

**The  
Foreign Exchange  
and  
Interest Rate Derivatives  
Markets:**

**Turnover in the United States,  
April 2010**

**Federal Reserve Bank of New York**

## The Foreign Exchange and Interest Rate Derivatives Markets: Turnover in the United States, April 2010

**Background** The Federal Reserve Bank of New York together with fifty-three other central banks conducted a survey of turnover in the over-the-counter (OTC) foreign exchange and interest rate derivatives markets for April 2010. This worldwide, cooperative effort is undertaken every three years and is coordinated by the Bank for International Settlements (BIS).

The “triennial survey” is a comprehensive source of information on the size and structure of the OTC foreign exchange and derivatives markets. These markets trade private, bilateral contracts; therefore, no turnover statistics are available, as they are for the organized exchanges. (Data for exchange-traded futures and options are excluded from the survey.)

To measure the OTC markets, the dealers that make markets in foreign exchange and interest rate derivatives reported trading volumes for April 2010 to the central banks in the countries where they are located. The participants reported separately the volume of trading they conduct with each other to permit adjustments for double reporting. The central banks then compiled national aggregates from the dealers’ data and the BIS compiled global totals from the central banks’ national data.<sup>1</sup> (See Annex I for a complete description of survey terms and methods.)

In 2010, a total of twenty-four dealers in the United States participated in the foreign exchange part of the survey and nineteen in the interest rate derivatives part, down from thirty-three and twenty-eight, respectively, in 2007. The decline is attributable to the consolidation of firms in 2008 and the exit of some dealers from the U.S. market. Participating dealers were commercial banks, U.S. offices of foreign banking organizations, and securities brokers/dealers. They were U.S.-owned institutions as well as foreign-owned institutions with dealing operations in the United States. (See Annex II for a list of participating dealers.)

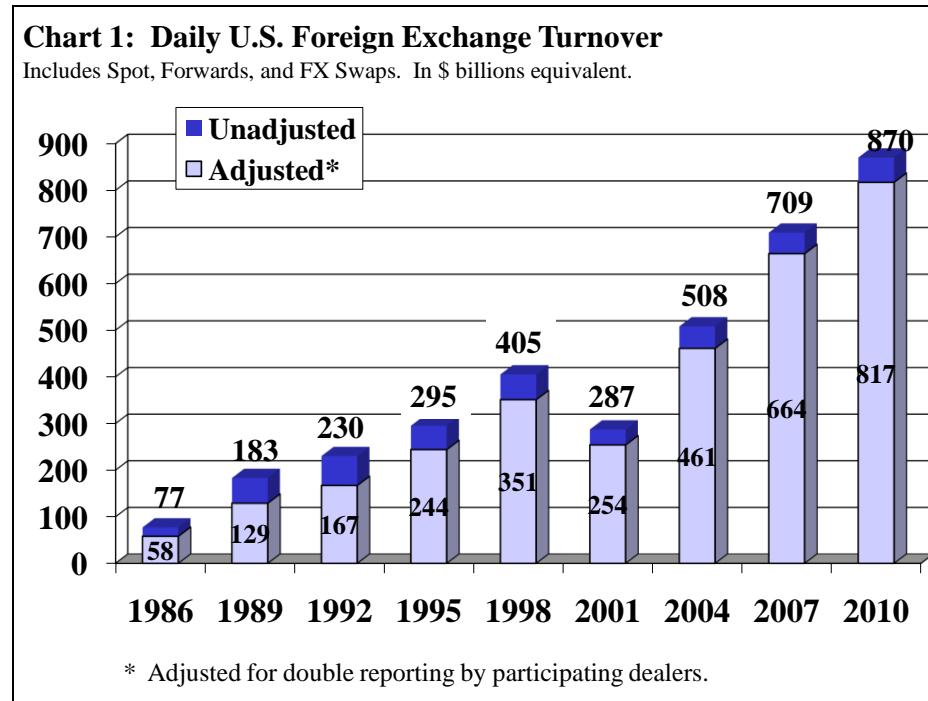
This report discusses turnover in foreign exchange (FX) spot, forwards, and swaps as the foreign exchange part of the survey. Trading in forward rate agreements (FRAs), currency and interest rate swaps, foreign exchange options, and interest rate options are then discussed together as the interest rate derivatives part of the survey. Aggregate data are included as Annex III.

After double reporting of trades between participating dealers has been adjusted for, daily foreign exchange turnover in the United States (spot,

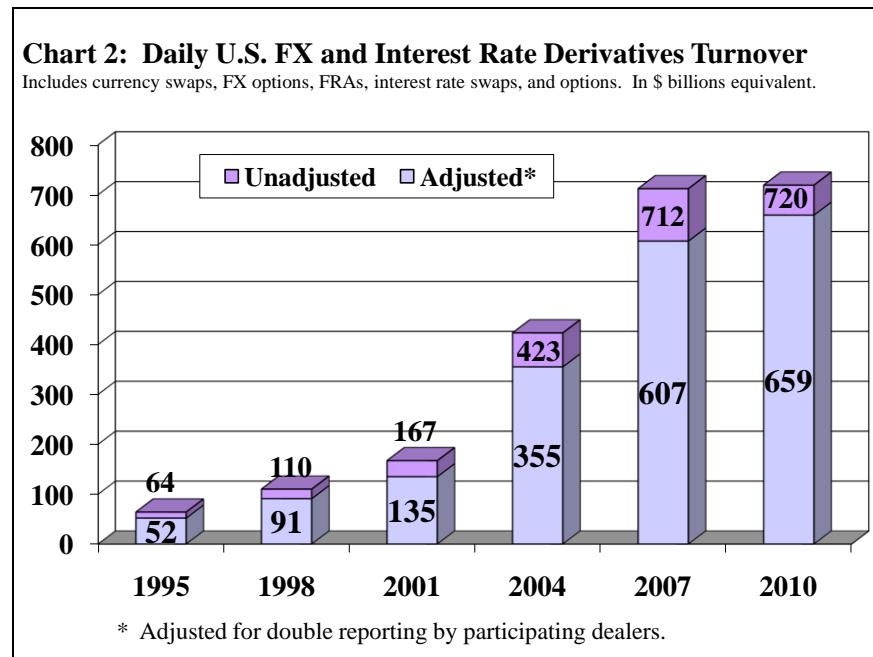
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<sup>1</sup> Visit <http://www.BIS.org> for the BIS report on global turnover.

forwards, and FX swaps) averaged \$817 billion in April 2010, an increase of 23 percent from the 2007 survey. See Chart 1.



Daily turnover for the other derivatives markets covered by the survey (FRAs, interest rate swaps, cross-currency swaps, and foreign exchange and interest rate options) averaged \$659 billion, up 9 percent. See Chart 2.



**The U.S. Foreign Exchange Market**

Daily foreign exchange turnover in the United States increased 23 percent from 2007 to \$817 billion,<sup>2</sup> continuing the strong growth reported in past surveys. At constant exchange rates, turnover increased 28 percent since 2007.<sup>3</sup>

Factors contributing to increased turnover included continued growth in market participation, especially through prime brokerage flows. Rising volumes were also supported by a return to more active management of currency risks and investment portfolios by corporations and portfolio managers as the credit crisis abated and financial market sentiment improved. Dealers continued to invest heavily in technology, building advanced electronic trading and risk management platforms to accommodate a growing customer base. The 2010 survey was conducted during a period of heightened sensitivity to sovereign fiscal concerns, especially among the euro-periphery countries. The subsequent increase in volatility among many euro pairs resulted in increased trading volumes as investors looked to more actively manage portfolios and hedge investment exposures with sentiment toward some euro-area financial markets waning.

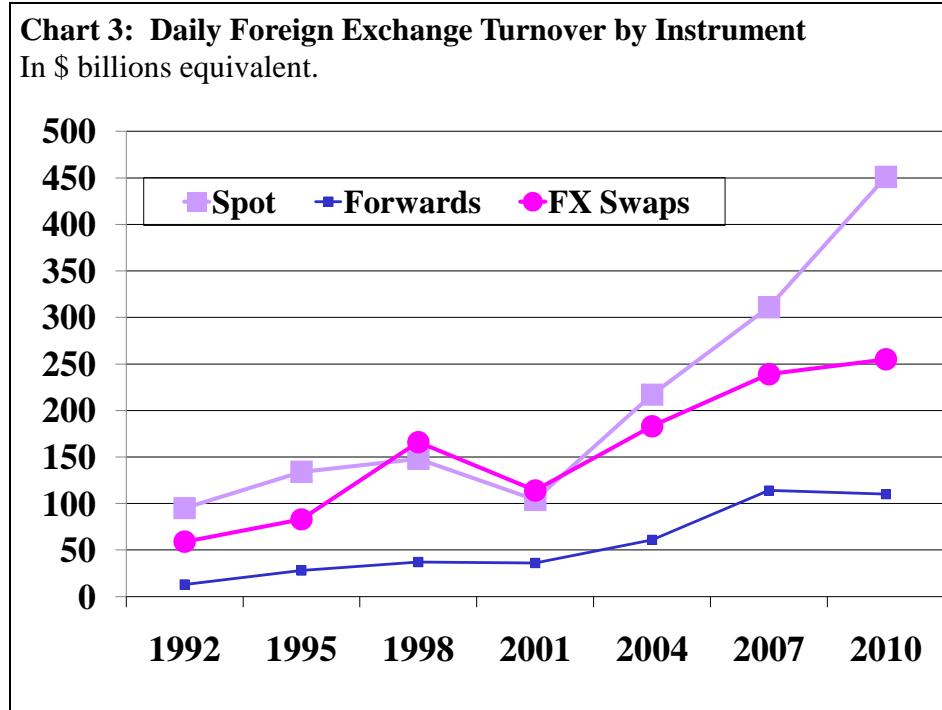
**Instruments**

Of the three instruments that are considered together as foreign exchange turnover, spot trading increased the most, by 52 percent. Turnover in FX swaps rose 12 percent and FX forwards increased 2 percent from the 2007 survey. See Chart 3.

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<sup>2</sup> This total is adjusted for the double reporting of transactions between participating dealers in the United States.

<sup>3</sup> Foreign currency amounts are reported in dollar terms. See Annex I. 1 f) for a description and explanation of the effect of exchange rate changes.

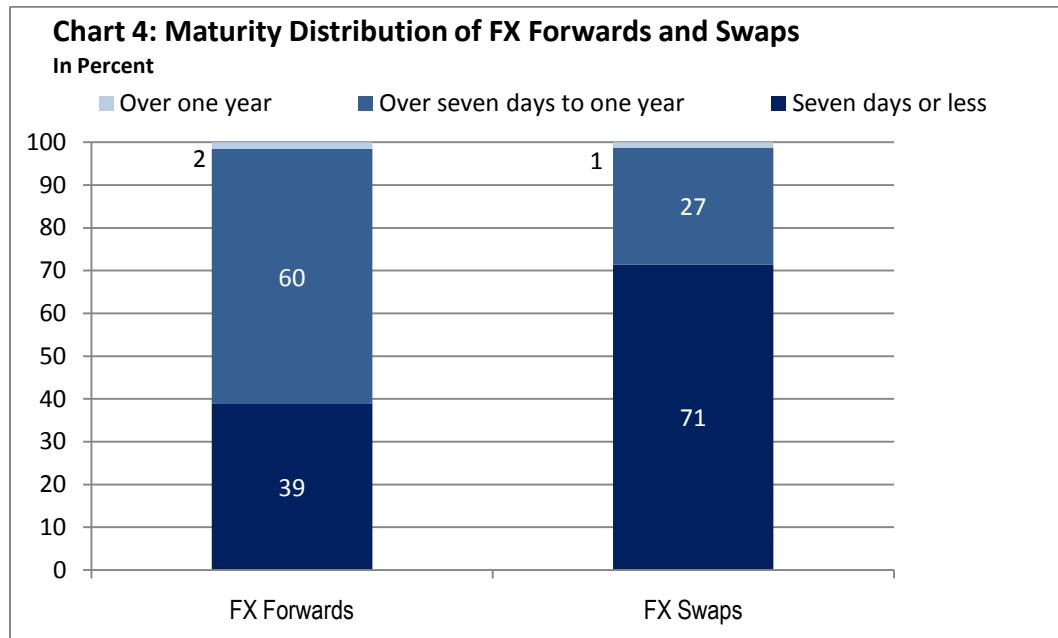


- Spot trading represented 55 percent of total foreign exchange turnover, up from 47 percent in 2007.
- FX swaps trading represented 31 percent of turnover, down from 36 percent in the prior survey.
- Outright forward transactions declined slightly to 14 percent of turnover, from 17 percent in the 2007 survey.

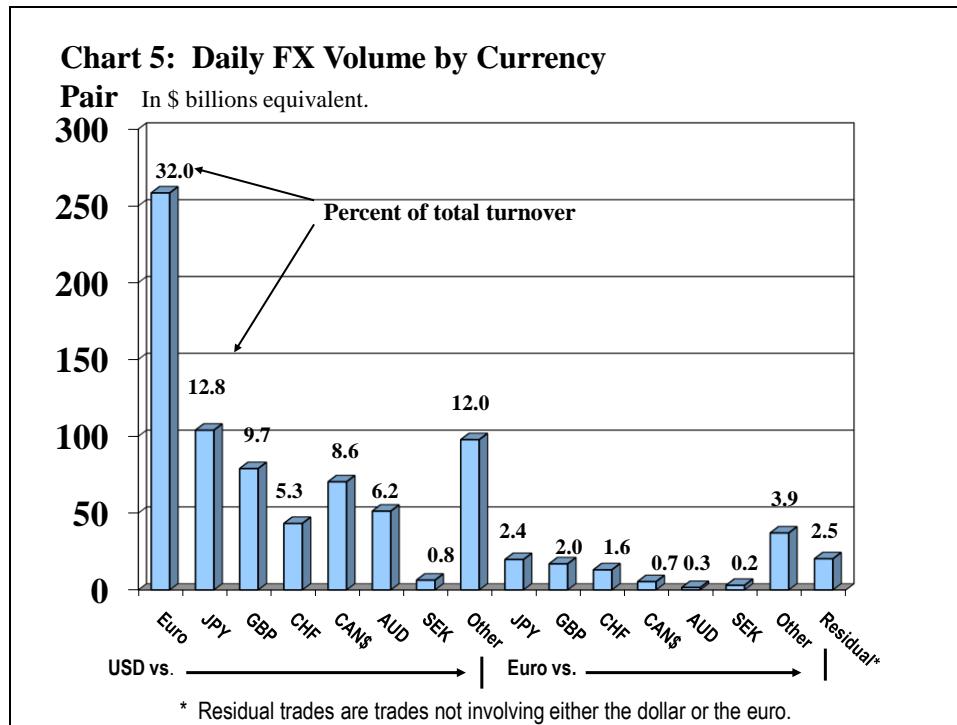
#### Average Maturity

FX swaps and forwards were reported by original term to maturity, with three categories of maturity buckets (seven days or less, over seven days and up to one year, and over one year). For both instruments, the data illustrate the relatively short-term nature of the products.

- More than 98 percent of the FX swaps reported in the survey were arranged with a maturity of less than one year. The majority of foreign exchange swaps, 71 percent, were reported within the seven-days-or-less maturity bucket. See Chart 4.
- Nearly 99 percent of the outright forward transactions were reported in the one-year-or-less maturity bucket. The majority of reported outright forward transactions, 60 percent, had an original maturity of more than seven days but no more than one year. See Chart 4.

**Currencies**

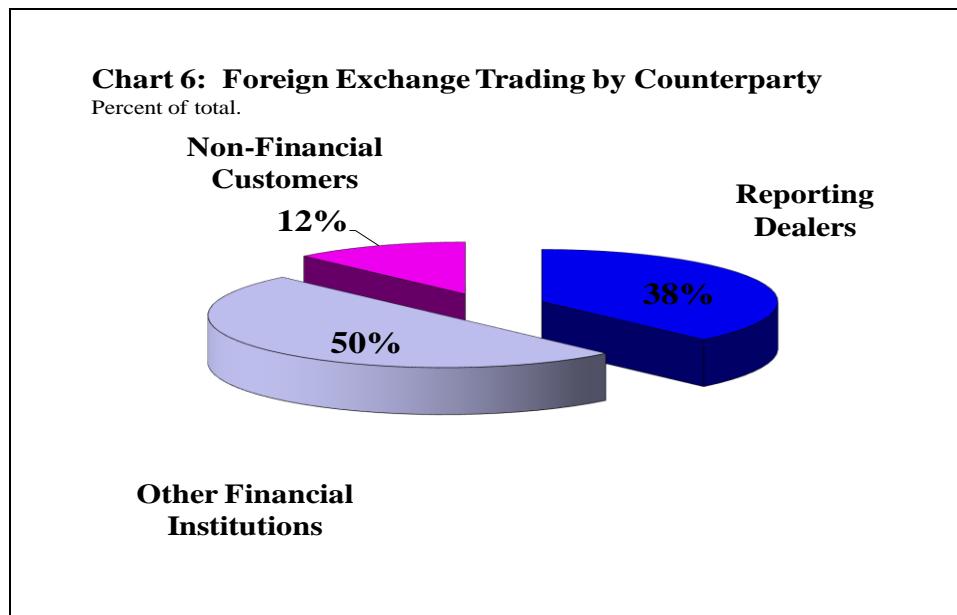
- The U.S. dollar was traded in 87 percent of all transactions, up from 83 percent in the last survey.
- The euro was the second most actively traded currency and was on one side of 42 percent of all trades in the U.S. market, up from 38 percent in April 2007.
- The most actively traded currency pair was the dollar/euro, which accounted for 31 percent of U.S. market turnover. See Chart 5.
- Yen trading declined slightly to 16 percent from 17 percent and remained the third most actively traded currency.



### Market Structure

Participating dealers also reported their trading activity according to type and location of counterparties.

- Counterparty Type: Half of all reported trades were undertaken with other financial institutions, while 38 percent were conducted with other reporting dealers and the remaining 12 percent were with non-financial customers. See Chart 6.



- Counterparty Location: Highlighting the international nature of foreign exchange trading, 60 percent of spot, forward, and FX swap transactions were conducted with market participants outside the United States, up from 58 percent in 2007.
- Market Share Concentration: Continuing the trend from earlier surveys, the market shares of the largest foreign exchange dealers continued to grow, reflecting consolidation among dealers and banking institutions as well as a declining number of dealers participating in the survey.
  - In the spot market, the market share of the ten firms reporting the highest volumes in the U.S. market increased sharply to 91 percent from 79 percent. The five largest volume reporters accounted for 74 percent of turnover, up from 56 percent.
  - In the foreign exchange swaps market, the top ten dealers accounted for 81 percent of market share, unchanged from the previous survey. The share of the top five increased to 61 percent from 55 percent.
  - In the forward market, the market share of the top ten dealers rose to 88 percent from 86 percent; for the top five dealers, it declined slightly to 58 percent from 59 percent.

### **Differences between the BIS Triennial Survey and the Foreign Exchange Committee's Semi-Annual Survey of North American Foreign Exchange Volume**

Since October 2004, the Federal Reserve Bank of New York has collected and published foreign exchange turnover data on a semi-annual basis on behalf of the Foreign Exchange Committee (FXC), an industry trade group comprised of representatives from leading foreign exchange dealers and sponsored by the Bank.

The reporting panel for the BIS triennial survey is slightly larger than the FXC survey's panel: twenty-five dealers compared with twenty-four. The FXC survey captures turnover in all of North America, including Canada and Mexico; by comparison, the U.S. results in the BIS survey are limited to U.S.-based transactions. However, the specified currency pairs collected in the FXC survey are significantly narrower than those in the BIS survey.

The most notable difference between the two surveys is the reporting basis. For the BIS survey, reporting is determined by the location of the sales desk. In contrast, reporting in the FXC survey is determined by the location of the trading desk.

Data collected in the FXC survey are limited to spot, outright forwards, foreign exchange swaps, and total foreign exchange options. Currency swaps and single-currency interest rate derivatives are excluded. In addition, the FXC survey expressly excludes related-party trades, while certain related-party trading is captured in the BIS survey and identified in aggregate. Other differences include:

- the content of maturity bucket information,
- the absence of maturity data for options in the FXC survey,
- separate reporting of options bought and options sold in the BIS survey,
- the absence of local/cross-border reporting in the FXC survey.

Despite these differences, reported aggregates for the two surveys, conducted simultaneously in April, were very similar:

<b>Instrument</b>	<b>BIS Survey</b>	<b>FXC Survey</b>	<b>Difference</b>
<b>Spot</b>	451	418	33
<b>Outright forwards</b>	111	104	7
<b>Foreign exchange swaps</b>	255	203	52
<b>Options</b>	38	30	8

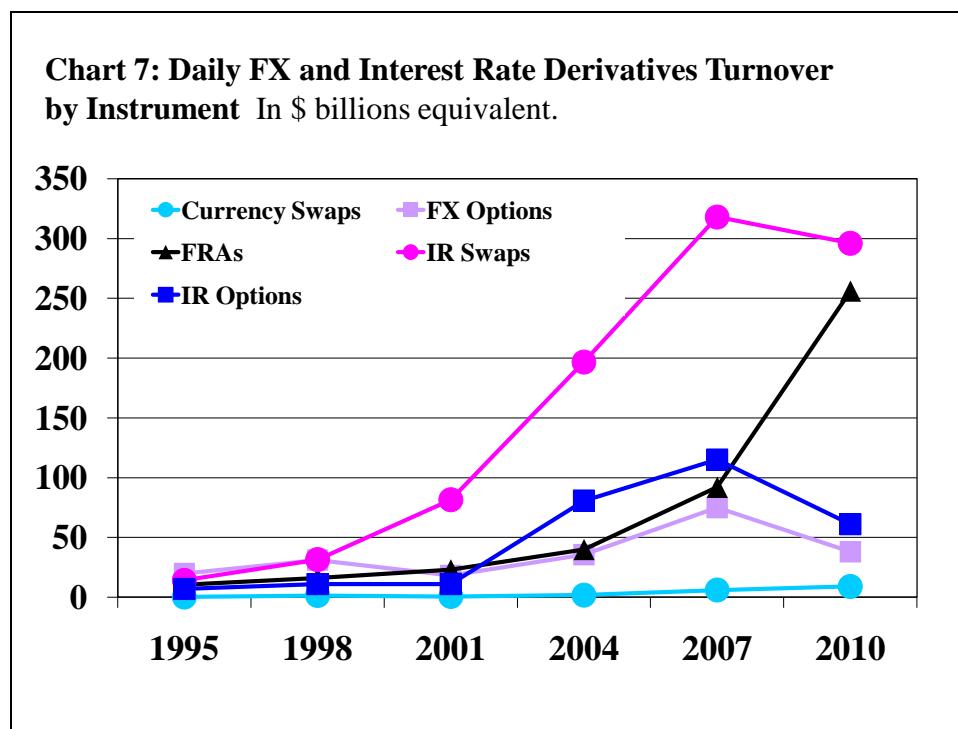
Note: Figures are daily averages reported in billions of U.S. dollars.

### **Foreign Exchange and Interest Rate Derivatives Markets**

Daily turnover for the other derivatives markets covered by the survey rose more strongly than did turnover in the traditional foreign exchange contracts. These other derivatives include forward rate agreements (FRAs), interest rate swaps, cross-currency rate swaps, and foreign exchange and interest rate options. Turnover in these instruments averaged \$659 billion per day in the United States during April 2010, up 9 percent from the last survey. See Chart 2.

## Instruments

- Daily turnover for interest rate swaps was \$295 billion, a decrease of 7 percent since the last survey. See Chart 7.
- Turnover in FRAs jumped by more than 175 percent to \$256 billion per day, the second most active trading among these contracts, while turnover in interest rate options fell to \$61 billion per day from \$115 billion three years ago.
- Although the currency swaps market, at \$8.7 billion per day, is smaller than the markets for other instruments, turnover increased more than 33 percent since 2007.
- Turnover in FX options fell to \$38 billion since the last survey.



## Currencies

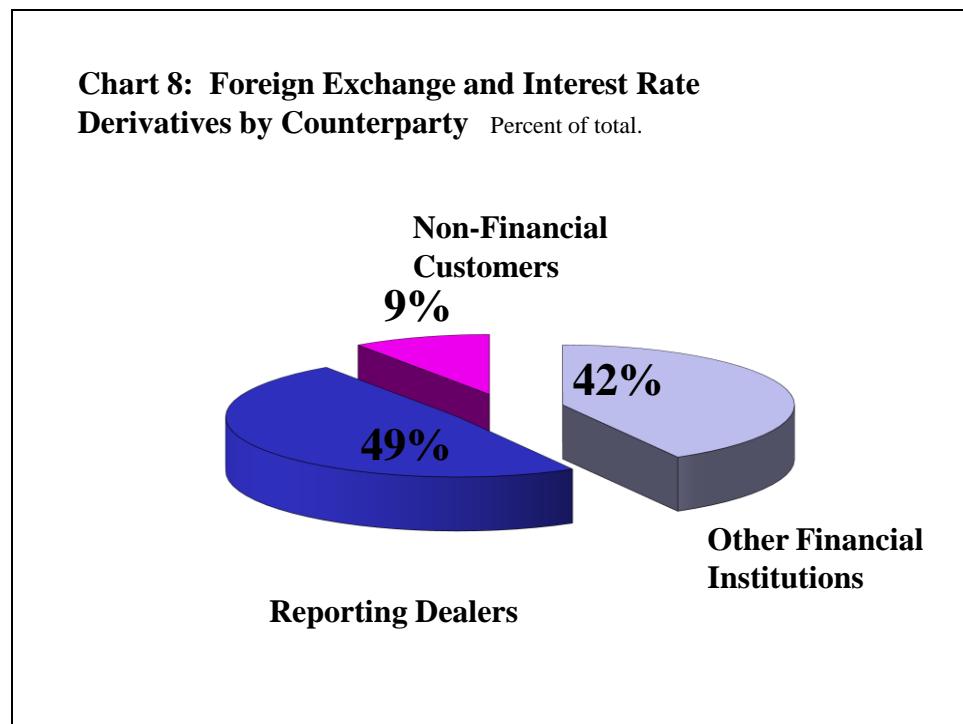
U.S.-dollar-denominated contracts and contracts with the dollar on one side accounted for 83 percent of the month's turnover in these instruments, compared with 87 percent three years earlier.

- U.S. dollar contracts represented 74 percent of single-currency interest rate swaps, down from 86 percent in 2007, as turnover in many non-dollar contracts gained on dollar contract trading in 2010. In particular, euro and Canadian dollar contracts rose to 7 percent of the total. Trading in yen rose to 4 percent of the total.

- ❑ The U.S. dollar was the currency in 92 percent of forward rate agreements and 87 percent of interest rate options. It was on one side of 79 percent of foreign exchange options and 97 percent of currency swaps.

There was considerable variability across the five instruments in terms of location and type of counterparty.

- ❑ Counterparty Location: On average for all contracts, 70 percent of trading during April was conducted with a market participant outside the United States. Among instruments, this percentage varied between 56 percent for interest rate options and 73 percent for foreign exchange options and FRAs.
- ❑ Counterparty Type: Other reporting dealers were the counterparty for 49 percent of turnover in these contracts on average, ranging from 32 percent for interest rate options to 59 percent for FRAs. See Chart 8.



- ❑ Trading in the derivatives market is generally more concentrated than trading in the foreign exchange market.
  - For the three single-currency instruments, the share of reported turnover accounted for by the top five dealers ranged from 60 percent for interest rate swaps to 75 percent for interest rate options, with

FRAs at about 70 percent. The top ten accounted for more than 95 percent. The currency swap market had relatively few reporting dealers and was even more concentrated, while the FX options market was less concentrated, with the top five dealers accounting for 70 percent of reported turnover.

As in the foreign exchange side of the survey, there are variations in dealer rankings from instrument to instrument and survey to survey. Just as in 2007, a total of twelve different dealers ranked in the top five in trading in at least one instrument type.

**Additional Information**  
**Recent Trend in Turnover**

Since the survey only covers one month every three years, dealers are also asked about the trading patterns and trends of their business. Their responses help to assess whether the survey month's turnover should be considered normal and whether turnover had been increasing or decreasing over the previous six months.

- Most dealers considered turnover during the month as normal, though some indicated that activity was above normal.
- Nearly all dealers viewed their business as steady or increasing over the prior six months.

**ANNEX I****Survey Terms  
and Methods****1. Turnover**

a) *Turnover* is the volume of transactions during April 2010 in U.S. dollar equivalents. The amount of each transaction is reported before the effects of any netting arrangements. In the case of swap transactions, only one leg is reported.

b) The survey covered three types of counterparties:

- 1) *reporting dealers* participating in the survey,
- 2) *other financial institutions*, and
- 3) *non-financial customers*.

Each type of counterparty was further identified as either *local* or *cross-border*, resulting in a total of six categories for counterparties.

c) *Market totals.* Transactions between two participating dealers were reported twice, once by each dealer. Survey figures for market totals are therefore adjusted to avoid double reporting of such trades. *Adjusted* figures are market totals after adjusting for double reporting by participating dealers. *Unadjusted* figures are gross totals without adjusting for double reporting. The data in this report are adjusted figures unless otherwise noted.

- Since transactions between *local reporting dealers* were reported twice, the total of local dealer transactions is divided by two for the *adjusted total*.

d) *Average daily turnover* was obtained by dividing total volume by twenty-two trading days.

e) Turnover for *non-U.S.-dollar transactions* was reported in U.S. dollar equivalents using exchange rates at the time of the transactions.

f) *Changes in exchange rates* from one survey period to the next affect the ability to directly compare turnover survey results over time. Since the 2007 survey, the performance of the dollar was mixed against most other currencies.

**ANNEX I****2. Location**

*Trade versus book location.* Transactions were reported on the basis of the location of the dealer agreeing to conduct the transaction. For example, a dealer in New York might engage in a trade that is booked at a London affiliate. In this case, the trade location is New York and the book location is London. This transaction would be included in the turnover figures in the U.S. survey. If a trader in London entered into a trade but the trader's firm booked the trade in its New York affiliate, the transaction would be included in the institution's survey report to the Bank of England.

**3. Participating firms**

A total of twenty-four dealers participated in the foreign exchange part of the survey. See Annex II. A total of thirty-three dealers participated in this part of the survey in 2007 and forty-three in 2004. A total of nineteen dealers participated in the foreign exchange and interest rate derivatives part of the survey, compared with twenty-eight in 2007, forty in 2004, and fifty-four in 2001. The dealers included U.S. institutions as well as foreign institutions with dealing operations in the United States. Participation is voluntary. See Annex II.

Dealers were asked to participate based on several criteria, including participation in the last BIS triennial survey or in the Foreign Exchange Committee's semi-annual survey; the firm's outstanding contracts reported in bank call reports; or, in the case of non-banks, outstanding contracts reported in published financial statements. Private surveys and articles in the financial press were also used to identify foreign banks that may book contracts outside the United States and non-bank dealers that do not publicly report their contracts.

**4. Instrument definitions**

In each risk category, OTC derivatives were broken down into three types of plain-vanilla instruments (forwards, swaps, and options). Plain-vanilla instruments are those traded in generally liquid markets using standardized contracts and market conventions. If a transaction comprised several plain-vanilla components, dealers were asked to report each one separately. Foreign exchange spot and OTC derivatives transactions should be defined as follows:

**Spot transaction**

Single outright transaction involving the exchange of two currencies at a rate agreed upon on the date of the contract for value or delivery (cash

**ANNEX I**

settlement) within two business days. The spot legs of swaps do not belong to spot transactions but are to be reported as swap transactions even when they are for settlement within two days (that is, spot transactions should exclude “tomorrow/next-day” transactions).

**Outright forward**

Transaction involving the exchange of two currencies at a rate agreed upon 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, non-deliverable forwards, and other forward contracts for differences.

**Foreign exchange swap**

Transaction involving the actual exchange of two currencies (principal amount only) on a specific date at a rate agreed upon 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 upon at the time of the contract (the long leg). Both spot/forward and forward/forward swaps should be included. For *turnover*, only the forward leg should be reported as such. The spot leg should not be reported at all, that is, neither as spot nor as foreign exchange swap transactions. Short-term swaps carried out as “tomorrow/next-day” transactions should also be included in this category.

**Currency swap**

Contract that commits two counterparties to exchange streams of interest payments in different currencies for an agreed-upon period of time and to exchange principal amounts in different currencies at an agreed-upon 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.

**Currency swaption**

OTC option to enter into a currency swap contract.

**Currency warrant**

OTC option; long-dated (over one year) currency option.

**ANNEX I****Forward rate agreement**

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 amortized 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.

**Interest rate cap**

OTC option that pays the difference between a floating interest rate and the cap rate.

**Interest rate floor**

OTC option that pays the difference between the floor rate and a floating interest rate.

**Interest rate collar**

Combination of cap and floor.

**Interest rate corridor**

1) A combination of two caps, one purchased by a borrower at a set strike and the other sold by the borrower at a higher strike to, in effect, offset part of the premium of the first cap. 2) A collar on a swap created with two swaptions – the structure and participation interval is determined by the strikes and types of swaptions. 3) A digital knockout option with two barriers bracketing the current level of a long-term interest rate.

**Interest rate swaption**

OTC option to enter into an interest rate swap contract, purchasing the right to pay or receive a certain fixed rate.

**Interest rate warrant**

OTC option; long-dated (over one year) interest rate option.

**ANNEX I**

**Forward contracts for differences (including non-deliverable forwards)**

Contracts in which only the difference between the contracted forward outright rate and the prevailing spot rate is settled at maturity.

**Annex II****Turnover Survey Participants:  
Foreign Exchange Dealers**

Bank of America  
Bank of Montreal  
Bank of New York Mellon  
Bank of Tokyo-Mitsubishi  
Barclays Capital  
BNP Paribas  
Calyon  
Canadian Imperial Bank of Commerce  
Citigroup  
Credit Suisse Group  
Deutsche Bank  
Goldman Sachs  
HSBC  
JP Morgan Chase  
Mizuho Corporation  
Morgan Stanley  
Royal Bank of Scotland  
Skandinaviska Enskilda Banken  
Societe Generale  
Standard Chartered Bank  
State Street Bank & Trust Company  
Sumitomo Mitsui Banking Corp  
UBS  
Wells Fargo

**Annex II**

**Turnover Survey Participants:  
Derivatives Dealers**

Bank of America  
Bank of Montreal  
Bank of New York Mellon  
Barclays Capital  
BNP Paribas  
Calyon  
Canadian Imperial Bank of Commerce  
Citigroup  
Credit Suisse Group  
Deutsche Bank  
Goldman Sachs  
HSBC  
JP Morgan Chase  
Mizuho Corporation  
Morgan Stanley  
Royal Bank of Scotland  
Societe Generale  
State Street Bank & Trust Company  
UBS