THE APRIL 1998 FOREIGN EXCHANGE AND INTEREST RATE DERIVATIVES MARKETS SURVEY

TURNOVER IN THE UNITED STATES

September 29, 1998

This report presents the U.S. turnover portion of the 1998 Central Bank Survey of Foreign Exchange and Derivatives Markets. The survey is part of an ongoing series of surveys conducted by central banks every three years on the size, structure, and trends in the foreign exchange and derivatives markets. The turnover survey collected data on over-the-counter transactions executed in the United States during April of 1998 in the foreign exchange market and interest rate derivatives market. The participants included both domestic- and foreign-owned dealers operating in the United States. The instruments covered in the survey include foreign exchange (FX) spot, forwards, and swaps (Foreign Exchange Survey) as well as forward rate agreements, currency and interest rate swaps, and foreign exchange and interest rate options (Derivatives Survey).

Summary of the Foreign Exchange Survey

Overall Volume Trends

The total volume of turnover in the foreign exchange market (spot, forwards, and FX swaps) increased 43 percent from 1995 to 1998 (an annualized growth rate of 13 percent).

- Daily volume rose to $351 billion in 1998 from $244 billion in 1995 (after adjusting for the double counting of transactions between reporting dealers in the United States).
- Turnover in the "other" European Union currencies[1] and the emerging market currencies grew at a faster pace than the market as a whole. Turnover in these currencies more than doubled since the last Survey.
- FX swaps turnover now exceeds turnover in spot transactions. Turnover in the foreign exchange swap market doubled to $166 billion a day, or 47 percent of total turnover, while the proportion of turnover volume in the spot market decreased to 42 percent of total turnover from 55 percent in 1995.

Market Structure

The last three years have seen a dramatic increase in the proportion of transactions executed through automated (electronic) order-matching systems.

- Turnover through automated order-matching systems increased over threefold from the previous survey to $47 billion daily.
- The proportion of interdealer trades (trades conducted between reporting dealers in the

Note: This reprint presents an abridged version of the original report. It excludes Annexes I, II, and III (which detail survey terms and methods and include supplementary tables) as well as charts. Copies of the complete report are available from the Public Information Department at the Federal Reserve Bank of New York and from the web site www.ny.frb.org.

[1]*These currencies include the Austrian schilling, Belgian franc, Danish krone, Spanish peseta, Finish markka, Greek drachma, Irish pound, Italian lira, Luxembourg franc, Dutch guilder, Portuguese escudo, and Swedish krona.*

survey) in the spot market fell to 49 percent from 62 percent. Much of this decline may be due to the greater use of automated order-matching systems, which now account for almost one-third of turnover in the spot market.

Despite the growing number of mergers in the financial industry, the foreign exchange market remained highly competitive. The market share of the top five firms remained relatively constant at 31 percent compared to 30 percent in 1995. Among the top five firms in 1995, only three remained in the top five in 1998.

Summary of the Derivatives Survey

The volume of turnover in the foreign exchange and interest rate derivatives markets (FRAs, interest rate swaps, cross-currency interest rate swaps, and foreign exchange and interest rate options) increased 75 percent from 1995 to 1998 (annualized growth rate of 20 percent).

- Daily turnover volume rose to $91 billion in 1998 from $52 billion in 1995.
- Turnover was largest in foreign exchange options ($32 billion) and interest rate swaps ($31 billion), followed by FRAs, interest rate options, and cross-currency swaps.
- The interdealer share of turnover fell slightly to 46 percent (from 52 percent in 1995). The share of cross border turnover fell to 45 percent (from 57 percent in 1995).

THE FOREIGN EXCHANGE MARKET SURVEY

The reporting panel for this part of the survey consisted of 93 dealers (of which 82 were banks and 11 were nonbanks) and 9 brokerage firms. Brokers and dealers were surveyed separately. The dealers included both foreign- and domestic-owned firms operating in the United States. The sample size is smaller than the 1995 survey, when 130 dealers participated.[2]

The foreign exchange market in the United States continued to grow at the same 13 percent annualized rate reported in the 1995 Survey. The composition of turnover was somewhat different, however, as FX swaps turnover volume surpassed spot turnover.

Instrument Details

- The proportion of turnover in the spot market dropped to 42 percent from 55 percent of total turnover in 1995. Nevertheless, spot market volume grew to $148 billion per day from $134 in 1995.
- FX swaps now account for almost half of turnover volume (47 percent) in the foreign exchange market compared to only one third (34 percent) in 1995. In dollar terms, turnover doubled to $166 billion a day.

  Of the growth in FX swaps volume, 34 percent was due to increased trading in the USD/other European Union currencies (see footnote 1) and USD/emerging market currencies even though these currencies accounted for only 17 percent of FX swaps turnover in 1995.

  The U.S. dollar was a component (comprising one of the two legs of a swap) of 97 percent of all turnover in the FX swaps market in the United States.

  FX swaps turnover in the USD/other European Union currencies increased more than threefold to $28 billion a day in 1998, accounting for 17 percent of the total FX swaps turnover volume. This share is just below the USD/JPY share at 22 percent and USD/DEM share at 20 percent.

  The volume of turnover in the USD/emerging market currencies increased to $14 billion a day from $5 billion in 1995, representing 8 percent of the total FX swaps turnover.

  The average maturity for FX swaps barely changed from 1995. The proportion of turnover in the seven days or less category remained at 69 percent, the over seven days up to a year category increased to 30 percent from 28 percent, and the over one year category declined slightly to 1 percent from 2 percent.
- The share of daily turnover conducted in the forward market remained constant at 11 percent of total turnover. In dollar terms, turnover

[2] *This decline in the sample size may be related to the higher dealing capacity of intermediaries in the market.*

increased to $37 billion per day in 1998 from $28 billion in 1995.

The proportion of forward contracts that were executed as nondeliverable forwards was small. They represented a little over 8 percent of the total forwards turnover volume—3 percent in the major currencies and 5 percent in the minor currencies.

The average maturity for forwards lengthened somewhat. The proportion of forwards in the seven days or less category declined to 50 percent from 57 percent in 1995, and the proportion of forwards in the over seven days to a year category rose to 48 percent from 41 percent in 1995. Turnover in the over one year category was unchanged at 2 percent.

Currency Trends

The U.S. dollar remained the most actively traded currency. The sum of all transactions involving the dollar was $315 billion per day (90 percent of total turnover) followed by the deutsche mark at $122 billion (35 percent), the Japanese yen at $86 billion (24 percent), other European Union currencies at $41 billion (12 percent), the British pound at $36 billion (10 percent), and the Swiss franc at $31 billion (9 percent).[3] Turnover in the "other" European Union currencies and the emerging market currencies grew at a faster pace than the market as a whole and more than doubled since 1995.

Dollar-based transactions

- USD/DEM remained the most actively traded currency pair. However, its share of total turnover dropped to 25 percent from 30 percent in 1995.
- USD/JPY remained the second most actively traded currency pair, with its proportion of total turnover increasing to 22 percent in 1998 from 20 percent in 1995.
- Turnover in the USD/other European Union currencies more than doubled to $35 billion a day from $16 billion in 1995.
- Turnover in the USD/emerging market currencies more than doubled to $23 billion a day from $10 billion a day in 1995.
- Among the emerging market currencies, the composition of turnover was as follows:

Mexican peso:	22 percent
Other Latin American:	3 percent
Asian (other than JPY and AUD):	33 percent
Remaining other:	42 percent

- Dealers were asked to report the minor currencies in which they had turnover in excess of $250 million in April 1998. The table on page 56 lists the currencies in which ten or more dealers reported turnover.

Deutsche mark–based transactions

- The proportion of turnover transacted in the deutsche mark dropped to 35 percent from 43 percent in 1995, although in dollar terms volume rose to $121 billion a day from $104 billion a day in 1995.
- The proportion of turnover transacted in DEM/FRF declined to less than 1 percent of total turnover from 4 percent in 1995. In dollar terms, turnover dropped to $2 billion in 1998 from $8.5 billion in 1995.
- Turnover in all the other DEM crosses increased slightly in volume, and they all maintained their relative market shares.

Residual transactions

- The dollar value of transactions where neither leg involved the dollar or deutsche mark was very small, at only $2.2 billion a day or six-tenths of a percent of total turnover. This was down slightly from the previous Survey. The apparent decrease, however, may be a valuation effect due to the sharp appreciation of the dollar since 1995. Using constant exchange rates, turnover volume in these currencies would have shown an increase.

[3] *The sum of the above exceeds 100 percent since the figure for each currency includes transactions with another currency.*

Number of Dealers in Other European and Emerging Market Currencies

Currency	No. of Dealers	Currency	No. of Dealers
Mexican peso	30	Finnish markka	18
Hong Kong dollar	26	Malaysian ringgit	18
Italian lira	25	Danish krone	17
Norwegian krone	25	Thai baht	15
New Zealand dollar	24	Brazil real	14
South African rand	22	Indonesian rupiah	14
Spanish peseta	22	Belgian franc	13
Dutch guilder	21	Portuguese escud	11
Singapore dollar	21	Argentine peso	10
Swedish krona	21	Austrian schilling	10

Market Structure

Although the foreign exchange market continued to grow at the same annualized pace reported in the last Survey, some interesting changes in the market's structure occurred.

Automated order-matching systems

- Turnover in automated (electronic) order-matching systems increased more than three-fold from the last survey to $47 billion a day.
- Trading through automatic order-matching systems is limited almost exclusively to the spot market (98 percent of all transactions).
- Almost one-third of all transactions in the spot market are conducted through an automated order-matching system compared to 10 percent in 1995.

Counterparty breakdown

- Approximately 80 percent of foreign exchange turnover takes place between financial counterparties.
- The proportion of interdealer trading fell to 49 percent in 1998 from 56 percent in 1995. For trades between dealers and customers, transactions with other financial institutions rose to 31 percent from 27 percent in 1995, and the share of trades with nonfinancial customers increased to 20 percent from 17 percent.
- Counterparty breakdowns differ somewhat across products.

  In the spot market, interdealer turnover dropped to 49 percent from 62 percent in 1995. This decrease might be related to the greater use of automated order-matching systems.

  The forward market's breakdown was more evenly divided, with the dealer proportion at 30 percent, other financial institutions at 40 percent, and nonfinancial customers at 30 percent.

  In the FX swaps market, interdealer trades accounted for 53 percent of turnover, other financial institutions accounted for 27 percent, and nonfinancial customers for 20 percent.
- More than half of all the turnover in the United States is transacted with counterparties outside of the United States. In 1998, 58 percent of all transactions were conducted with cross-border counterparties, a slight decrease compared to the 1995 share of 64 percent.

  Among reporting dealers, 68 percent of transactions are conducted with cross-border counterparties, while 32 percent are conducted with local counterparties.

Among trades between reporting dealers and customers (both financial and non-financial customers), 47 percent of transactions are conducted with cross-border counterparties, while 53 percent are conducted with local counterparties.

Competition

- While the survey contained a smaller number of participants, the foreign exchange market remained similarly competitive in 1998 compared to 1995.

  The market share of the top five firms remained relatively constant at 31 percent compared to 30 percent in 1995.[4]

  Among the top five firms in 1995, only three remained in the top five in 1998.

  Only six out of the top ten firms in 1995 remained in the top ten in 1998. Among the six that remained in the top ten, only one saw its rank rise while the other five saw their rank drop.

  The market share of the top ten firms increased slightly to 51 percent from 48 percent in 1995.

Trading patterns

- Survey participants reported trading activity in April relative to the previous six months:

below normal	25 percent
normal	66 percent
above normal	9 percent

- Most trading takes place during the morning hours. Survey participants reported the following breakdown of trading by time period:

  morning turnover (8 a.m. to noon) was 60 percent compared to 58 percent in 1995;

  afternoon turnover (noon to 4 p.m.) was 31 percent compared to 34 percent in 1995;

  evening turnover (4 p.m. to 8 a.m.) remained steady at 9 percent.

- Most transactions in the foreign exchange market are settled on a gross basis, i.e., payments are arranged without payment netting. The larger firms tend to utilize netting agreements more than the smaller firms.

  For the entire Survey sample, 21 percent of transactions by dollar value were settled on a net basis, while 79 percent were settled on a gross basis.

  For the ten largest firms (ranked in terms of total turnover), 26 percent of all transactions by dollar value were settled on a net basis, while 74 percent were settled on a gross basis.

- With the exception of FX swaps, the average deal size remained relatively unchanged compared to the 1995 Survey.

  The average deal size for spot and forward transactions hardly changed at $3.4 million and $4.0 million.

  The average deal size for FX swaps increased to $31 million from $15 million in 1995.

FOREIGN EXCHANGE AND INTEREST RATE DERIVATIVES SURVEY

This section presents results of the over-the-counter derivatives turnover survey. The reporting panel for this part of the survey consisted of 60 dealers (of which 52 were banks and 8 were nonbanks), both foreign- and domestic-owned, operating in the United States.

The volume of turnover in the foreign exchange and interest rate derivatives markets (FRAs, interest rate swaps, cross-currency interest rate swaps, and foreign exchange and interest rate options) increased 75 percent from 1995 to 1998 (annualized growth rate of 20 percent).

[4]Another measure of the competitiveness of an industry, the Herfindahl-Hirschman Index (HHI), found the foreign exchange market to be similarly competitive in 1998 compared to 1995. The HHI index is a measure often used to calculate market concentration. The index can range from zero (perfect competition) to 10,000 (monopoly). The HHI index for the foreign exchange market in 1998 was 317 (compared to 331 in 1995), a figure considered to indicate a high degree of competition.

- Daily turnover volume rose to $91 billion in 1998 from $52 billion in 1995.
- Turnover was largest in foreign exchange options ($32 billion) and interest rate swaps ($31 billion), followed by FRAs, interest rate options, and cross-currency swaps.
- U.S. dollar-denominated contracts or contracts where one leg of the contract was denominated in the U.S. dollar accounted for 80 percent of derivatives turnover. This breakdown differed somewhat across instruments.
- The proportion of business done by the largest firms is more highly concentrated in the derivatives market than in the foreign exchange market. For derivatives products as a group, the largest ten firms account for 84 percent of turnover.
- Market share of the top ten dealers by product:

foreign exchange options	75 percent
interest rate swaps	80 percent
interest rate options	92 percent
FRAs	95 percent

- Almost half (46 percent) of all turnover in the derivatives market was conducted between reporting dealers, while 37 percent was between a reporting dealer and another financial institution, and 17 percent was between a reporting dealer and a nonfinancial customer.

  The interdealer share of turnover (46 percent) fell slightly from the 52 percent figure in 1995.

- Almost 45 percent of all turnover in the derivatives market was with cross-border counterparties, while 55 percent was with local counterparties.

  The share of cross border turnover (45 percent) fell from 57 percent in 1995.

THE RESULTS OF THE BROKERS SURVEY

Brokered turnover volume increased 8 percent from 1995 to 1998 (an annualized growth rate of 2.5 percent). All of this increase is attributable to the growth of automated order-matching systems. Statistics for interest rate products are not reported because of insufficient data (only two of the nine participating brokers reported turnover volume in interest rate derivatives).

- Daily turnover of brokered foreign exchange transactions increased to $83 billion a day from $77 billion a day in 1995.
- Turnover in the automated order-matching systems increased more than threefold to $47 billion a day in 1998 from $14 billion in 1995. Most of the increase was in the spot market.
- In the brokers' market, 57 percent of turnover is now conducted through an automated order-matching system compared to 18 percent in 1995.
- Turnover volume of brokered transactions in the spot and FX swaps markets increased 25 percent and 12 percent respectively, from 1995. Brokered turnover volume in both the forward and options markets, however, fell considerably.

  The brokers' share of turnover in the spot market rose to 41 percent in 1998 from 36 percent in 1995, while its share of the forwards, FX swaps, and options markets all fell.

  Brokered spot transactions now account for 74 percent of total brokers volume compared to 64 percent in 1995.

- The currency composition of brokered transactions is similar to the foreign exchange market as a whole.

  The sum of transactions in which one leg was the dollar totaled $70 billion a day (84 percent of broker turnover), followed by the deutsche mark at $44 billion (52 percent) and the Japanese yen at $19 billion (22 percent).