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

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In April this year, the Bank of England conducted its usual three-yearly survey of turnover in the United Kingdom's foreign exchange and over-the-counter (OTC) interest rate derivatives markets. This forms part of the latest worldwide survey co-ordinated by the Bank for International Settlements (BIS). The results show that the value of foreign exchange activity in the United Kingdom rose by one quarter between April 2007 and April 2010, increasing the UK share of the global market to 37%. Turnover in OTC interest rate derivatives also rose considerably over the same period. This report sets out the results of the UK survey, and then considers the potential underlying drivers in these markets over the past three years.

Introduction

In April this year, central banks and monetary authorities in 53 countries, including the United Kingdom, conducted national surveys of turnover in the foreign exchange (FX) markets[2] and in OTC interest rate derivatives markets. These surveys have taken place every three years since 1986[3] and measure turnover in the whole of April. They are co-ordinated on a global basis by the BIS, with the aim of obtaining comprehensive and internationally consistent information on the size and structure of the corresponding global markets.

This article begins by outlining the results of the latest UK contribution to the BIS global survey.[4] The article will concentrate largely on developments in foreign exchange markets, highlighting the significant increase in UK turnover since the previous survey. But the survey results on OTC interest rate derivatives are also summarised, in a box on page 358. The second part of the article considers the main factors behind recent trends in FX turnover in the context of structural changes in the UK foreign exchange markets in recent years.

The timings of the latest surveys (in April 2007 and April 2010) mean that the article can only report snapshots of activity in foreign exchange markets before and after the height of the recent financial crisis. But, as discussed in a recent paper by the London Foreign Exchange Joint Standing Committee (FXJSC),[5] FX markets seem to have been affected only modestly by the financial turbulence between mid-2007 and 2009. As a result, market contacts report that, by 2010, structural influences re-emerged as the dominant forces on activity in foreign exchange markets.

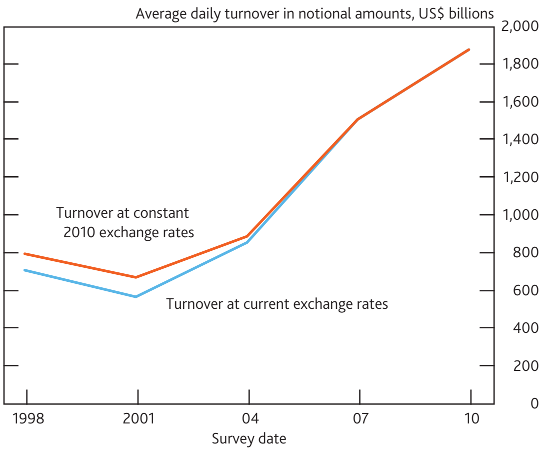
The results of the UK survey

The UK survey was conducted by the Bank of England and covers the business of 47 institutions (both UK-owned and foreign-owned) located in the United Kingdom. The box on pages 356–57 discusses the types of trades captured in the survey. Average daily turnover in the UK foreign exchange market during April 2010 was $1,854 billion, 25% higher than

(1) The authors would like to thank Perry Francis, Jake Horwood, David Osborn and James Wackett for their help in producing this article.
(2) Unless otherwise stated, turnover figures published here are adjusted to remove double counting of trades between UK principals that will have been reported by both parties (so-called 'local double counting').
(3) In the 1986 survey four countries, including the United Kingdom, reported data to the BIS. The first published global data were for the 1989 survey, which also included results of the 1986 survey. OTC derivatives were included for the first time in 1995.
(4) The Bank published a summary of the UK results on 1 September 2010 (see www.bankofengland.co.uk/publications/news/2010/066.htm). The BIS global results can be found on the BIS website: www.bis.org/publ/rpfx10.htm.
(5) The paper is available at www.bankofengland.co.uk/markets/forex/fxjsc/fxpaper090923.pdf. Similar studies were also undertaken by relevant committees in North America (see www.newyorkfed.org/fxc/news/2009/overview_nov_2009.pdf) and Canada (see www.cfec.ca/files/developments.pdf).

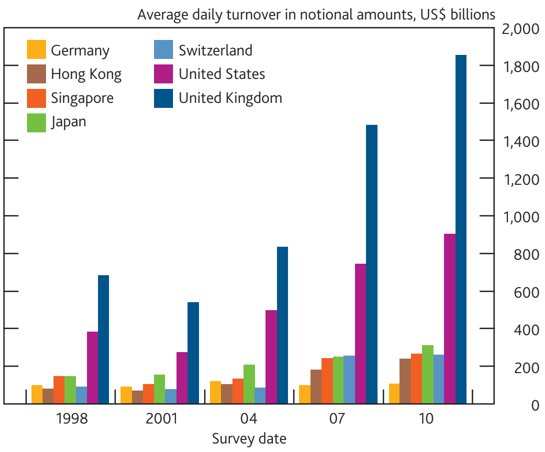
in 2007 at both current and constant exchange rates (**Chart 1**).(1) This was slightly less than the strong growth seen in 2007 and extends the upward trend of foreign exchange turnover since the late 1980s.

Chart 1 Foreign exchange turnover at constant and current exchange rates — average daily turnover in notional amounts



The latest pickup in FX turnover in the UK market was part of a global development, with other major centres showing similar rises in percentage terms (**Chart 2**). But the United Kingdom recorded the strongest growth in notional values, and consolidated its position as the largest centre of foreign exchange activity, accounting for 37% of the global market in 2010.

Chart 2 Foreign exchange turnover in the United Kingdom and other centres — average daily turnover in notional amounts



Source: BIS.

The United Kingdom's share of the global FX market has exceeded 30% in each of the past five surveys. The next largest centre was the United States, with 18% of the global market, followed by Japan, with a market share of 6%. The majority of turnover in the UK foreign exchange market was cross-border business — some 71% of total turnover in April 2010 — reflecting the United Kingdom's role as an international financial centre. The US dollar continued to be the dominant currency in the UK foreign exchange market, with 85% of all trades having one side denominated in dollars (**Table A**).

Table A Foreign exchange turnover — currency breakdown

Per cent[a]

	2001	2004	2007	2010
US dollar	90.9	88.4	87.6	84.7
Euro	41.5	42.7	41.6	44.3
Pound sterling	23.7	26.7	21.5	17.8
Japanese yen	18.7	16.3	14.6	17.2
Swiss franc	5.5	5.7	6.2	5.9
Canadian dollar	3.7	3.1	3.0	4.4
Australian dollar	3.5	4.0	4.3	5.9
Other currencies	12.6	13.1	21.3	19.8

(a) Because two currencies are involved in each transaction, the sum of the percentage shares of individual currencies totals 200% instead of 100%. Components may not sum to the total due to rounding.

Broadly speaking, these results for UK FX turnover were echoed in outturns for OTC interest rate derivatives — see the box on page 358. The rest of this article will, however, concentrate on the results for the FX market. The remainder of this section highlights some of the key trends that emerge from the survey before the subsequent section examines the underlying factors that have contributed to those developments.

Increase in spot transactions

FX turnover in the United Kingdom in spot and outright forwards grew markedly since 2007, while turnover in foreign exchange swaps fell slightly (**Chart 3**). Foreign exchange spot showed the largest increase, up 108% to $697 billion per day, slightly higher than the rise in outright forwards which increased 84% to $228 billion per day. Spot transactions accounted for 38% of all foreign exchange turnover. The large increases in spot and outright forward transactions coincided with a 14% fall in FX swaps, to $775 billion from $899 billion per day in 2007. Turnover in foreign exchange options grew 27% to $135 billion per day, while currency swaps showed slight growth with turnover of $18 billion per day.

Increased diversity of market participants

Turnover with 'other financial institutions', a category that includes hedge funds, pension funds and central banks, continued to increase and now represents the largest single counterparty (**Chart 4**). Turnover within the category rose by 39% compared with April 2007, to $866 billion per day, accounting for 47% of all turnover. Interbank trading grew 22% to $809 billion per day but deals with 'non-financial institutions' fell by 10%, to $178 billion per day.

(1) Constant exchange rate measures are constructed by converting each leg of a foreign currency transaction, other than the US dollar leg, into original currency amounts at the prevailing average April bilateral exchange rates and then reconverting into US dollar amounts at average April 2010 exchange rates.

BIS triennial survey definitional issues

Participants

Forty-seven institutions, mainly commercial and investment banks, participated in the UK survey. This compares with 62 participants in 2007. Others active in the UK market were not directly involved in the survey, but their transactions with participating principals will have been recorded by those institutions.

The questionnaire

Survey participants completed a questionnaire prepared by the Bank of England, based on a standard format agreed with other central banks and the Bank for International Settlements (BIS). Participants were asked to provide details of their gross turnover for the 20 business days in April 2010. Gross turnover (measured in notional values) is defined as the absolute total value of all deals contracted; there was no netting of purchases against sales. Data were requested in terms of US dollar equivalents, rounded to the nearest million. The basis of reporting was the location of the sales desk of the trade, as per the 2007 survey. 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) usually within two business days. The spot legs of FX swaps and FX swaps that were for settlement within two days (ie 'tomorrow/next day' swap transactions) were excluded from this category.

- *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). Also included in this category were forward foreign exchange agreement transactions, non-deliverable forwards, and other forward contracts for difference.

- *Foreign exchange swap*: simultaneous transaction that involves the exchange of two currencies, first the near leg and then, subsequently, a reverse transaction at a forward date, the far leg. Short-term swaps carried out as overnight and 'tomorrow/next day' transactions are included in this category.

- *Currency swap*: contract which 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 against another currency at a specified exchange rate during a specified period. This category also includes currency swaptions, currency warrants and exotic foreign exchange options such as average rate options and barrier options.

Single-currency OTC interest rate derivatives

- *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 category 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. Included in this category are interest rate caps, floors, collars, corridors, swaptions and warrants.

Reporting institutions were asked to distinguish between transactions with:

- *Reporting dealers*: financial institutions that are participating in the globally co-ordinated survey. These institutions actively participate in local and global foreign exchange and derivatives markets.

- *Other financial institutions*: financial institutions that are not classified as reporting dealers. Thus, it will mainly cover 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, other financial subsidiaries of corporate businesses and central banks.

- *Non-financial customers*: covers any counterparty other than those described above, ie mainly non-financial end-users, such as businesses and governments.

In each case reporters were asked to separate local and cross-border transactions (determined according to the location, rather than the nationality of the counterparty) to permit adjustment for double counting.

Market conditions

Participants were asked whether they regarded the level of turnover in April 2010 as normal. The responses, summarised in **Table 1**, suggest that the survey results can be regarded as representative.

The aggregate responses (adjusted for double counting) for the main sections of the questionnaire are shown in **Tables C**, **D** and **E** (at the end of this article). The BIS published a report on FX activity at end-November and further analysis of the global survey results in its December *Quarterly Review*.(1) A survey of global outstanding positions in the derivatives markets (measured at the end of June 2010) was also undertaken, and global results for this survey were published in November.(2)

Table 1 Survey participants' estimates of foreign exchange turnover levels

In April 2010

	Number of banks	Percentage of turnover[a]
Below normal	5	3
Normal	34	83
Above normal	8	15

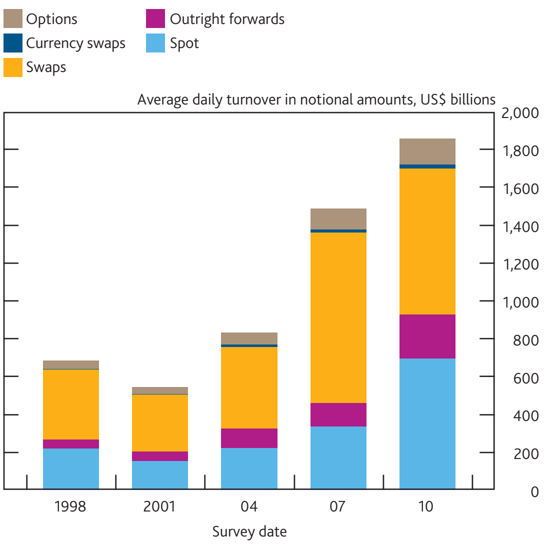
In preceding six months

	Number of banks	Percentage of turnover[a]
Decreasing	6	3
Steady	27	47
Increasing	14	51

(a) Percentages may not sum to 100% due to rounding.

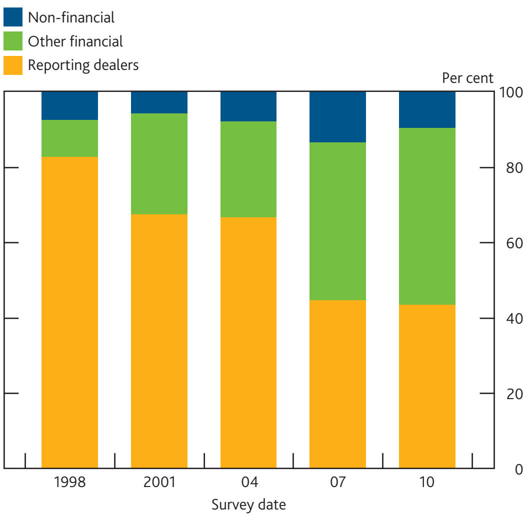
(1) The BIS report on FX activity can be found on the BIS website at www.bis.org/publ/rpfxf10t.htm.
(2) Results of the BIS Amounts Outstanding global survey can be found on the BIS website at www.bis.org/publ/otc_hy1011.htm.

Chart 3 Foreign exchange turnover by instrument type — average daily turnover in notional amounts[a]



(a) For a discussion of the different instrument types, see the box on pages 356–57.

Chart 4 Foreign exchange turnover by counterparty



The market has become more concentrated since April 2007. The combined market share of the ten institutions with the highest level of turnover increased from 70% to 77%, and the share of the top 20 from 90% to 93%. **Table B** shows how concentration varied by instrument.

Table B Foreign exchange turnover — market concentration

Per cent

	Spot	Forwards	FX swaps	Currency swaps	Options
Top five institutions	68	62	49	72	67
Top ten institutions	87	84	72	88	91
Top twenty institutions	97	97	90	99	100

Developments in trade execution

Electronic trading has become an increasingly popular way to execute trades, rising by 71% since April 2007. Trades conducted on electronic broking systems and electronic trading systems each account for around 20% of all foreign exchange turnover (**Chart 5**). Customer direct trades are the most widely used trading method in the United Kingdom with average daily turnover of $473 billion, up from $408 billion recorded in 2007.(1) Interdealer direct turnover decreased over the past three years, from $427 billion to $405 billion. Trades

(1) Customer direct trades executed between the reporting dealer and either a customer or a non-reporting dealer that are not intermediated by a third party: for example, a transaction between a reporting dealer and a non-reporting dealer that is executed via direct telephone communication or direct electronic dealing systems such as Reuters Conversational Dealing.

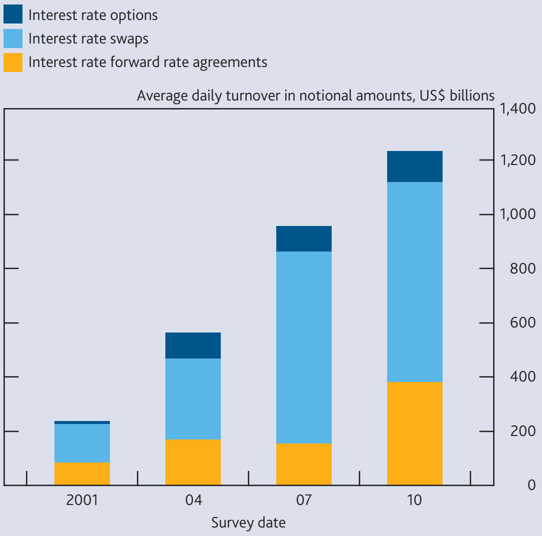
OTC interest rate derivatives turnover in the United Kingdom

Average daily turnover for OTC interest rate derivatives in the United Kingdom was $1,235 billion in April 2010, a 29% increase since 2007. Within this, turnover in forward rate agreements recorded the largest increase between 2007 and 2010, up 147% (**Chart A**). Turnover in interest rate options also increased, up 23% from $93 billion to $114 billion. The smallest increase came in activity in interest rate swaps, which rose just 4%. Nevertheless, they still accounted for 60% of the turnover in the OTC interest rate derivatives market, down from 74% in 2007.

The United Kingdom remained the main centre for OTC interest rate derivatives trading, increasing its share of the global market to 46% in April 2010, compared with 44% in 2007. The next largest centre was the United States (24%), followed by France (7%). Cross-border trades with UK reporting dealers comprised around two thirds of OTC interest rate derivatives turnover, reflecting London's role as an international financial centre.

The euro remained the dominant currency in the OTC interest rate derivatives market, accounting for 54% of total turnover, up from 51% in 2007. Compared with the foreign exchange market, the currency concentration was higher in the OTC interest rate derivatives market. Currencies other than the top four — US dollar, euro, sterling and yen — account for just 5% of the interest rate derivatives market, compared with 18% for foreign exchange.

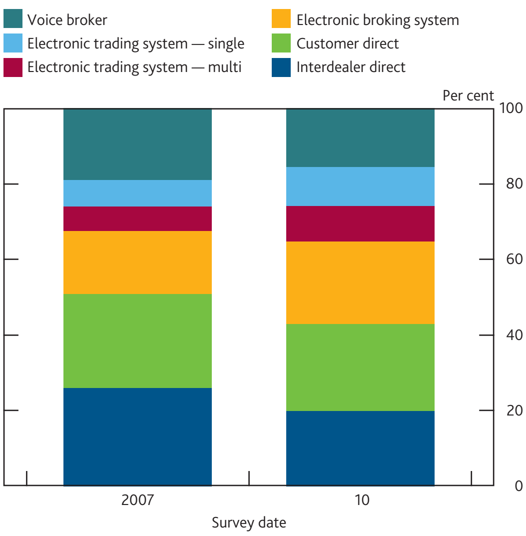
Chart A OTC interest rate derivatives turnover by instrument type — average daily turnover in notional amounts



Most of the increase in activity has been with other reporting dealers, consistent with the market remaining centred around interbank trading flows. Indeed, interbank business has grown 39% since April 2007 and accounted for 54% of all turnover in OTC interest rate derivatives. Customer business has grown 19% since the previous survey, driven by growth in turnover with non-financial customers. Factors contributing to the increases in customer business could also include the growing prime brokerage business.

executed through voice brokers stood at $320 billion in April 2010.(1)

Chart 5 Foreign exchange execution method



Underlying factors behind the continued strength of FX turnover

Currency markets, along with most other financial markets, were clearly affected by the recent financial crisis. But activity in foreign exchange markets seems to have held up relatively well, and overall market functioning remained relatively resilient. Indeed, while there were some brief episodes of heightened volatility — especially in late 2008 — market contacts suggest that the financial crisis did not have a lasting impact on currency trading. Structural changes in foreign exchange markets continued to be the dominant drivers of FX turnover.

More specifically, contacts identified three key interconnected themes that supported the growth in FX turnover over the past three years: further developments in the infrastructure for trading foreign exchange; the continuing influence of new

(1) In contrast to the news release published on 1 September 2010, execution method data are presented here on an unadjusted basis to allow comparisons with 2007.

entrants to the market; and the attractiveness of foreign exchange to investors as a distinct asset class. This section discusses each of these factors in turn.

Developments in market infrastructure

As in 2007, the introduction of new trading technologies has allowed 'traditional' foreign exchange market participants to adopt more sophisticated and efficient trading strategies, as well as enabling a growing number of new market participants to access the market directly.(1) Many of the large banks continued to invest heavily in building and innovating their systems, particularly their proprietary trading platforms that distribute prices to their customer base, allowing them to trade electronically. Investment in systems has resulted in reduced latency,(2) increased capacity and greater sophistication — for example through offering customers advanced or algorithmic execution tools. Some banks have also invested significantly in automated risk management.

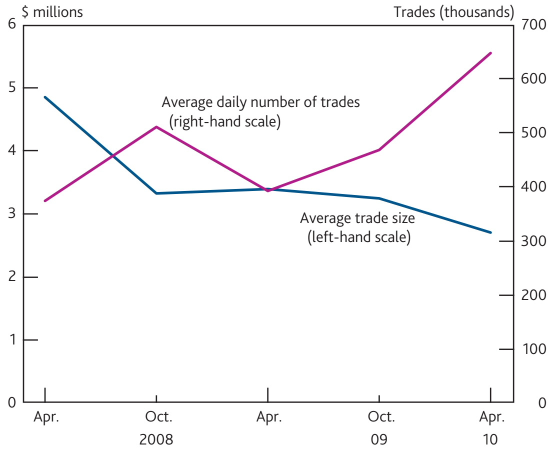
Market commentators note in particular the growing ability of banks' proprietary platforms to manage risk exposure automatically, in many cases with little manual intervention. Through the use of algorithms, systems can be programmed to make decisions in order to manage market risk — similar to the traditional role of a trader. As a result, banks are able to manage increasing amounts of risk from multiple customers simultaneously, and, in many cases, automatically.

According to contacts, such technological innovation has been key to banks maintaining, and capturing, market share. But despite the increase in concentration, competitive conditions in the FX market reportedly remained tight. Bid-offer spreads stayed narrow, and transaction costs for end-investors have been reduced further.

More generally, contacts suggest that developments in banks' electronic trading systems have contributed to an increasingly competitive market place. This has encouraged investors, especially asset managers, to trade on a more frequent basis and in smaller notional amounts to hedge and manage currency risk more efficiently. Data published by CLS Bank show that the average number of trades in April 2010 was 351,415 per day, from 128,696 in April 2007. Furthermore, over the three years, the data show a significant increase in turnover for deals with a value of less than $1 million. Separately, the April 2010 FXJSC survey indicated that the average trade size had almost halved over the previous two years, to an average of $2.7 million (**Chart 6**).(3) The consistency between the BIS and FXJSC surveys is discussed further in the box on page 360.

Technological developments have also impacted the ways in which banks manage liquidity. Banks' own systems are able to access a greater number of liquidity sources, thus further

Chart 6 Average trade size and daily volume



Source: London Foreign Exchange Joint Standing Committee survey.

enhancing the price discovery process. In particular, market commentators note the continued growth in liquidity sourced from within institutions using 'internal' flow. That is, instead of transacting via traditional interbank markets, a bank may try to enter into an offsetting position with another customer. This process of offsetting trades has reportedly been facilitated by developments in banks' electronic trading systems, and has given banks the ability to manage risk more efficiently, largely through reduced transaction costs.

New market participants

Investment in technology continued to lower barriers to entry, encouraging new participants to the foreign exchange market. As highlighted above, turnover involving 'other financial institutions' surpassed that between reporting dealers for the first time in the survey's history (**Chart 4**). Market commentators note two key reasons for the growth within this category: an increase in non-bank participants acting as market makers;(4) and an increase in central bank turnover. Non-wholesale investors too have reportedly increased their interest in currency markets, although their presence in the UK market remains modest.

Non-bank market makers

The 2007 *Quarterly Bulletin* article on the BIS triennial survey results noted how some non-bank market participants — often referred to as high-frequency traders — used models to profit from exploiting 'latency arbitrage'(5) opportunities. But growing efficiencies in FX markets over the past three years have reduced opportunities for exploiting such pricing inconsistencies. Instead, in a bid to maintain profitability,

(1) For a discussion of the 2007 results, see Christodoulou and O'Connor (2007).
(2) Latency is the time it takes to deliver an executable price to a client plus the time it takes for the trade record to return to the price maker.
(3) Results of the FXJSC turnover survey can be found at www.bankofengland.co.uk/markets/forex/fxjsc. The FXJSC survey began recording data on the number of trades transacted in April 2008.
(4) A market maker is a company, or an individual, that quotes both a buy and a sell price in a financial instrument or commodity.
(5) Taking advantage of small delays in price dissemination, usually between different price sources.

BIS triennial survey and the Foreign Exchange Joint Standing Committee survey

Since October 2004, the London Foreign Exchange Joint Standing Committee (FXJSC) has been publishing foreign exchange turnover data for the United Kingdom. The FXJSC is a UK market liaison group established by the banks and brokers of the London foreign exchange (FX) market and chaired by the Bank of England. Data are published on a six-monthly basis, for April and October. Further details of the FXJSC can be found on the Bank's website at www.bankofengland.co.uk/markets/forex/fxjsc.

The FXJSC survey collects similar information to the foreign exchange section of the BIS triennial survey. But there are two important differences, in institutional coverage and definition. First, more institutions participate in the BIS survey (47 compared with 31 in the respective April 2010 surveys). Second, the reporting basis for the FXJSC survey is based on the location of the price-setting dealer or trading desk (where transactions are executed), whereas the BIS triennial survey is based on the location of the sales desk (where transactions are arranged).

Despite these differences, the two surveys are broadly comparable. Institutions that are common to both surveys report very similar results (**Table 1**). And these institutions account for the vast bulk of turnover in the BIS survey (**Table 2**). The FXJSC survey does therefore provide a good, and more frequent, measure of activity within the UK foreign exchange market.

Table 1 Comparison of BIS triennial and FXJSC data for FXJSC reporting institutions[(a)]

Daily average in $ billions, unadjusted

	BIS triennial	FXJSC	Difference
Spot	771	741	30
Outright forwards	228	205	23
FX swaps	849	885	-36
Currency swaps	19	19	1
FX options	151	131	20
Total	**2,018**	**1,980**	**38**

(a) Components may not sum to the total due to rounding.

Table 2 FXJSC reporters' contributions to the BIS triennial data[(a)]

Daily average in $ billions, unadjusted

	Total BIS triennial	*Of which*, FXJSC reporting institutions	Per cent
Spot	779	771	99
Outright forwards	241	228	94
FX swaps	873	849	97
Currency swaps	20	19	95
FX options	151	151	100
Total	**2,065**	**2,018**	**98**

(a) Both the totals and percentages are calculated from unrounded data.

these non-bank participants have reportedly become market makers in their own right, in particular for FX spot markets, by providing their prices to buy or sell a currency (much like a bank does) to the wider market via FX Electronic Communication Networks (ECNs).[(1)] They typically obtain the necessary liquidity to sustain this activity through the use of prime brokerage services offered by banks themselves.

Consistent with this development, FX turnover conducted through multi-bank trading systems — which include FX ECNs — rose by 85% in the latest BIS survey. Moreover, while the BIS survey does not collect data on prime brokerage, data from the April 2010 FXJSC survey showed that transactions financed by prime brokerage rose by over 30% since April 2008,[(2)] accounting for 14% of all FX turnover recorded in the survey.

In general, the increase in the number of market makers outside of banks continues to broaden the number of venues supplying market liquidity, which some contacts noted should helpfully reduce the reliance on the banks as pricing providers. However, the entry of new non-bank market-making participants could potentially create a liquidity 'mirage': the ability and desire for such participants to continue pricing could evaporate quickly in periods of heightened volatility.

Central banks

Central banks have become increasingly active in currency markets over the past three years, both in terms of reserves growth and diversification. They have also, in some cases alongside sovereign wealth funds, become more sophisticated, using a wider range of strategies in order to execute their trading. According to the IMF's Currency Composition of Official Foreign Exchange Reserves (COFER) survey, global foreign exchange reserves rose 41% from 2007 Q2 to 2010 Q2, to stand at $8,422 billion. Given the scale of overall reserves, even relatively modest changes in reserve allocations can create large FX transactions that can noticeably impact foreign exchange turnover.

Non-wholesale investors

In a global context, non-wholesale foreign exchange trading has grown markedly. This growth was most pronounced in Japan, where so-called retail aggregators reportedly generated

(1) An FX Electronic Communication Network facilitates trading of foreign exchange products between the end-user and market-making institution.
(2) The FXJSC survey began recording details on prime brokerage turnover in April 2008.

over half of FX customer trading volumes in 2009 (compared with 27% in 2008) (Greenwich Associates (2010)).[1] As with many developments, the proliferation of electronic trading in FX markets is thought to be a key driver of this growth. In the United Kingdom, non-wholesale FX is thought to be a much less dominant feature of FX markets. Data from the FXJSC survey in April 2010 showed that less than 2% of overall turnover is attributable to deals with retail aggregators.

FX as a separate asset class

Over the past three years, institutional investors have continued to invest more in foreign exchange products as a separate part of their portfolios. In particular, contacts report that investors who traditionally focused on equity and credit markets increasingly sought to diversify their portfolios using foreign exchange linked products, referencing both developed and emerging currencies. A number of banks advertise foreign exchange as an asset class and provide various trading strategies to investors. The banks cite the liquidity advantages of FX, combined with low correlation to bond or equity markets, and high potential returns.

The way in which foreign exchange investments are used has also evolved. According to contacts, some market participants that were unable to access certain markets during the financial crisis (either through impairment or closure) would instead express their trading views using the foreign exchange market through so-called 'proxy' trades. As other asset markets started to function more normally again, contacts noted that the need to use FX in this way diminished somewhat. Nonetheless, increased awareness of how deep, liquid and resilient foreign exchange markets were during the turbulence is thought to have provided a boost to FX turnover over the past three years.

Conclusion

Average UK foreign exchange turnover continued to increase, rising 25% over the past three years to $1,854 billion per day. The United Kingdom remained the largest centre of foreign exchange activity.

Against the backdrop of generally rising turnover, the foreign exchange market has continued to grow, develop and innovate. The proliferation of electronic trading continues to lower barriers to entry and encourage new participants to the market. The UK FX market provided a liquid and resilient alternative during the financial crisis, which may have ultimately attracted some new investors to the asset class.

(1) A retail aggregator is either a financial institution or an intermediary that serves as a portal through which retail investors can trade foreign exchange on a margin basis. Margin trading allows an investor to take a position (long/short) on a currency by depositing a portion of the purchase price.

References

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Table C Average daily foreign exchange turnover(a)

US$ millions (rounded to the nearest million)

	US dollar against:													Sterling against:	
	Euro	¥	SwFr	Can$	Aus$	Skr	BrL	CnY	HK$	InR	KrW	ZaR	Other	US$	Euro
Spot															
Reporting dealers	**103,864**	**30,127**	**9,909**	**11,783**	**16,556**	**1,367**	**268**	**583**	**3,041**	**306**	**803**	**2,218**	**18,417**	**34,422**	**13,068**
Local	28,221	8,025	2,783	2,273	4,222	403	30	113	660	77	130	571	5,474	12,280	3,975
Cross-border	75,643	22,102	7,126	9,509	12,334	964	239	470	2,381	229	673	1,648	12,943	22,142	9,094
Other financial institutions	**109,408**	**37,803**	**16,965**	**14,274**	**19,964**	**1,591**	**550**	**599**	**2,052**	**624**	**1,844**	**2,003**	**17,377**	**41,262**	**15,716**
Local	35,887	11,773	6,913	4,189	6,072	253	31	215	373	144	576	588	5,919	14,312	6,287
Cross-border	73,521	26,031	10,053	10,085	13,892	1,339	519	383	1,679	481	1,268	1,415	11,458	26,950	9,430
Non-financial institutions	**22,455**	**6,926**	**2,686**	**2,058**	**2,866**	**133**	**30**	**22**	**221**	**13**	**16**	**98**	**1,949**	**6,156**	**2,851**
Local	4,493	1,240	576	574	892	44	16	0	55	1	0	27	624	1,994	992
Cross-border	17,962	5,686	2,110	1,484	1,974	89	15	22	167	12	16	71	1,325	4,162	1,859
Subtotal	**235,727**	**74,856**	**29,561**	**28,115**	**39,386**	**3,091**	**848**	**1,205**	**5,314**	**943**	**2,662**	**4,319**	**37,743**	**81,840**	**31,635**
Outright forward															
Reporting dealers	**21,424**	**3,671**	**2,771**	**2,176**	**2,885**	**1,482**	**684**	**1,287**	**420**	**1,320**	**1,821**	**343**	**7,149**	**6,533**	**2,393**
Local	3,211	894	227	363	738	143	204	229	153	426	391	124	1,896	1,497	465
Cross-border	18,213	2,777	2,544	1,813	2,147	1,338	480	1,058	266	893	1,430	219	5,253	5,037	1,928
Other financial institutions	**23,629**	**30,621**	**2,816**	**6,974**	**5,098**	**773**	**1,477**	**1,536**	**548**	**1,413**	**1,292**	**735**	**11,790**	**13,126**	**6,761**
Local	7,192	2,045	586	1,345	1,546	229	524	728	99	632	523	293	4,627	6,111	3,959
Cross-border	16,437	28,577	2,230	5,629	3,552	544	953	807	448	781	769	442	7,163	7,015	2,803
Non-financial institutions	**4,635**	**25,986**	**467**	**519**	**400**	**85**	**214**	**283**	**57**	**203**	**169**	**68**	**1,463**	**2,100**	**1,391**
Local	1,219	662	284	107	143	23	116	84	11	78	56	17	381	1,215	727
Cross-border	3,416	25,323	183	412	257	62	99	199	46	125	112	51	1,082	885	665
Subtotal	**49,688**	**60,278**	**6,053**	**9,668**	**8,384**	**2,340**	**2,376**	**3,106**	**1,024**	**2,935**	**3,282**	**1,146**	**20,401**	**21,760**	**10,546**
Foreign exchange swaps															
Reporting dealers	**139,851**	**41,186**	**17,269**	**18,952**	**25,934**	**10,345**	**21**	**88**	**3,482**	**145**	**107**	**3,636**	**52,811**	**62,197**	**11,943**
Local	33,633	8,346	2,720	3,370	6,596	1,599	11	20	1,351	10	20	878	13,006	22,467	1,963
Cross-border	106,217	32,841	14,549	15,582	19,339	8,746	10	68	2,130	135	87	2,758	39,804	39,730	9,980
Other financial institutions	**103,923**	**33,930**	**11,257**	**11,950**	**17,986**	**6,172**	**3**	**15**	**2,659**	**67**	**48**	**2,119**	**35,466**	**51,112**	**11,794**
Local	31,948	8,958	1,901	1,813	4,144	1,155	0	1	324	6	10	331	8,118	25,404	3,731
Cross-border	71,975	24,972	9,356	10,136	13,842	5,018	2	14	2,335	62	38	1,788	27,347	25,708	8,063
Non-financial institutions	**21,240**	**5,052**	**3,609**	**3,150**	**3,166**	**1,829**	**9**	**1**	**459**	**18**	**34**	**142**	**12,016**	**7,311**	**3,444**
Local	3,393	1,491	241	714	730	167	1	1	142	14	22	17	1,702	3,650	1,566
Cross-border	17,847	3,560	3,369	2,436	2,436	1,662	9	0	317	3	12	125	10,314	3,662	1,878
Subtotal	**265,014**	**80,168**	**32,135**	**34,052**	**47,086**	**18,346**	**32**	**104**	**6,600**	**230**	**189**	**5,897**	**100,293**	**120,621**	**27,180**
Maturity of forwards and swaps, per cent(b)															
Seven days or less	72	77	76	77	77	78	32	10	78	21	23	78	77	72	77
Over seven days	28	23	24	23	23	21	65	80	19	77	76	22	22	28	23
Over one year	1	1	1	0	0	1	3	10	3	2	1	0	1	1	1
Currency swaps															
Reporting dealers	**2,157**	**416**	**129**	**743**	**738**	**160**	**11**	**4**	**2**	**0**	**1**	**134**	**1,112**	**773**	**97**
Local	543	219	17	28	112	77	0	0	2	0	0	8	703	489	80
Cross-border	1,614	196	112	714	626	83	11	4	0	0	1	127	409	285	17
Other financial institutions	**4,883**	**2,042**	**409**	**137**	**777**	**105**	**11**	**7**	**13**	**5**	**28**	**34**	**845**	**364**	**51**
Local	2,399	558	97	0	338	98	9	1	0	4	0	4	322	143	43
Cross-border	2,484	1,483	313	137	439	7	2	7	13	1	28	30	522	220	9
Non-financial institutions	**379**	**91**	**3**	**20**	**177**	**0**	**0**	**0**	**1**	**0**	**0**	**6**	**115**	**35**	**23**
Local	19	0	0	0	21	0	0	0	0	0	0	0	27	13	23
Cross-border	360	91	3	20	156	0	0	0	1	0	0	6	88	22	0
Subtotal	**7,419**	**2,548**	**541**	**899**	**1,692**	**265**	**22**	**11**	**16**	**5**	**29**	**174**	**2,072**	**1,172**	**172**
OTC options sold															
Reporting dealers	**6,269**	**3,316**	**743**	**481**	**1,140**	**31**	**510**	**354**	**116**	**160**	**406**	**88**	**1,812**	**1,347**	**1,043**
Local	1,995	1,617	318	110	369	7	233	184	37	49	207	38	724	542	421
Cross-border	4,274	1,699	425	371	771	24	277	170	79	111	199	50	1,088	805	622
Other financial institutions	**11,060**	**13,021**	**949**	**584**	**1,351**	**24**	**462**	**525**	**65**	**298**	**400**	**86**	**2,210**	**1,965**	**1,303**
Local	6,077	11,867	533	316	874	1	260	405	15	203	274	17	965	1,015	793
Cross-border	4,983	1,154	417	269	477	23	202	120	50	96	125	68	1,244	950	510
Non-financial institutions	**1,377**	**559**	**334**	**43**	**188**	**2**	**58**	**122**	**118**	**64**	**44**	**8**	**261**	**210**	**246**
Local	405	239	89	15	103	1	26	11	111	35	38	5	62	109	96
Cross-border	973	320	245	28	85	1	32	111	7	29	7	4	199	101	150
Subtotal	**18,706**	**16,896**	**2,026**	**1,109**	**2,680**	**57**	**1,029**	**1,001**	**298**	**522**	**850**	**182**	**4,283**	**3,522**	**2,592**
OTC options bought															
Reporting dealers	**7,576**	**2,613**	**494**	**530**	**1,421**	**31**	**564**	**487**	**155**	**209**	**345**	**84**	**2,061**	**1,393**	**1,229**
Local	2,151	719	133	121	349	9	234	163	62	89	173	39	750	490	463
Cross-border	5,426	1,894	361	410	1,072	23	330	324	93	121	171	45	1,311	904	765
Other financial institutions	**9,790**	**12,385**	**593**	**482**	**1,090**	**17**	**551**	**690**	**37**	**250**	**458**	**64**	**2,160**	**1,828**	**1,357**
Local	4,357	11,167	262	264	604	1	292	556	5	125	386	14	872	761	671
Cross-border	5,433	1,218	331	219	486	16	259	134	32	124	72	51	1,288	1,067	686
Non-financial institutions	**1,310**	**603**	**60**	**82**	**230**	**4**	**58**	**170**	**20**	**46**	**63**	**8**	**344**	**373**	**372**
Local	368	281	15	33	82	0	18	16	4	24	48	3	97	147	91
Cross-border	942	323	45	49	148	4	41	155	16	23	15	5	246	226	281
Subtotal	**18,676**	**15,601**	**1,148**	**1,095**	**2,741**	**53**	**1,173**	**1,347**	**211**	**505**	**866**	**156**	**4,565**	**3,595**	**2,957**
Total options	**37,382**	**32,497**	**3,174**	**2,204**	**5,420**	**109**	**2,202**	**2,348**	**508**	**1,028**	**1,716**	**338**	**8,848**	**7,117**	**5,549**
Total foreign currency turnover	**595,230**	**250,348**	**71,464**	**74,938**	**101,968**	**24,150**	**5,481**	**6,772**	**13,462**	**5,141**	**7,877**	**11,874**	**169,357**	**232,509**	**75,081**

(a) Adjusted for local double counting.
(b) Gross maturities data cannot be adjusted accurately for local double counting. Figures in this table are unadjusted, given as a percentage of gross outright forward and foreign exchange swap turnover.

						Euro against:						Yen against:			Residual	Total,
¥	SwFr	Can$	Aus$	Skr	Other	¥	SwFr	Can$	Aus$	Skr	Other	Aus$	NZ$	Other		all currencies
2,847	**491**	**297**	**445**	**34**	**382**	**13,137**	**8,014**	**855**	**765**	**2,877**	**8,962**	**1,983**	**185**	**2,213**	**2,598**	**292,817**
852	67	52	160	8	188	4,397	1,882	220	149	415	2,321	801	100	880	710	82,440
1,994	424	245	285	27	194	8,740	6,132	635	616	2,462	6,641	1,182	84	1,332	1,887	210,377
4,215	**741**	**414**	**462**	**108**	**629**	**23,778**	**8,765**	**730**	**813**	**2,335**	**7,896**	**2,372**	**262**	**5,656**	**2,861**	**344,070**
721	231	145	151	34	336	10,101	3,412	94	214	472	2,263	591	46	2,492	659	115,491
3,494	511	269	311	75	293	13,677	5,353	636	599	1,862	5,633	1,781	216	3,165	2,203	228,579
541	**66**	**41**	**74**	**18**	**88**	**4,580**	**2,166**	**130**	**121**	**340**	**919**	**404**	**40**	**1,455**	**165**	**59,627**
35	11	16	24	5	53	660	509	26	19	60	154	23	2	17	59	13,198
505	55	25	50	13	35	3,919	1,657	104	102	280	765	381	38	1,439	106	46,429
7,602	**1,298**	**752**	**981**	**161**	**1,099**	**41,495**	**18,946**	**1,715**	**1,698**	**5,552**	**17,777**	**4,758**	**487**	**9,324**	**5,624**	**696,514**
593	**52**	**207**	**96**	**9**	**136**	**993**	**1,083**	**155**	**369**	**314**	**1,451**	**178**	**14**	**516**	**945**	**63,470**
35	28	29	47	2	72	364	226	45	59	92	459	57	10	196	288	12,970
558	24	178	48	8	64	630	857	110	310	222	992	121	4	320	657	50,500
1,126	**325**	**265**	**402**	**143**	**515**	**2,878**	**1,878**	**1,172**	**526**	**876**	**3,256**	**374**	**54**	**889**	**1,073**	**124,339**
518	193	140	265	77	338	1,285	704	888	150	326	1,036	124	4	244	315	37,048
608	131	125	137	66	177	1,592	1,174	284	376	549	2,219	250	50	645	758	87,291
100	**50**	**90**	**79**	**25**	**146**	**214**	**273**	**60**	**117**	**160**	**717**	**46**	**3**	**81**	**111**	**40,314**
38	33	49	25	21	110	66	101	7	7	91	90	13	0	11	26	5,811
62	17	41	54	4	37	148	172	53	110	69	627	34	2	70	86	34,503
1,819	**427**	**562**	**577**	**177**	**798**	**4,085**	**3,235**	**1,387**	**1,011**	**1,350**	**5,423**	**598**	**71**	**1,486**	**2,129**	**228,122**
700	**108**	**28**	**137**	**7**	**69**	**1,838**	**3,500**	**243**	**497**	**777**	**2,553**	**210**	**70**	**437**	**202**	**399,340**
256	33	4	22	6	0	458	267	27	53	62	357	129	58	340	22	98,086
444	75	23	114	1	69	1,379	3,233	216	444	715	2,195	81	12	97	180	301,253
1,165	**236**	**96**	**716**	**154**	**342**	**3,850**	**2,517**	**551**	**855**	**1,063**	**3,869**	**1,315**	**716**	**2,181**	**565**	**308,691**
401	91	65	287	69	214	523	399	48	89	64	590	79	119	277	73	91,230
764	145	31	429	85	128	3,327	2,118	503	767	999	3,279	1,236	597	1,904	492	217,461
353	**106**	**150**	**161**	**65**	**280**	**677**	**721**	**134**	**449**	**511**	**1,546**	**145**	**27**	**230**	**315**	**67,350**
164	40	57	46	35	194	103	93	6	106	20	240	1	0	7	31	14,993
189	66	93	115	30	86	574	628	128	343	491	1,306	144	27	223	284	52,357
2,218	**450**	**274**	**1,014**	**226**	**691**	**6,364**	**6,738**	**928**	**1,802**	**2,351**	**7,968**	**1,670**	**813**	**2,848**	**1,082**	**775,381**
76	77	77	78	32	10	54	54	62	39	34	43	75	91	87	58	71
24	23	23	21	65	80	45	46	37	60	65	55	25	9	13	41	28
1	0	0	1	3	10	1	1	1	1	2	2	1	0	1	1	1
0	**0**	**0**	**0**	**0**	**36**	**34**	**30**	**0**	**15**	**1**	**119**	**1**	**0**	**0**	**2**	**6,716**
0	0	0	0	0	4	6	10	0	0	0	17	0	0	0	1	2,318
0	0	0	0	0	31	28	20	0	15	1	101	1	0	0	1	4,397
5	**2**	**0**	**1**	**0**	**14**	**138**	**194**	**0**	**41**	**17**	**283**	**61**	**0**	**3**	**30**	**10,500**
5	2	0	0	0	0	7	81	0	0	0	17	0	0	3	2	4,134
0	0	0	1	0	14	131	113	0	41	17	266	61	0	0	28	6,366
27	**0**	**0**	**0**	**0**	**15**	**2**	**33**	**0**	**2**	**0**	**31**	**0**	**0**	**0**	**0**	**961**
27	0	0	0	0	8	0	0	0	0	0	5	0	0	0	0	146
0	0	0	0	0	7	2	33	0	2	0	26	0	0	0	0	816
32	**2**	**0**	**1**	**0**	**65**	**174**	**258**	**0**	**58**	**18**	**433**	**63**	**0**	**3**	**33**	**18,177**
111	**74**	**27**	**34**	**13**	**83**	**514**	**988**	**57**	**108**	**273**	**1,244**	**154**	**11**	**167**	**470**	**22,144**
30	34	5	17	6	46	178	346	18	48	86	419	51	6	66	194	8,401
81	40	22	17	7	37	336	642	39	61	188	824	103	5	101	276	13,743
155	**88**	**50**	**66**	**11**	**166**	**1,283**	**1,603**	**111**	**94**	**346**	**2,535**	**194**	**22**	**288**	**456**	**41,771**
81	17	31	39	5	58	407	857	36	60	178	1,111	109	10	141	230	26,984
75	71	19	26	6	108	877	746	75	34	168	1,424	85	12	147	227	14,786
8	**14**	**13**	**22**	**1**	**29**	**241**	**494**	**13**	**21**	**39**	**595**	**30**	**0**	**37**	**69**	**5,258**
2	0	7	21	0	1	136	263	9	15	19	209	6	0	3	15	2,049
6	14	6	2	1	28	105	231	3	5	20	386	24	0	34	55	3,209
274	**176**	**90**	**122**	**24**	**277**	**2,038**	**3,085**	**181**	**223**	**658**	**4,374**	**378**	**33**	**492**	**996**	**69,172**
108	**73**	**30**	**57**	**30**	**103**	**531**	**1,534**	**49**	**119**	**303**	**1,541**	**147**	**15**	**150**	**505**	**24,486**
39	27	17	19	10	45	149	370	19	28	96	478	42	3	62	178	7,525
70	46	13	38	19	58	382	1,163	29	90	207	1,063	105	12	88	327	16,961
165	**89**	**34**	**41**	**26**	**142**	**786**	**1,091**	**133**	**120**	**319**	**1,310**	**197**	**13**	**311**	**474**	**37,004**
89	26	27	20	8	50	341	532	60	72	108	455	100	6	118	204	22,554
76	63	6	22	18	92	445	560	73	48	211	855	96	8	193	270	14,450
10	**29**	**4**	**5**	**1**	**22**	**135**	**337**	**9**	**10**	**66**	**207**	**25**	**4**	**48**	**83**	**4,737**
0	1	2	5	0	1	32	90	7	0	25	23	6	0	7	6	1,428
9	28	2	0	1	21	103	247	2	10	41	184	19	4	41	77	3,309
283	**191**	**68**	**104**	**57**	**268**	**1,451**	**2,962**	**190**	**248**	**688**	**3,058**	**368**	**33**	**509**	**1,062**	**66,227**
557	**367**	**157**	**226**	**81**	**545**	**3,490**	**6,047**	**371**	**471**	**1,347**	**7,432**	**746**	**66**	**1,001**	**2,057**	**135,399**
12,228	2,544	1,745	2,799	645	3,197	55,608	35,223	4,400	5,040	10,617	39,034	7,835	1,437	14,662	10,925	1,853,594

Table D Average daily OTC interest rate derivatives turnover[(a)]

US$ millions (rounded to the nearest million)

	£	US$	€	¥	SwFr	Can$	Aus$	Dkr	HK$	Skr	Other	Total
FRAs												
Reporting dealers	**39,548**	**52,535**	**125,219**	**630**	**1,758**	**754**	**1,349**	**220**	**0**	**4,342**	**6,402**	**232,756**
Local	15,066	13,299	36,035	87	736	230	77	36	0	546	1,889	68,001
Cross-border	24,481	39,236	89,184	543	1,021	524	1,272	184	0	3,797	4,513	164,755
Other financial institutions	**18,896**	**42,994**	**52,440**	**189**	**4,883**	**101**	**325**	**215**	**0**	**2,193**	**2,308**	**124,545**
Local	11,171	15,630	26,178	186	2,565	49	33	19	0	309	288	56,430
Cross-border	7,725	27,364	26,262	3	2,318	52	293	196	0	1,884	2,020	68,115
Non-financial institutions	**337**	**3,245**	**19,782**	**27**	**289**	**0**	**55**	**107**	**0**	**303**	**596**	**24,742**
Local	101	202	2,235	0	0	0	0	0	0	0	12	2,550
Cross-border	236	3,043	17,547	27	289	0	55	107	0	303	584	22,191
Subtotal	**58,781**	**98,774**	**197,441**	**845**	**6,930**	**856**	**1,729**	**542**	**0**	**6,838**	**9,306**	**382,042**
Swaps												
Reporting dealers	**92,627**	**33,191**	**160,009**	**73,723**	**1,306**	**3,482**	**2,797**	**117**	**125**	**1,149**	**8,865**	**377,393**
Local	34,759	7,521	39,790	2,897	287	720	520	18	31	223	1,950	88,716
Cross-border	57,868	25,670	120,219	70,826	1,019	2,762	2,277	99	95	926	6,916	288,677
Other financial institutions	**34,671**	**27,933**	**190,414**	**5,173**	**3,186**	**958**	**1,059**	**39**	**187**	**691**	**4,076**	**268,387**
Local	23,468	15,152	103,920	3,261	1,342	424	470	0	111	242	1,480	149,871
Cross-border	11,203	12,781	86,494	1,912	1,844	534	589	39	75	450	2,596	118,516
Non-financial institutions	**26,717**	**5,727**	**54,579**	**2,671**	**156**	**267**	**556**	**1**	**29**	**213**	**1,936**	**92,851**
Local	8,361	361	21,949	769	85	40	145	0	0	94	159	31,961
Cross-border	18,356	5,366	32,631	1,903	71	227	411	1	29	118	1,777	60,890
Subtotal	**154,015**	**66,851**	**405,002**	**81,567**	**4,649**	**4,708**	**4,412**	**156**	**341**	**2,053**	**14,877**	**738,631**
OTC options sold												
Reporting dealers	**7,631**	**5,227**	**20,809**	**973**	**36**	**0**	**187**	**0**	**33**	**154**	**1,309**	**36,359**
Local	1,287	1,438	3,154	34	10	0	0	0	0	18	108	6,050
Cross-border	6,344	3,789	17,655	940	26	0	187	0	33	136	1,201	30,309
Other financial institutions	**4,662**	**5,123**	**15,272**	**454**	**101**	**16**	**49**	**0**	**2**	**76**	**464**	**26,220**
Local	2,542	2,886	3,530	41	28	0	47	0	0	0	29	9,102
Cross-border	2,121	2,237	11,743	413	73	16	2	0	2	76	436	17,118
Non-financial institutions	**1,282**	**829**	**2,563**	**122**	**0**	**0**	**92**	**0**	**87**	**92**	**310**	**5,377**
Local	199	5	50	5	0	0	0	0	0	0	13	271
Cross-border	1,084	824	2,513	117	0	0	92	0	87	92	298	5,106
Subtotal	**13,576**	**11,179**	**38,645**	**1,549**	**137**	**16**	**328**	**0**	**122**	**321**	**2,083**	**67,956**
OTC options bought												
Reporting dealers	**3,134**	**3,599**	**12,823**	**948**	**89**	**0**	**49**	**1**	**36**	**34**	**400**	**21,113**
Local	838	590	2,503	49	7	0	0	0	0	7	35	4,029
Cross-border	2,297	3,009	10,320	899	82	0	49	1	36	27	364	17,084
Other financial institutions	**3,821**	**4,389**	**11,390**	**684**	**8**	**0**	**47**	**0**	**1**	**0**	**302**	**20,640**
Local	2,829	2,923	3,546	86	5	0	47	0	0	0	202	9,638
Cross-border	992	1,466	7,843	598	3	0	0	0	1	0	100	11,002
Non-financial institutions	**921**	**715**	**2,210**	**155**	**0**	**0**	**57**	**0**	**0**	**114**	**50**	**4,221**
Local	180	14	56	9	0	0	0	0	0	0	0	258
Cross-border	741	701	2,155	146	0	0	57	0	0	114	50	3,962
Subtotal	**7,876**	**8,703**	**26,423**	**1,787**	**97**	**0**	**152**	**1**	**37**	**148**	**751**	**45,974**
Total options	**21,451**	**19,881**	**65,068**	**3,336**	**234**	**16**	**480**	**1**	**159**	**469**	**2,834**	**113,930**
Total OTC interest rate derivatives	**234,247**	**185,506**	**667,511**	**85,749**	**11,812**	**5,579**	**6,621**	**700**	**500**	**9,360**	**27,017**	**1,234,603**

(a) Adjusted for local double counting.

Table E Average daily foreign exchange turnover by execution method(a)(b)

US$ millions (rounded to the nearest million)

	Interdealer direct	Customer direct	Electronic broking system	Electronic trading systems: Multi-bank dealing systems	Electronic trading systems: Single-bank proprietary platforms	Voice broker	Total
Execution method							
Spot — total	**93,396**	**141,193**	**236,014**	**93,192**	**87,435**	**45,285**	**696,514**
of which: with reporting dealers	89,033	0	103,152	39,379	32,903	28,350	292,817
– local	25,291	0	32,973	7,654	5,156	11,367	82,440
– cross-border	63,742	0	70,179	31,726	27,748	16,984	210,377
Outright forwards — total	**25,095**	**79,804**	**14,992**	**34,487**	**63,043**	**10,702**	**228,122**
of which: with reporting dealers	19,491	0	10,864	4,949	22,060	6,105	63,470
– local	5,971	0	2,491	962	1,644	1,902	12,970
– cross-border	13,520	0	8,373	3,987	20,416	4,204	50,500
FX swaps — total	**168,706**	**176,648**	**134,381**	**50,274**	**45,303**	**200,070**	**775,381**
of which: with reporting dealers	162,380	0	82,293	13,738	12,336	128,592	399,340
– local	44,813	0	15,573	4,645	4,428	28,627	98,086
– cross-border	117,567	0	66,720	9,093	7,908	99,966	301,253
FX options — total	**29,892**	**75,513**	**7,731**	**1,157**	**1,474**	**19,631**	**135,399**
of which: with reporting dealers	29,612	0	3,943	739	406	11,930	46,630
– local	11,892	0	1,151	329	15	2,538	15,926
– cross-border	17,720	0	2,791	410	391	9,392	30,704
Total	**317,090**	**473,158**	**393,118**	**179,110**	**197,254**	**275,687**	**1,835,417**

(a) Adjusted for local double counting.
(b) Does not include currency swaps.