
Turnover in the Foreign-Exchange and Derivatives Markets in April 2001

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INTRODUCTION

Danmarks Nationalbank has conducted a survey of turnover in April 2001 in the Danish market for foreign exchange and OTC derivatives¹. The survey is part of a major international survey coordinated by the Bank for International Settlements (BIS). The survey is conducted every three years as the most extensive survey of activity in the global foreign-exchange and derivatives markets.

According to the survey, turnover in the Danish foreign-exchange market in April 2001 amounted to \$23.3 billion per banking day, while turnover in the Danish market for OTC derivatives was \$6.3 billion. Turnover in the foreign-exchange market has declined from 1998, amongst other factors due to the introduction of the euro. On the other hand, the derivatives market has seen a considerable increase in turnover, attributable mainly to the greater activity in the short-term tomorrow/next interest-rate swap.

The survey confirms that the foreign-exchange and derivatives markets are well-integrated international markets that are used in the financial planning and risk management of banks and other business enterprises, and make it possible for business enterprises to achieve the desired risk profile. Furthermore, the players in the foreign-exchange market have access to acquire or place liquidity in a given currency at any time.

In line with the trends in the Danish market, the global market shows a decrease in turnover of foreign exchange and a considerable increase in turnover of derivatives. Global market activity is concentrated in the financial centres, particularly London. The UK thus accounts for approximately one third of total global turnover in both the foreign-exchange and derivatives markets.

¹ *Derivatives* are financial contracts whose value is derived from another contract, an interest rate, a currency, an index or similar. Derivatives are traded on exchanges as well as over-the-counter (OTC), i.e. directly between two parties. Foreign exchange, on the other hand, is always traded directly between two parties.

Danmarks Nationalbank's survey of the foreign-exchange and derivatives markets is part of a major international survey coordinated by the Bank for International Settlements (BIS). The survey has been conducted every three years since 1989, and in 2001 involved the largest market participants in 48 countries. The Danish part of the survey comprised 11 banks, including 4 branches of foreign banks. Together, the 11 banks are estimated to account for more than 99 per cent of turnover in the Danish foreign-exchange and derivatives markets. The survey covers transactions entered into by the banks' units in Denmark, and includes intra-Group trade on market terms. All figures are adjusted for double counting of trades between two reporting banks. The results are stated in dollars to facilitate comparison with other national surveys.

The survey includes the foreign-exchange market (spot transactions, outright forwards and FX swaps), the market for OTC foreign-exchange derivatives (currency swaps and OTC currency options) and the market for OTC interest-rate derivatives (forward rate agreements, interest-rate swaps and OTC interest-rate options). The survey does not include exchange-traded contracts.

Turnover is compiled in nominal terms and is broken down by currency and counterparty for all contracts, and furthermore by original maturity for outright forwards and FX swaps. Turnover is broken down by three counterparty categories, i.e. other reporting dealers, other financial institutions and non-financial customers. For each counterparty category, a further distinction is drawn between whether the counterparty is located in Denmark or abroad.

The survey has applied the following definitions:

- *Spot transaction*: Single outright transaction involving the exchange of two currencies for settlement within two banking days.
- *Outright forward*: Single outright transaction involving the exchange of two currencies for settlement more than two banking days later.
- *FX swap*: A combination of a spot transaction and an offsetting outright forward. An FX swap is in effect a loan or placement in one currency against another currency as collateral.
- *Currency swap*: A contract committing two counterparties to exchange streams of interest payments and principal amounts in different currencies. A currency swap is in effect an exchange of loans in different currencies.
- *Currency option*: A contract which gives one party a right, but no obligation, to buy or sell an amount in foreign currency at an agreed price on a future date.
- *Forward rate agreement (FRA)*: An agreement to fix an interest rate for a specified amount for an agreed future period.
- *Interest-rate swap*: An agreement to exchange interest payments for a period. Typically, fixed interest rates are swapped for variable interest rates.
- *Interest-rate option*: A contract which gives one party a right, but no obligation, to receive or pay a particular interest rate on an agreed principal for a future period.

Amounts outstanding in foreign-exchange contracts and derivatives in mid-2001 have been compiled as a supplement to the turnover survey. The compilation of amounts outstanding is not described in this article. A detailed presentation of the results of the Danish turnover survey and the survey of amounts outstanding will be published in Danmarks Nationalbank's Special Reports publication series before the end of 2001.

TURNOVER IN THE FOREIGN-EXCHANGE MARKET BY TYPE OF INSTRUMENT					Table 1
Billion dollars per banking day	April 1989	April 1992	April 1995	April 1998	April 2001
Spot transactions	6.4	10.5	8.6	6.3	4.3
Outright forwards	1.3	2.0	1.5	1.1	0.7
FX swaps	5.5	14.4	19.7	19.9	18.3
Total foreign-exchange contracts	13.2	26.9	29.8	27.3	23.3

This article first describes the results of the Danish turnover survey, followed by a comparison with the global survey results. Box 1 presents sources, methods and definitions.

TURNOVER IN THE DANISH FOREIGN-EXCHANGE MARKET

According to the survey, turnover in the Danish foreign-exchange market totalled \$23.3 billion per banking day in April 2001, cf. Table 1. For comparison, gross current payments between Denmark and abroad amounted to \$1.1 billion per banking day in April 2001, or less than 5 per cent of daily turnover in the Danish foreign-exchange markets.

The difference between turnover in the foreign-exchange market and the sum of revenue and expenditure on the current account of the balance of payments reflects that foreign exchange is traded for other purposes besides the exchange of currency in connection with current payments to and from abroad. Investments and foreign loans as well as the liquidity and risk management of financial institutions and other business enterprises generate foreign-exchange trading, and the foreign-exchange markets are also used for taking actual positions or for arbitrage, cf. Box 2. Furthermore, each customer transaction usually generates a chain of trades between banks. This significantly inflates turnover, cf. Box 3.

In addition, it is important to bear in mind that turnover of FX swaps accounted for more than 75 per cent of total turnover in the foreign-exchange market in April 2001. To a certain extent FX swaps are used in combination with spot transactions to hedge exchange-rate risks.¹ In the Danish market, however, FX swaps are to a far greater extent used as a money-market product² than as an actual foreign-exchange instrument.

¹ A FX swap alone, which combines a spot transaction with an opposite forward transaction, does not affect a bank's foreign-exchange exposure, and thus cannot be used to hedge exchange-rate risk. However, by simultaneously entering into a spot transaction to offset the spot transaction included in the FX swap the same result is obtained as by entering into an outright forward. The incentive to use this hedging method, rather than hedging via an outright forward, could be that the spot and FX swap markets are more liquid than the market for outright forwards.

² The money market consists of loan agreements between banks for a period of up to one year. The loan agreements are designed to settle differences in the banks' liquidity requirements.

Current payments to and from abroad, including payments related to imports and exports of goods and services, will typically entail a need for at least one of the parties to exchange an amount in that party's own currency for the transaction currency.

Besides current payments, a large proportion of the activity in the foreign-exchange and derivatives markets is generated by the financial planning and risk management of financial institutions as well as other business enterprises. A business enterprise may thus use foreign-exchange or derivatives contracts to achieve the desired balance-sheet structure in terms of foreign-exchange and interest-rate exposure.

Many business enterprises have stipulated limits for their exchange-rate or interest-rate risks, i.e. the size of any losses arising as a result of exchange-rate or interest-rate fluctuation. If financial transactions (e.g. raising foreign loans at fixed interest rates or purchase of foreign shares) cause these limits to be exceeded, the business enterprise will be obliged to resort to foreign-exchange and derivatives contracts to hedge the excessive foreign-exchange and interest-rate exposure.

Naturally, foreign-exchange and derivatives contracts are also used to take positions so as to exploit expectations of future changes in exchange or interest rates. However, positions will also usually be taken within the aforementioned limits set for financial risks.

In the assessment of turnover of foreign exchange and derivatives it must also be borne in mind that business enterprises are subject to taxation and accounting legislation which may support or hinder their activities in the market. These rules vary strongly across sectors and countries. Most financial enterprises are also subject to solvency and placement rules, which likewise affect their exposure in the foreign-exchange and derivatives markets. Some countries have stipulated very restrictive rules, even prohibitions, concerning the use of foreign-exchange and derivatives contracts by certain institutional investors (e.g. pension funds and insurance companies).

Another factor contributing to turnover is financial innovation, i.e. the development of new financial products. The introduction of new products offers business enterprises new opportunities to adjust their risk exposure. A new product can thus increase the turnover of market participants that are already active, but it may also induce new enterprises to enter the market because the new product is well-suited to their financial management.

A bank in need of krone liquidity may enter into an FX swap with another bank rather than raising a krone-denominated loan via a repurchase agreement or deposit¹. This enables the bank to buy kroner spot against e.g. dollars, with simultaneous agreement of forward repurchase of dollars against kroner, i.e. at a later date at a fixed exchange rate. A FX swap thus corresponds to raising a loan in one currency against collateral pledged in another currency. Such transactions cannot be described as foreign-exchange trading in a narrow sense.

¹ A repurchase agreement is a loan against securities, typically bonds, as collateral. A deposit is an ordinary non-collateralised loan.

When a customer concludes a foreign-exchange transaction with its bank, this normally generates a chain of interbank transactions. For example, when a customer sells foreign exchange to its bank, the bank may not want to hold that currency and assume the associated exchange-rate risk. However, normally the bank will have no difficulty in selling the purchased foreign exchange in the very liquid foreign-exchange market. The bank may thus sell the currency to another bank (or to several banks in smaller portions), that needs the currency, is more willing to assume the exchange-rate risk, or sees an opportunity to resell the currency at a profit.

A similar situation applies when a customer wishes to hedge its exchange-rate risk by e.g. entering into a forward contract with its bank. The customer thus passes on its exchange-rate risk to the bank, which will then hedge the risk by entering into a contract with another bank, which again will hedge the risk in the foreign-exchange market, etc.

A simple foreign-exchange transaction thus typically generates a whole chain of foreign-exchange transactions, whereby the risk is passed on through the financial system until a bank is willing to hold the currency, or until a customer demands the currency in question.

Declining turnover in the foreign-exchange market

Turnover in the foreign-exchange market fell by 15 per cent from 1998 to 2001, cf. Table 1. This continues the trend from 1995 to 1998. However, the estimated decline in turnover in the foreign-exchange market is only 6 per cent after adjustment for the dollar's strengthening against other currencies between April 1998 and April 2001.¹ Spot and forward transactions have shown the strongest decline since 1998. Considering the dollar's course, the turnover of FX swaps is estimated to be almost unchanged.

The main factor behind the decline in spot and forward turnover can be assumed to be the introduction of the euro as the single currency in 12 EU member states. The lapse of trading between the currencies of these countries has naturally caused spot turnover to decline. Furthermore, the existence of a single currency has reduced the need to hedge exchange-rate risks, which is often via a forward contract or an FX swap combined with a spot transaction. The negative effect on FX swap turnover is nevertheless offset by the more widespread use of the FX swap as a money-market product, cf. above.

The observed decline in turnover from 1998 is attributable mainly to trading with other banks, particularly with foreign banks. This is found

¹ Adjustment for the development in the dollar rate is by isolating the foreign-exchange transactions not denominated in dollars. These amounts are adjusted for the difference between the average exchange rate against the dollar in April 1998 and April 2001, respectively.

TURNOVER IN THE FOREIGN-EXCHANGE MARKET BY COUNTERPARTY

Table 2

April	Billion dollars per banking day			Percentage share		
	1995	1998	2001	1995	1998	2001
<i>Reporting dealers</i>						
Danish	0.7	1.4	1.1	3	5	5
Foreign	25.2	20.1	16.3	85	74	70
<i>Other financial institutions</i>						
Danish	0.2	0.6	0.4	1	2	2
Foreign	0.2	2.9	2.8	1	11	12
<i>Non-financial customers</i>						
Danish	2.4	0.9	1.6	8	3	7
Foreign	1.1	1.2	1.1	4	4	5
Total	29.8	27.3	23.3	100	100	100

Note: The distribution on Danish and foreign counterparties is by counterparty location, irrespective of national ownership. For example, Danish reporting dealers are the banks that participate in the Danish survey, while foreign reporting dealers are the institutions that participate in the corresponding surveys of other countries.

inter alia to be a consequence of the global trend for greater consolidation in the banking industry, which has reduced the number of trading units.

Finally, the increased use of electronic broking in the foreign-exchange market has probably contributed to the decline in especially spot turnover. By traditional means of trading, dealers must obtain prices from potential counterparties e.g. by telephone, whereas this price information is immediately available in electronic broking systems. The increased use of electronic broking thus enhances market transparency, and fewer transactions are required to clear the prices offered in the market. Electronic broking is used mostly for spot transactions between banks. In April 2001, electronic broking accounted for approximately 50 per cent of spot turnover in Denmark.

Structure of foreign-exchange turnover

In April 2001, trading among reporting dealers accounted for 75 per cent of the total turnover of foreign-exchange contracts in the Danish market, cf. Table 2. The remainder is fairly evenly distributed on trades with other financial institutions and non-financial customers, respectively.

This distribution reflects primarily that FX swaps, which are mainly used as money-market products, and are thus primarily traded among banks, account for the greater part of turnover. Secondly, the distribution reflects that, as mentioned, a customer transaction often generates a chain of transactions between banks.

**TURNOVER IN THE FOREIGN-EXCHANGE MARKET
IN APRIL 2001 BY CURRENCY PAIR**

Chart 1

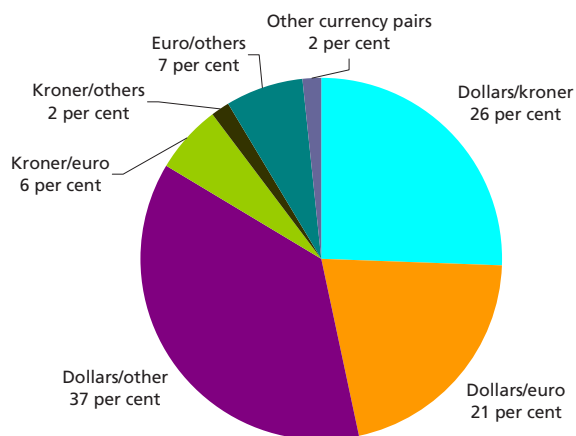


Chart 1 shows that foreign-exchange turnover is concentrated on relatively few currencies. The dollar was part of 84 per cent of all transactions in April 2001, which makes it the most actively traded currency in the Danish market. It is followed by Danish kroner and euro, each with a share of 34 per cent of all transactions. Finally, turnover in Swedish kronor and Norwegian kronor was also significant.¹

The dollar's predominance can be attributed to its use as a vehicle currency, i.e. a transaction between two currencies is often carried out by exchanging one of the currencies for dollars and then exchanging dollars for the other currency.

TURNOVER IN THE DANISH OTC DERIVATIVES MARKET

Single-currency interest-rate derivatives account for more than 90 per cent of turnover in the OTC derivatives market, and amounted to \$5.8 billion per banking day in April 2001. The market for currency derivatives is thus relatively small, with turnover amounting to \$0.5 billion per banking day in April 2001, cf. Table 3.

It must be emphasised that a very large proportion of the turnover of interest-rate derivatives takes place via exchanges, especially exchanges

¹ In the survey, all foreign-exchange transactions are registered as currency pairs. For example, kroner traded against dollars is registered as a krone/dollar transaction. On calculating each currency's share of total foreign-exchange turnover, the trading of kroner against dollars is registered on the krone as well as on the dollar side. The various currencies' shares of the total foreign-exchange turnover will therefore total 200 per cent.

TURNOVER IN THE OTC DERIVATIVES MARKET BY TYPE OF INSTRUMENT			Table 3
Billion dollars per banking day	April 1995	April 1998	April 2001
Currency swaps	0.9	0.1	0.1
Currency options (OTC)	0.4	0.7	0.4
Total foreign-exchange derivatives	1.2	0.7	0.5
Forward rate agreements (FRAs)	2.0	3.4	4.1
Interest-rate swaps	0.2	0.7	1.5
Interest-rate options (OTC)	0.2	0.1	0.2
Total interest-rate derivatives.....	2.4	4.2	5.8
Total OTC derivatives.....	3.7	4.9	6.3

abroad.¹ Since this survey solely comprises OTC contracts, the reported turnover constitutes only part of Danish banks' total turnover of interest-rate derivatives.

Rising turnover in the market for interest-rate derivatives

Turnover of interest-rate derivatives has risen by 39 per cent from 1998. In fixed exchange rates, however, the real increase in turnover is estimated to be no less than 63 per cent.

Interest-rate swaps account for the strongest increase, with average daily turnover more than doubling since April 1998. This is a continuation of the trend from 1995 to 1998. The increase in swap turnover is attributable mainly to the tomorrow/next interest-rate swap, which is a short-term interest-rate swap introduced in the Danish market in 1997². The tomorrow/next interest-rate swap has boosted activity by offering new opportunities to hedge interest-rate risk and exploit expectations of future developments in interest rates.

FRA turnover has risen by 22 per cent against April 1998. As before, FRAs account for by far the largest share of turnover of interest-rate derivatives. However, because of the significant increase in swap turnover, FRAs' share of the total turnover of interest-rate derivatives has decreased from approximately 80 per cent in April 1998 to 70 per cent in April 2001.

Structure of trading in interest-rate derivatives

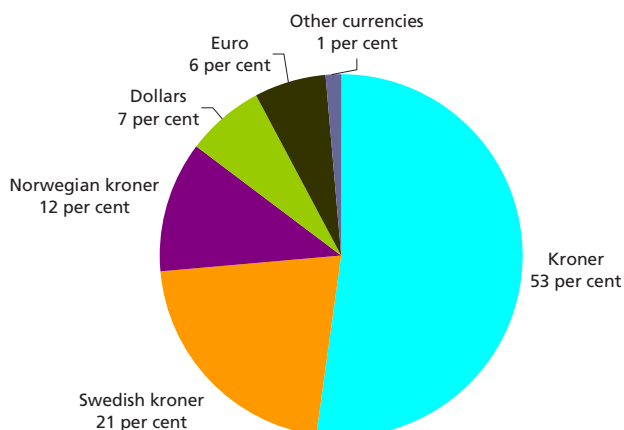
Like the foreign-exchange market, the market for interest-rate derivatives is dominated by trades among reporting dealers, cf. Table 4. Trades

¹ Derivatives traded via exchanges are standardised contracts which cannot be customised to meet individual requirements. The all-important exchange-traded derivatives are options and futures, where the latter in principle correspond to forward contracts.

² The tomorrow/next interest-rate swap is described in further detail in Birgitte Damm and Anne Reinhold Pedersen, New Money-Market Statistics, Danmarks Nationalbank, *Monetary Review*, 3rd Quarter 1997.

**TURNOVER IN THE OTC INTEREST-RATE DERIVATIVES MARKET
IN APRIL 2001 BY CURRENCY**

Chart 2



among reporting dealers have been the sole contributor to the increase in turnover since 1998, while trades with other financial institutions and non-financial customers have declined a little. Trades among reporting dealers thus accounted for approximately 80 per cent of the total turnover in April 2001, against 70 per cent in 1998.

Instruments pegged to a Danish interest rate account for more than 50 per cent of turnover in the Danish market for OTC interest-rate derivatives, cf. Chart 2. However, instruments pegged to a Swedish or Norwegian interest rate are also significant. As stated, the survey solely com-

TURNOVER IN THE OTC DERIVATIVES MARKET BY COUNTERPARTY

Table 4

April	Billion dollars per banking day			Percentage share		
	1995	1998	2001	1995	1998	2001
<i>Reporting dealers</i>						
Danish	0.3	0.8	1.0	8	17	16
Foreign	2.8	2.7	4.0	77	54	63
<i>Other financial institutions</i>						
Danish	0.1	0.1	0.2	2	3	3
Foreign	0.1	0.8	0.7	3	17	12
<i>Non-financial customers</i>						
Danish	0.3	0.1	0.1	7	2	2
Foreign	0.2	0.3	0.2	4	7	4
Total.....	3.7	4.9	6.3	100	100	100

Note: The distribution on Danish and foreign counterparties is by counterparty location, irrespective of national ownership. For example, Danish reporting dealers are the banks that participate in the Danish survey, while foreign reporting dealers are the institutions that participate in the corresponding surveys of other countries.

prises OTC contracts. Had it included exchange-traded derivatives, the turnover shares of dollar- and euro-denominated contracts would have been considerably larger.

GLOBAL TURNOVER OF FOREIGN EXCHANGE AND DERIVATIVES

According to the global survey coordinated by BIS¹, in April 2001 turnover in the global foreign-exchange market amounted to \$1,210 billion per banking day, while turnover in the global market for OTC derivatives totalled \$575 billion per banking day, cf. Table 5.

To supplement the 48 national surveys of the markets for OTC derivatives, BIS has obtained information on turnover of exchange-traded derivatives from a range of exchanges. Table 5 shows that exchange trading of foreign-exchange derivatives is modest, while exchange trading of interest-rate derivatives far exceeds OTC trading.

Declining foreign-exchange turnover and rising turnover in interest-rate derivatives

Since 1998, the global markets have taken the same course as the Danish markets, although the international development trends have been stronger. Global foreign-exchange trading has thus decreased by almost 20 per cent against 1998, while derivatives trading has increased by 53 per cent. This includes an increase of 85 per cent in isolated terms in turnover of interest-rate derivatives, but a decrease by more than 30 per cent in turnover of foreign-exchange derivatives. Taking the dollar's course into account, total foreign-exchange trading has decreased by only 14 per cent, while derivatives trading has increased by 67 per cent.

BIS finds that the drop in global foreign-exchange trading is derived from the same factors as those assumed to explain the decline in Danish trading, i.e. the introduction of the euro, consolidation in the global banking industry, and the more widespread use of electronic broking.

These factors appear to have had a stronger impact on total global turnover than on Danish turnover, viewed in isolation. Naturally, the introduction of the euro has had a stronger impact on turnover in the euro-area member states than on Danish turnover. The majority of euro-area member states have thus seen a significant decline in turnover of foreign exchange, and in overall terms foreign-exchange trading in the euro area has fallen by approximately 30 per cent against 1998.

¹ See BIS, Press Release of 9 October 2001.

**TURNOVER IN THE GLOBAL MARKETS FOR FOREIGN EXCHANGE AND
DERIVATIVES BY TYPE OF INSTRUMENT**

Table 5

Billion dollars per banking day	April 1989	April 1992	April 1995	April 1998	April 2001
Spot transactions.....	317	394	494	568	387
Outright forwards.....	27	58	97	128	131
FX swaps.....	190	324	546	734	656
Total foreign-exchange contracts.....	590	820	1.190	1.490	1.210
Currency swaps.....	...	...	4	10	7
Currency options.....	...	...	41	87	60
Other foreign-exchange derivatives.....	...	...	1	0	0
Total foreign-exchange derivatives.....	...	...	45	97	67
Forward rate agreements (FRAs).....	...	...	66	74	129
Interest-rate swaps.....	...	...	63	155	331
Interest-rate options (OTC).....	...	...	21	36	29
Other interest-rate derivatives.....	...	...	2	0	0
Total interest-rate derivatives.....	...	...	151	265	489
Total OTC derivatives.....	...	...	200	375	575
Exchange-traded foreign-exchange derivatives.....	...	...	17	12	9
Exchange-traded interest-rate derivatives.	...	...	1.205	1.360	2.200
Total exchange-traded derivatives.....	...	...	1.222	1.372	2.209

Note: Total turnover in the foreign-exchange and derivatives markets is adjusted for the fact that the reported turnover does not cover 100 per cent of global turnover.

Source: BIS, Press Release of 9 October 2001.

Moreover, it should be noted that the decline in turnover in both the Danish and the global foreign-exchange markets is attributable primarily to a decrease in spot turnover, while the turnover of FX swaps was somewhat weaker. FX swaps account for a considerably larger proportion of the turnover of the Danish foreign-exchange market than of the global market, which may contribute to explaining the smaller decrease in turnover of foreign exchange in the Danish market than in the global market.

As in the Danish market, the greater interest-rate swap activity has lent momentum to the growth in global turnover of interest-rate derivatives. Global turnover of interest-rate swaps has thus risen by 114 per cent against 1998. Dollar- and euro-denominated swaps accounted for the largest increases. According to BIS, the growth in dollar-denominated swaps can be attributed mainly to the less liquid market for long-term US government bonds than before, and to the fact that interest-rate swaps constitute an alternative, more effective instrument for hedging and taking positions. The explanation for the increase in trading of euro-

denominated swaps is that since the introduction of the euro a large liquid market for euro-denominated interest-rate swaps has emerged.

Global turnover of FRAs has risen by almost 75 per cent since 1998, which is a somewhat higher increase than in Denmark. However, this should be viewed in the light of the somewhat stronger increase in turnover of FRAs in Denmark than in the global market between 1995 and 1998.

Structure of global turnover

The proportion of global foreign-exchange trading taking place between reporting dealers was 59 per cent in April 2001, which is a smaller proportion than in 1998. The decrease is attributable mainly to the more widespread use of electronic broking in the interbank market and the consolidation of the global banking industry, cf. above. The proportion of customer transactions has likewise decreased to 13 per cent of turnover. On the other hand, trading with other financial institutions has gained ground. According to BIS, the reason is an increase in foreign-exchange trading with asset managers, while hedge funds' foreign-exchange activities are found to have decreased since the previous survey in 1998.

Like the Danish market, the global market for interest-rate derivatives is dominated by trading between reporting dealers. In April 2001, this trading accounted for 66 per cent of turnover, while customer transactions accounted for a modest share of 5 per cent.

Dollar-denominated transactions are even more dominant in global foreign-exchange trading than in the Danish market. In April 2001, the dollar was part of 90 per cent of trades in the global foreign-exchange markets, followed by euro and Japanese yen with trading shares of respectively 38 and 23 per cent.¹

The euro dominates the global markets for interest-rate derivatives, followed by the dollar. In April 2001, 47 per cent of traded interest-rate derivatives were related to an interest rate denominated in euro, and approximately 30 per cent to a dollar-denominated interest rate. The euro plays a particularly dominant role in the market for interest-rate swaps.

Turnover in the national markets

The UK still constitutes by far the largest market for both foreign exchange and derivatives, cf. Table 6. In both cases the UK market is greater than the 2nd and 3rd ranking markets together. Denmark ranks 13th with regard to both the foreign-exchange and derivatives market, with shares of respectively 1.4 and 0.8 per cent of global turnover.

¹ See note 1, p. 59.

TURNOVER IN THE 20 LARGEST MARKETS IN APRIL 2001

Table 6

Turnover of foreign exchange per banking day	Billion dollars	Percentage share	Turnover of OTC derivatives per banking day	Billion dollars	Percentage share
UK	504	31.1	UK	275	36.0
USA	254	15.7	USA.....	135	17.7
Japan	147	9.1	Germany	97	12.7
Singapore	101	6.2	France.....	67	8.8
Germany	88	5.4	Netherlands	25	3.3
Switzerland	71	4.4	Italy	24	3.1
Hong Kong	67	4.1	Japan.....	22	2.9
Australia	52	3.2	Spain	21	2.7
France	48	3.0	Switzerland.....	15	2.0
Canada.....	42	2.6	Belgium.....	14	1.8
Netherlands	30	1.9	Canada.....	13	1.7
Sweden	24	1.5	Australia.....	12	1.6
Denmark.....	23	1.4	Denmark.....	6	0.8
Italy.....	17	1.0	Singapore.....	6	0.8
Luxembourg.....	13	0.8	Ireland.....	6	0.8
Norway.....	13	0.8	Luxembourg.....	5	0.7
Belgium.....	10	0.6	Austria.....	5	0.7
Korea	10	0.6	Hong Kong.....	4	0.5
Russia	10	0.6	Sweden.....	4	0.5
South Africa.....	10	0.6	Norway.....	3	0.4

Source: BIS, Press Release of 9 October 2001.

It should be noted that Japan accounted for 2.9 per cent of derivatives trading in April 2001. This is a considerable reduction from its 8.8 per cent of turnover in 1998. The relatively weak activity in the Japanese derivatives market in April 2001 can be attributed to widespread expectations at that time that for the foreseeable future Japanese interest rates would evolve in a very narrow band.

The ranking in Table 6 changes when each country's turnover is viewed in relation to the size of its economy. In GDP terms, the UK, Singapore and Luxembourg constitute the largest markets for foreign exchange and derivatives, while countries such as the USA, Japan and Germany are placed much lower on the list. In GDP terms, Denmark's foreign-exchange market is the 8th largest in the world, while its derivatives market is the 10th largest.

Firstly, this reflects the concentration of foreign-exchange and derivatives market activities in the financial centres, with London as the biggest centre by far. Secondly, in relative terms, foreign-exchange trading is naturally greater in small, open economies like Denmark than in larger and less open economies such as the USA and Japan. Furthermore, a larger proportion of the major countries' trading is invoiced in the national currency. This reduces the need to trade foreign exchange and hedge exchange-rate risks as a consequence of foreign trade.