross-border double-counting. [2] Excluding the US dollar. [3] Excluding the US dollar, the euro and the Deutsche mark.

Table 9

OTC interest rate derivatives turnover by currency[1]

Daily averages in April, in billions of US dollars

Currency	1998	2001	2004	2007
FRAs	**74**	**129**	**233**	**258**
US dollar	23	39	59	98
Euro	.	48	116	66
Deutsche mark	9	.	.	.
French franc	2	.	.	.
ECU and other EMS	15	.	.	.
Japanese yen	3	9	0	4
Pound sterling	8	12	25	42
Other	14	21	33	49
Swaps	**155**	**331**	**621**	**1,210**
US dollar	36	100	195	322
Euro	.	173	288	528
Deutsche mark	47	.	.	.
French franc	22	.	.	.
ECU and other EMS	16	.	.	.
Japanese yen	14	16	35	110
Pound sterling	8	23	59	124
Other	12	19	43	127
Options	**36**	**29**	**171**	**215**
US dollar	12	12	93	113
Euro	.	11	57	62
Deutsche mark	7	.	.	.
French franc	1	.	.	.
ECU and other EMS	3	.	.	.
Japanese yen	10	2	10	23
Pound sterling	1	2	6	6
Other	3	2	4	11
Total	**265**	**489**	**1,025**	**1,686**
US dollar	71	152	347	532
Euro	.	231	461	656
Deutsche mark	63	.	.	.
French franc	25	.	.	.
ECU and other EMS	35	.	.	.
Japanese yen	27	27	46	137
Pound sterling	17	37	90	172
Other	28	42	81	188

[1] Adjusted for local and cross-border double-counting. Single currency interest rate contracts only.

Table 10

Geographical distribution of OTC derivatives turnover[1]

Daily averages in April, in billions of US dollars and percentages

Country	1998[2]		2001[3]		2004		2007	
	Amount	% share	Amount	% share	Amount	% share	Amount	% share
Argentina	...	...	...	...	...	...	...	...
Australia	5	1.1	12	1.6	18	1.2	29	1.2
Austria	4	0.8	5	0.7	15	1.0	6	0.2
Bahrain	0	0.0	0	0.0	0	0.0	0	0.0
Belgium	6	1.3	14	1.8	32	2.1	23	0.9
Brazil	...	...	1	0.1	1	0.1	0	0.0
Bulgaria	...	...	...	...	...	...	0	0.0
Canada	7	1.5	13	1.7	17	1.2	25	1.0
Chile	...	...	...	...	0	0.0	0	0.0
China	...	...	...	...	...	...	...	...
Colombia	...	...	0	0.0	0	0.0	0	0.0
Czech Republic	...	...	0	0.0	1	0.0	1	0.0
Denmark	5	1.1	6	0.8	12	0.8	12	0.5
Estonia	...	...	...	...	...	...	0	0.0
Finland	2	0.4	1	0.1	0	0.0	3	0.1
France	46	9.7	67	8.8	154	10.2	183	7.2
Germany	34	7.2	97	12.7	46	3.0	93	3.7
Greece	0	0.0	0	0.0	0	0.0	0	0.0
Hong Kong SAR	3	0.6	4	0.5	15	1.0	24	0.9
Hungary	0	0.0	0	0.0	0	0.0	1	0.0
India	...	...	0	0.0	1	0.1	8	0.3
Indonesia	0	0.0	0	0.0	0	0.0	0	0.0
Ireland	3	0.6	6	0.8	13	0.9	85	3.4
Israel	...	...	...	...	0	0.0	0	0.0
Italy	5	1.1	24	3.1	41	2.7	32	1.3
Japan	42	8.8	22	2.9	39	2.6	88	3.5
Korea	0	0.0	0	0.0	2	0.1	7	0.3
Latvia	...	...	...	...	...	...	...	...
Lithuania	...	...	...	...	0	0.0	0	0.0
Luxembourg	3	0.6	5	0.7	7	0.5	5	0.2
Malaysia	1	0.2	0	0.0	0	0.0	0	0.0
Mexico	0	0.0	0	0.0	2	0.1	3	0.1
Netherlands	6	1.3	25	3.3	22	1.5	28	1.1
New Zealand	0	0.0	0	0.0	1	0.1	3	0.1
Norway	3	0.6	3	0.4	5	0.3	7	0.3
Peru	...	...	...	...	...	...	0	0.0
Philippines	...	...	...	...	0	0.0	0	0.0
Poland	...	...	...	...	1	0.1	3	0.1
Portugal	1	0.2	0	0.0	1	0.0	2	0.1
Romania	...	...	...	...	...	...	0	0.0
Russia	...	...	...	...	...	...	0	0.0
Saudi Arabia	0	0.0	0	0.0	0	0.0	1	0.0
Singapore	11	2.3	6	0.8	17	1.1	69	2.7
Slovakia	...	...	...	...	...	...	0	0.0
Slovenia	...	...	...	...	...	...	0	0.0
South Africa	1	0.2	1	0.1	3	0.2	5	0.2
Spain	4	0.8	21	2.7	12	0.8	18	0.7
Sweden	5	1.1	4	0.5	8	0.6	14	0.6
Switzerland	16	3.4	15	2.0	18	1.2	73	2.9
Taiwan, China	0	0.0	1	0.1	3	0.2	2	0.1
Thailand	0	0.0	0	0.0	0	0.0	1	0.0
Turkey	...	...	...	...	0	0.0	1	0.0
United Kingdom	171	36.0	275	36.0	643	42.6	1,081	42.5
United States	90	18.9	135	17.7	355	23.5	607	23.8
Total	**475**	**100**	**764**	**100**	**1,508**	**100**	**2,544**	**100**

[1] Adjusted for local double-counting ("net-gross"). Tables 6, 7, 8 and 9 are expressed on a "net-net" basis. Estimated coverage of the foreign exchange market ranged between 90% and 100% in most countries.

III. Statistical notes

The objective of the Triennial Central Bank Survey of Foreign Exchange and Derivatives Market Activity is to obtain the most comprehensive and internationally consistent information on the size and structure of foreign exchange spot and over-the-counter (OTC) derivatives markets. The purpose of the statistics is to increase market transparency and thereby help central banks, other authorities and market participants to better monitor patterns of activity in the global financial system. The latest triennial survey covered foreign exchange spot and OTC derivatives turnover in April 2007, as reported by approximately 1,280 market participants in 54 countries[5] and financial centres on a gross and unconsolidated basis. The format of the 2007 survey included the following main refinements and clarifications of reporting procedures as compared with the previous survey:

- The Swedish krona has been included as an individual currency in the main reporting templates;
- Additional currencies have been identified in the templates in order to ensure comprehensive identification of turnover in all participating countries' currencies. Reporting central banks retain discretion to customise this list.

Despite these changes, the data presented here can be considered as being largely comparable with those of the previous triennial central bank survey in 2004. Weighted average coverage of forex markets in reporting countries increased from 94% in 2004 to 96% in 2007.

1. Coverage

Following the practice from previous exercises, for the purpose of analysing the survey results two instrument categories are distinguished: the "traditional foreign exchange market" including spot trades, outright forwards and foreign exchange swaps; and "derivatives markets" including currency swaps, FX options, forward rate agreements, interest rate swaps, interest rate options and other instruments.

2. Turnover data

Turnover data provide a measure of market activity, as well as an indication of market liquidity. Turnover was defined as the absolute gross value of all new deals entered into during the month of April 2007, and was measured in terms of the nominal or notional amount of the contracts.

No distinction was made between sales and purchases (ie a purchase of $5 million against sterling and a sale of $7 million against sterling would amount to a gross turnover of $12 million). Direct cross-currency transactions were counted as single transactions; however, cross-currency transactions passing through a vehicle currency were recorded as two separate deals against the vehicle currency. The gross amount of each transaction was recorded once, and netting arrangements and offsets were

[5] Bulgaria and Romania have reported for the first time in this exercise.

ignored. For turnover of transactions with variable nominal or notional principal amounts, the nominal or notional principal amount on the transaction date was reported.

The basis for reporting was in principle the location of the sales desk of any trade, even if deals entered into in different locations were booked in a central location. Thus, transactions concluded by offices located abroad were not reported by the country of location of the head office, but by that of the office abroad (insofar as the latter was a reporting institution in one of the other 53 reporting countries). Where no sales desk was involved in a deal, the trading desk was used to determine the location of deals.

In all cases, transactions were reported to the BIS in US dollar equivalents, with non-dollar amounts generally converted into US dollars using the exchange rate prevailing on the date of the trade.

As in the previous triennial foreign exchange market surveys, turnover data were collected over a one-month period, the month of April, in order to reduce the likelihood that very short-term variations in activity might contaminate the data. The data collected for the survey reflected all transactions entered into during the calendar month of April 2007, regardless of whether delivery or settlement was made during that month.

In order to allow a comparison across countries, daily averages of turnover were computed by dividing aggregate monthly turnover for the country in question by the number of days in April on which the foreign exchange and derivatives markets in that country were open. The number of trading days ranged from 18 to 25 in April 2007.

3. Instruments

The definitions used for traditional foreign exchange market instruments and OTC derivatives market instruments were the following:

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.

Outright forward: transaction involving the exchange of two currencies at a rate agreed on the date of the contract for value or delivery (cash settlement) at some time in the future (more than two business days later). This category also includes forward foreign exchange agreement transactions (FXA), non-deliverable forwards and other forward contracts for differences.

Foreign exchange swap: transaction which 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 (generally different from the rate applied to the short leg) agreed at the time of the contract (the long leg).

Currency swap: contract which commits two counterparties to exchange streams of interest payments in different currencies for an agreed period of time and usually 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. 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 those swaps whose 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.

4. Counterparties

Following the methodology of the previous triennial central bank surveys, reporting institutions were requested to provide for each instrument a breakdown of contracts by counterparty as follows: *reporting dealers*, *other financial institutions* and *non-financial customers*, with separate information on *local* and *cross-border* transactions. The distinction between local and cross-border had to be determined according to the location of the counterparty and not its nationality.

"Reporting dealers" were defined as those financial institutions that actively participate in local and global foreign exchange and derivatives markets. These are mainly large commercial and investment banks and securities houses that (1) participate in the *inter-dealer* market and/or (2) have active *business with large customers*, such as large corporate firms, governments and other non-reporting financial institutions; in other words, *reporting dealers* are institutions that are actively buying and selling currency and OTC derivatives both for their own account and/or in meeting customer demand. In practice, *reporting dealers* are often those institutions that actively or regularly deal through electronic platforms, such as EBS or Reuters dealing facilities. The category of reporting dealers also included the branches and subsidiaries of institutions operating in multiple locations that have sales desks, but not necessarily trading desks, which conduct active business with large customers.

"Other financial institutions" were defined as those financial institutions that were not classified as *reporting dealers*. Thus, they mainly cover all other financial institutions, such as smaller commercial banks, investment banks and securities houses, and in addition mutual funds, pension funds, hedge funds, currency funds, money market funds, building societies, leasing companies, insurance companies, financial subsidiaries of corporate firms and central banks.

"Non-financial customers" were defined as any counterparty other than those described above, ie mainly non-financial *end users,* such as corporates and governments.

5. Currency and other market risk breakdowns

In order to obtain consistent data on turnover in principal currency segments of the foreign exchange market, reporting institutions were asked to report turnover data on foreign exchange contracts and to identify the main currency pairs. As a result, data were provided separately for trading in domestic currency, the US dollar and the euro against each other and against the following:

Japanese yen; pound sterling; Swiss franc; Canadian dollar; Australian dollar; Swedish krona; other currencies.

Given the increasing interest in the identification of turnover in all reporting countries' currencies, reporting dealers were requested to provide supplementary information on total turnover for the following currencies:

Argentine peso, Australian dollar,[6] Bahraini dinar, Brazilian real, Bulgarian lev, Canadian dollar,[6] Swiss franc,[6] Chilean peso, Chinese renminbi, Colombian peso, Czech koruna, Danish krone, Estonian kroon, pound sterling,[6] Hong Kong dollar, Hungarian forint, Indonesian rupiah, Israeli new shekel, Indian rupee, Japanese yen,[6] Korean won, Latvian lats, Lithuanian litas, Malaysian ringgit, Mexican peso, Norwegian krone, New Zealand dollar, Peruvian new sol, Philippine peso, Polish zloty, Romanian leu, Russian rouble, Saudi riyal, Singapore dollar, Slovak koruna, Swedish krona,[6] new Taiwan dollar, Thai baht, Turkish lira and South African rand.

For turnover of single currency interest rate contracts, the same currencies were covered. Participating central banks had discretion in adjusting the above list to their national needs.

6. Maturities

Transactions in outright forwards and foreign exchange swaps were to be broken down between the following maturity bands: seven days or less; over seven days and up to one year; over one year.

7. Elimination of double-counting

Double-counting arises because transactions between two reporting entities are recorded by each of them, ie twice. In order to derive meaningful measures of overall market size, it is therefore necessary to halve the data on transactions between reporting dealers. To permit this, reporters were asked to distinguish deals contracted with other reporters (dealers). The following methods of adjustment were applied: data on local deals with other reporters were firstly divided by two and this figure was subtracted from total gross data to arrive at so-called "net-gross" figures, ie business net of local inter-dealer double-counting. In a second step, data on cross-border deals with other reporters were also divided by two and this figure was subtracted from total "net-gross" data to obtain so-called "net-net" figures, ie business net of local and cross-border inter-dealer double-counting.

8. Gaps in reporting

Gaps in reporting stem from two sources: incomplete reporting (ie deals between two non-reporting institutions) in the countries providing data, and less than full coverage of the range of countries in which the surveyed activity took place.

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[6] For any turnover in these currencies not included as main currency pairs.

The second type of gap is mitigated by the existence of counterparty reports. The bulk of the cross-border inter-dealer business of dealers located in non-reporting countries is very likely to be captured in the reports of their counterparties in countries participating in the survey. The types of transactions which are not included in the reported data are local as well as cross-border transactions between dealers in non-reporting countries, and those between non-reporting dealers and any customers or other financial institutions wherever they are located.

As in previous surveys, an estimate of gaps due to incomplete reporting in the countries providing data was calculated. This estimate is based on information supplied on the coverage of the survey in each participating country. For example, if in a given country the coverage of the survey was reported as 90%, the gap from incomplete reporting was estimated to represent 10% of reported turnover in that country.

In some cases, the sum of sub-items does not equal the total for the category in question. Apart from rounding, this can result from incomplete classification of data, use of residual categories and suppression of data for confidentiality reasons.

9. Intertemporal comparisons

Intertemporal comparisons are complicated by changes in coverage and definition, and by the movement of exchange rates over the three-year periods separating the surveys in the participating countries.

Changes in coverage might have been of two kinds. First, within national markets the coverage of dealers active in national markets might have changed. An increase in the number of reporting institutions, for example, does not necessarily denote greater coverage. If institutions which were not active before, and were therefore not covered in earlier reports, began to deal on a substantial scale, it is legitimate to compare the total turnover of the larger number of reporting institutions with the total turnover of the smaller number reporting their transactions in the previous period. The same applies, of course, in the case of a decrease in the number of reporting institutions due to a reduction or the transfer to another country of their activity, and to their relative importance in the market.

The second type of change in coverage relates to the inclusion of a larger number of countries and of new features since the inception of the survey in 1986. For instance, in 1995 the coverage of market activity was significantly expanded to include most financial derivatives. In 1998 the number of reporting countries increased from 28 to 43 and the coverage of derivatives market activity was further expanded to include separate data on credit-linked derivatives. In 2001, 2004, and 2007 the number of reporting countries increased further to 48, 52 and 54, while the coverage of market segments remained the same as in 1998.

While the additional information provided by new reporting countries is valuable, not all of it relates to transactions that were not captured before. The bulk of these countries' cross-border transactions with dealers can be presumed to have been included in the reports of their counterparties in earlier years. In new reporting countries, the business not captured before therefore relates to local inter-dealer transactions and those with non-reporting financial institutions and customers.

Another complication involves changes in definitions. Most changes in definitions reflect improvements in compilation procedures. In particular, greater effort has been made following the 1992 survey to classify counterparties accurately and a finer counterparty

breakdown has been used. As a result, it is now possible to arrive at more accurate estimates of double-counting and to compile net figures on turnover for all items. However, intertemporal comparisons have to be interpreted carefully. The current procedure introduces biases to the extent that the share of inter-dealer business has changed over time. In 2004, an effort was made to clarify the concept of reporting dealers, in order to better distinguish between inter-dealer and customer transactions. In addition, the reporting basis for the location of trades was further clarified as being, in principle, that of the *sales desk* of any reporting institution. See Section 4 of these statistical notes for more details.

The extension of the currency breakdown in 2007, to ensure a finer identification of the turnover in all participating countries currencies, is another factor to be considered when analysing movements in a particular currency.

10. Data at constant exchange rates

Another question often raised with intertemporal comparisons is the impact on aggregate turnover of movements in exchange rates vis-à-vis the US dollar from one reporting date to the next. For instance, turnover in the Japanese yen/pound sterling sector might have remained unchanged from one reporting period to the next in terms of these currencies. But if the dollar rises against both currencies, total turnover in the segment reported in dollar terms will be lower, thus signalling a decline where none has in fact taken place. Even in currency pairs involving the dollar, exchange rate movements will impact on turnover. For example, if a trade for a fixed amount of yen against US dollars is transacted, the trade will enter the aggregates with a smaller or larger US dollar amount, depending on how the yen moves against the dollar from one reporting date to the next.

To provide some guidance on the impact of actual exchange rate movements on total reported aggregates, pre-2007 totals have been provided additionally recalculated at constant exchange rates, replacing historical exchange rates by average April 2007 exchange rates. All transactions in a given currency, say the yen, are converted into original currency terms at the historical exchange rate and then recalculated using the average April 2007 dollar/yen exchange rate, as appropriate. In case of foreign exchange transactions, the dollar side of transactions remains unchanged, since the exchange rate for dollar amounts is constant (and equal to one) over time. The sums of all recalculated transactions are divided by two. This takes account of the joint contribution of two currencies to each foreign exchange transaction.