

## Payment flows of interbank payment and settlement systems in 2002

### 1. Development and distribution of interbank turnover among payment systems

The value of the interbank payment system in 2002 - including the total turnover of VIBER (the Hungarian abbreviation for Real-Time Gross Settlement System, RTGS), the account keeping system of the NBH and the Interbank Clearing System (ICS) – amounted to HUF 305,788 billion, by 65 percent (HUF 185,331 billion) above the 2001 year value. The expansion of the value of payments shapes an exponential function, demonstrated by the chart below:

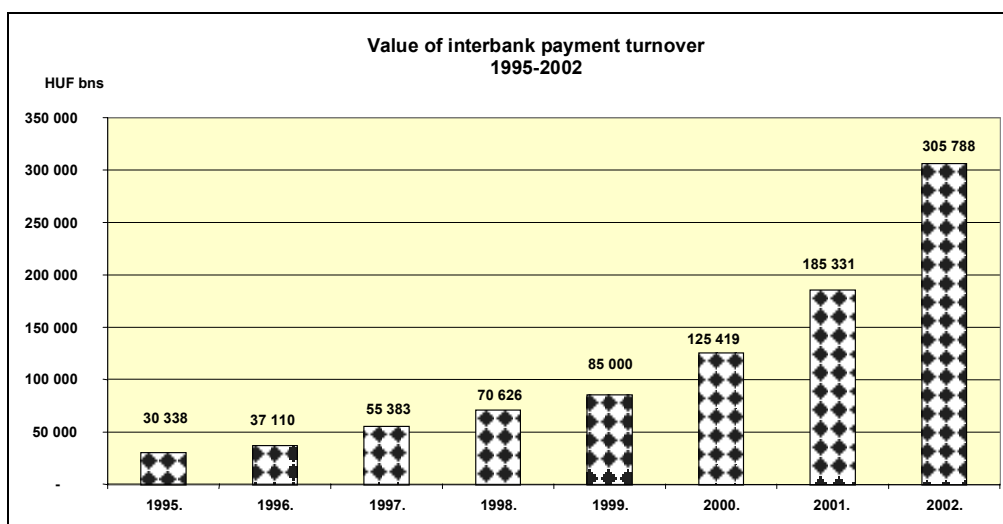


Chart 1

The number of payments transacted amounted to 154.9 million in 2002, 10.7 percent higher than in the previous year (139.9 million).

Participants of the payments systems settle the growing proportion of the interbank turnover's value via VIBER operated by the NBH and the central bank's accounting system. In 2002 the share of central bank's systems exceeded 85 percent. The development of proportions over the last few years is shown in the chart below:

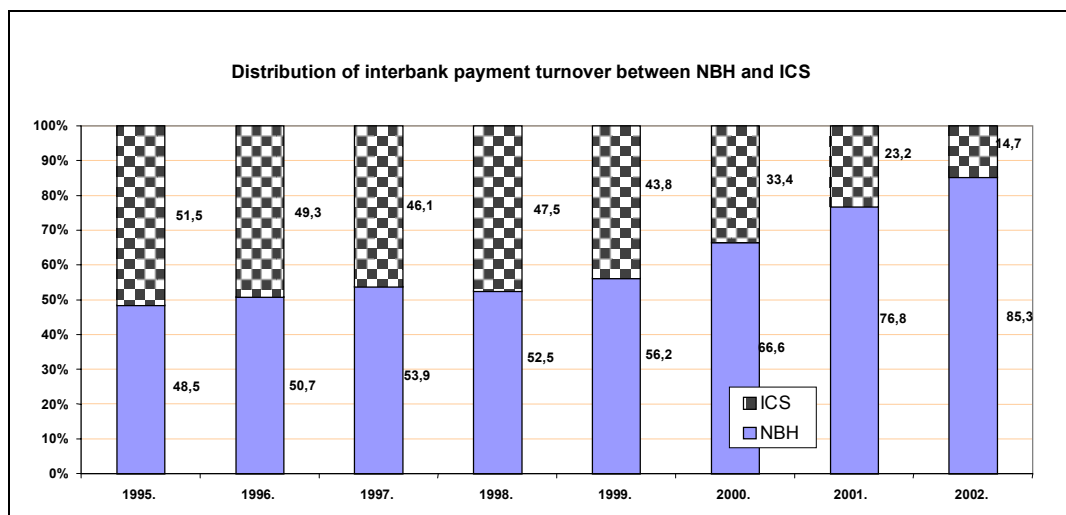


Chart 2

The value of the payment turnover increased at the highest rate (+85.3 percent) in VIBER compared to 4.9 percent in ICS. This is in line with the tendencies of the earlier years. The table below indicates the distribution and yearly development of the turnover's value among different systems.

	2000.	2001.	2002.	Change %	
	HUF billion			2001/2000.	2002/2001.
<b>ICS</b>	41 905	42 985	45 074	102,6	104,9
<b>VIBER</b>	83 131	139 757	258 931	168,1	185,3
<b>Central bank accounting system</b>	1 384	2 588	1 782	187,0	68,8
<b>Total</b>	126 419	185 331	305 788	146,6	165,0

Table 1

The distribution on the basis of the number of transactions indicates a completely different situation. The bulk of the payments are settled via ICS, the tendency of changes, however, is parallel to that experienced in the development of transactions' value. This tendency is shown in the table below:

	2000.	2001.	2002.	Change %	
	Number of payments, thousand			2001/2000.	2002/2001.
<b>ICS</b>	125 775	139 573	154 482	111,0	110,7
<b>VIBER</b>	159	240	337	151,0	140,7
<b>Central bank accounting system</b>	43	50	58	116,6	116,0
<b>Total</b>	125 977	139 863	154 877	111,0	110,7

Table 2

As a consequence of the above-mentioned the average value of transactions in the two systems is developing in the opposite direction; the transaction value in the NBH is growing, whereas in the ICS it is declining, as shown in the chart below:

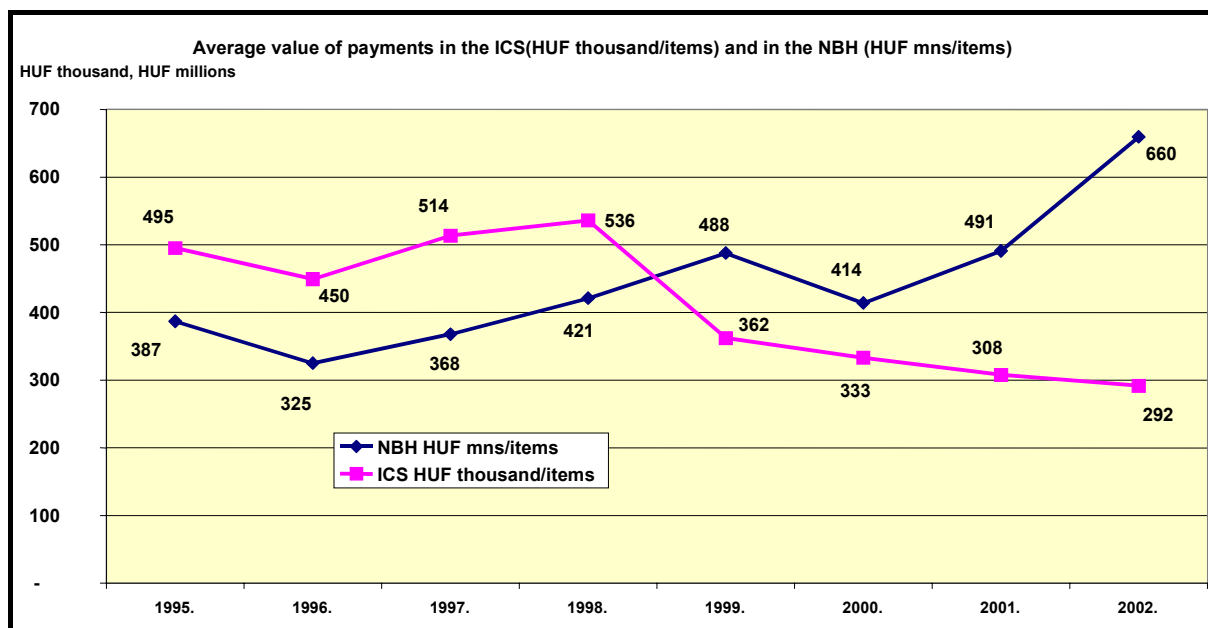


Chart 3

## 2. Characteristic data of different payment systems

### 2.1. Interbank Clearing System

The value and number of payment instructions increased moderately in the last three years. The monthly rate of changes is demonstrated in the chart below:

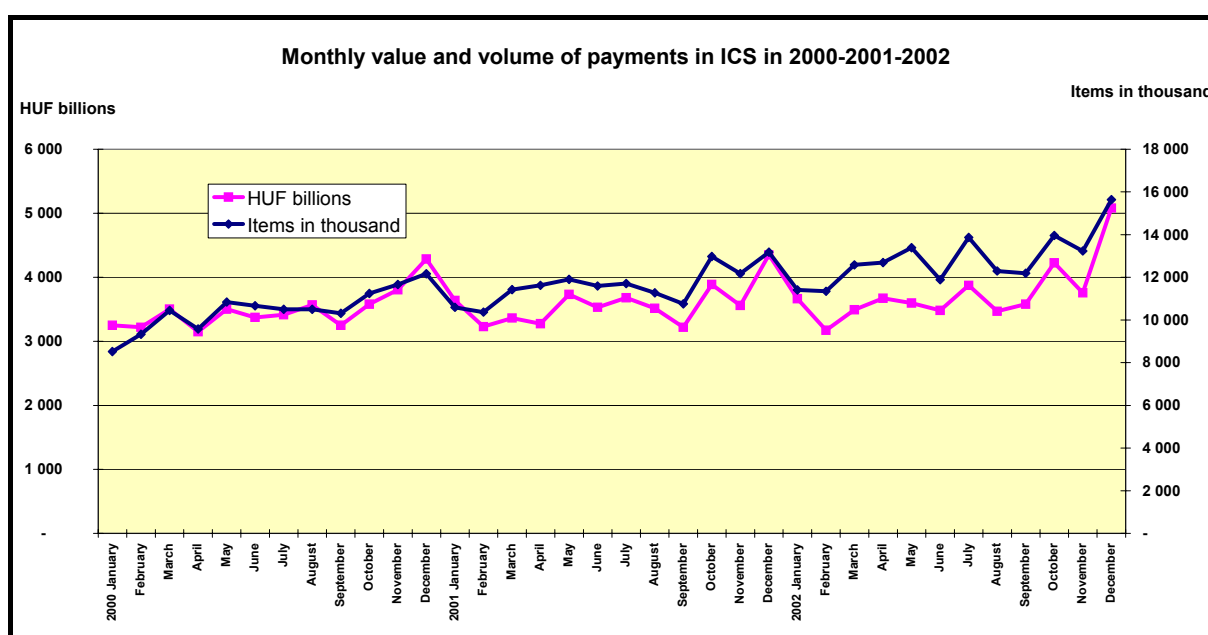


Chart 4

The bulk of the payments' value is simple transfer order; they account for 94.1 percent of the total turnover. As to the number of transactions the share of simple transfer orders is declining compared to the dynamic increase in the number of direct credits and debits.

Type of payments	Value HUF billions			Distribution %	Number of payments thousand			Distribution %
	2000	2001	2002		2000	2001	2002	
customer-initiated credit transfer	40 500	41 131	42 425	94,1	85 907	92 522	95 782	62,0
bank-to-bank transfers	48	29	28	0,1	0	0	0	0,0
direct credits	1 104	1 499	2 194	4,9	21 410	26 392	34 536	22,4
direct debits	71	88	107	0,2	17 964	19 960	21 719	14,1
other transactions	163	220	216	0,5	327	548	341	0,2
rejected payments	20	18	20	0,0	166	151	156	0,1
postal cash delivery orders	n.a.	n.a.	84	0,2			1 949	1,3
<b>Interbank Clearing System</b>	<b>41 905</b>	<b>42 985</b>	<b>45 074</b>	<b>100,0</b>	<b>125 774</b>	<b>139 573</b>	<b>154 482</b>	<b>100,0</b>

Table 3

The rate of concentration in the ICS, i.e. the share of the five largest participants transacting the largest payment turnover in total turnover both in terms of value or volume declined compared to the previous year.

Concentration ratio of ICS payments %					
Volume			Value		
2000	2001	2002.	2000	2001	2002.
59,26	64,84	61,47	44,10	63,36	56,03

Table 4

Ten participants performing the largest monthly turnover concentrated 81 percent of the value (all of them above HUF 150 billion) and 86 percent of the volume (over 300 thousand transactions per month each) of credit transfers. Three ICS participants sent payments in a number of over 1 million.

Similar to earlier years, not only small-value orders were processed in the ICS. In December 2002, 56 percent of the total value of payments settled were individual orders with over HUF 10 million each, out of which the individual value of 16 percent exceeded HUF 1 billion each. The chart below demonstrates the breakdown in December 2002 in value.

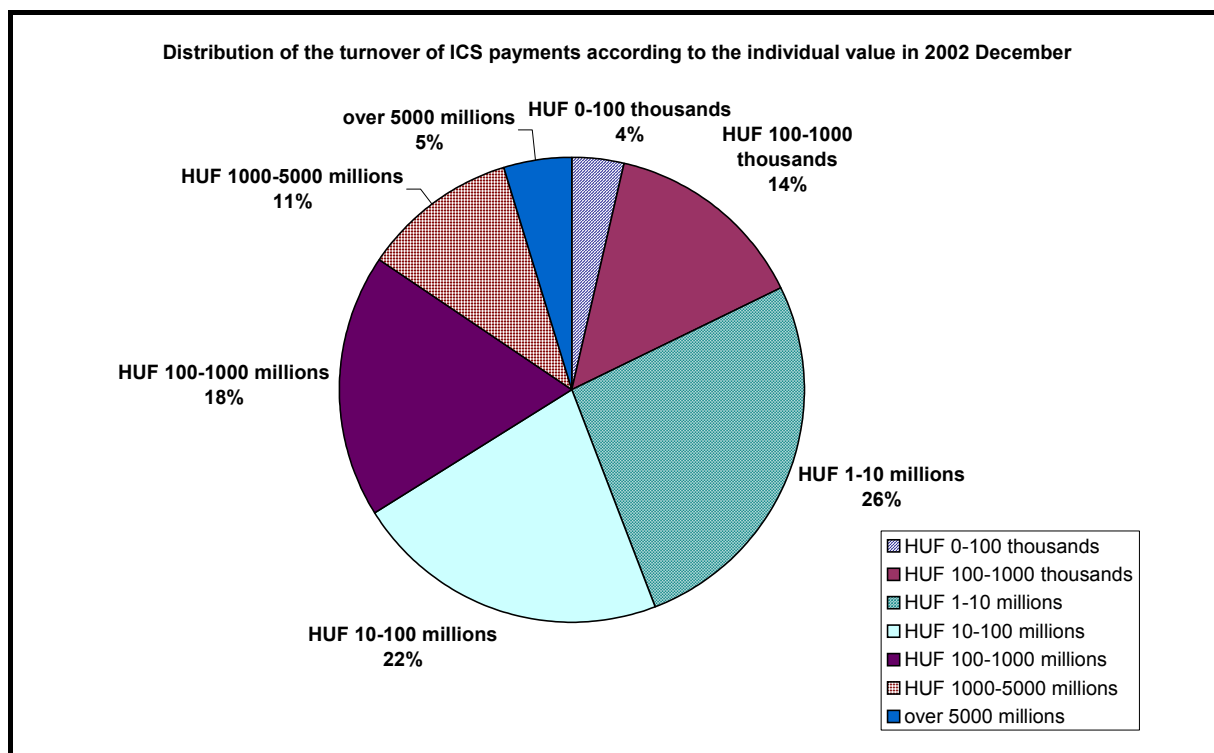


Chart 5

The number of items of payment instructions in different value ranges in terms of individual value and its changes are indicated in the table below for the December period of the last three years.

Value ranges	Volume of ICS turnover in numbers			Changes %	
	Dec. 2000	Dec. 2001	Dec. 2002	2001/2000	2002/2001
HUF 0-1 millions	7 555 228	8 069 893	8 519 805	106,8	105,6
HUF 1-5 millions	333 525	358 982	403 973	107,6	112,5
HUF 5-10 millions	44 331	48 171	55 031	108,7	114,2
HUF 10-100 millions	33 828	36 697	42 014	108,5	114,5
HUF 100-500 mns	2 744	2 735	3 084	99,7	112,8
HUF 500-1000 mns	334	295	345	88,3	116,9
HUF 1000-5000 mns	266	201	257	75,6	127,9
over HUF 5000 mns	16	23	23	143,8	100,0
<b>Total</b>	<b>7 970 272</b>	<b>8 516 997</b>	<b>9 024 532</b>	<b>106,9</b>	<b>106,0</b>

Table 5

As it is obvious from the table, the number of large-value payment orders is increasing almost in all value ranges, whereas the average value of items is declining (Chart 14). The share of orders with an individual value of below HUF 1 million is 94.4 percent in the total number of items (less than in the previous year), the share of the number of items of over HUF 10 million individual value is 0.51 percent (higher than in the previous year).

The share of rejected items in ICS is below 0.15 percent, even below 0.1 percent in the second half of the year indicating that banks sent less and less items to each other which the partner bank is unable to credit to its own client's account. In 2003 Giro Ltd. will extend the formal control of orders to the banking sphere of messages too. In the course of the preparatory work participants made tests and those sending incorrect orders were informed on the items, which might have some difficulties in performing. Although the control *de facto* was not introduced, the effect of the preparatory work is reflected in the declining number of orders rejected.

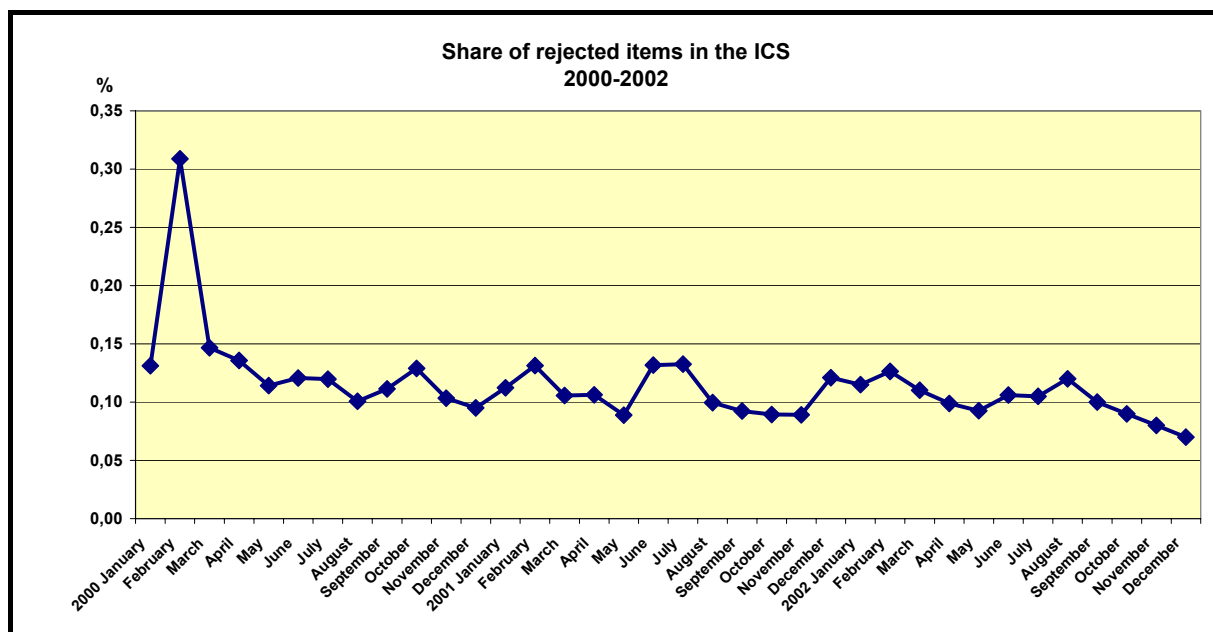


Chart 6

In 2002 the average daily transaction number in the ICS was 614 thousand (in 2001 556 thousand). On the day with the maximum number of transactions (on 12.03.2002) the number of payment instructions was as high as 1,995 million. The daily turnover value on average in 2002 was HUF 179.6 billion (in 2001 171.3 billion), on the day with the maximum value (on 12.12.2002) HUF 560 billion.

Business hours were more respected than in the previous year. In 2001 four banks accomplished sending payment orders later than the closing hour (02:00 a.m.), in 2002 five banks were late in 17 cases (length of the delay varied from 5 minutes to two hours forty minutes). The night-time processing was performed always on time, opening of VIBER was never delayed due to late forwarding of the settlement positions.

In 2002 11 banks in 21 cases did not provide sufficient liquidity for the night-time settlement of payments, thus a total amount of HUF 14.6 billion was settled in 21 cases out of 251 clearing days during the morning hours processing. While the volume of turnover increased by 4.5 percent, the number of queues grew by 31.2 percent compared to the previous year. This trend is partly explained by the declining share of mandatory reserves, however, as an interesting experience four from among the banks remaining in the queue do never exploit the possibility of setting up limits.

Month	2000		2001		2002	
	Queues					
	number	HUF millions	number	HUF millions	number	HUF millions
January	4	886	1	1 169	1	58
February	-	-	3	101 985	3	2 905
March	3	5 742	1	829	4	79
April	1	653	2	927	2	1 117
May	1	3	-		1	23
June	-	-	1	1 900	1	999
July	-	-	1	2 878	2	53
August	1	1 368	2	1 443	3	1 638
September	1	293	3	7 154	1	1 228
October	2	3 287	2	1 208	1	7
November	-	-	2	581	1	721
December	2	1 128	3	6 854	1	5 797
Total	15	13 360	16	126 928	21	14 623

Table 6

## 2.2 Payments settled in the NBH systems

The number of payments settled in the NBH systems was 395 thousand in 2002, 36 percent higher than the number in the previous year. The value of the turnover settled was HUF 260.7 trillion, 83 percent higher than in 2001.

The table below demonstrates the turnover settled in the NBH broken down by types in the last three years.

	2000			2001			2002		
	Value HUF bns	Volume Thousands	Average HUF mns	Value HUF bns	Volume Thousands	Average HUF mns	Value HUF bns	Volume Thousands	Average HUF mns
<b>VIBER (RTGS) payments</b>	0	0,0	0,0	139 757	239,8	582,7	<b>258 931</b>	337,3	767,6
- bank-to-bank transfers	84	0,2	0,4	90 357	121,4	744,5	<b>209 431</b>	190,3	1 100,3
- DVP transactions	-	-	-	19 896	59,1	336,4	<b>23 883</b>	79,3	301,2
- customer transfers	-	-	-	13 700	35,2	388,7	<b>9 943</b>	45,1	220,5
- NBH and other transactions	-	-	-	15 805	24,1	656,0	<b>15 674</b>	22,6	692,9
<b>NBH accounting system</b>	-	-	0,1	2 588	50,0	51,8	<b>1 782</b>	58,0	30,7
- FX transactions	-	-	0,1	1 975	37,7	52,3	<b>462</b>	48,4	9,5
- deposits with the central bank	-	-	-	235	0,7	321,7	<b>553</b>	1,2	477,0
- other transactions	-	-	-	379	11,5	32,9	<b>766</b>	8,4	91,4
<b>Total transactions with NBH</b>	-	-	-	<b>142 346</b>	<b>289,8</b>	<b>491,2</b>	260 713	395,3	659,5

Table 7

### 2.2.1. VIBER

The number of VIBER participants was 38 in 2002, one less than in the previous year since the participation of Otthon Lakástakarékpénztár has ceased.

Value and volume of transactions in VIBER increased dynamically. The value of transactions amounted to HUF 258.9 trillion, 85.3 percent higher than in the previous year, whereas the number of transactions, 337.3 thousand, was 40.7 percent more than the volume in 2001. The chart below indicates the monthly development of the value and quantity of transactions as of 2000.

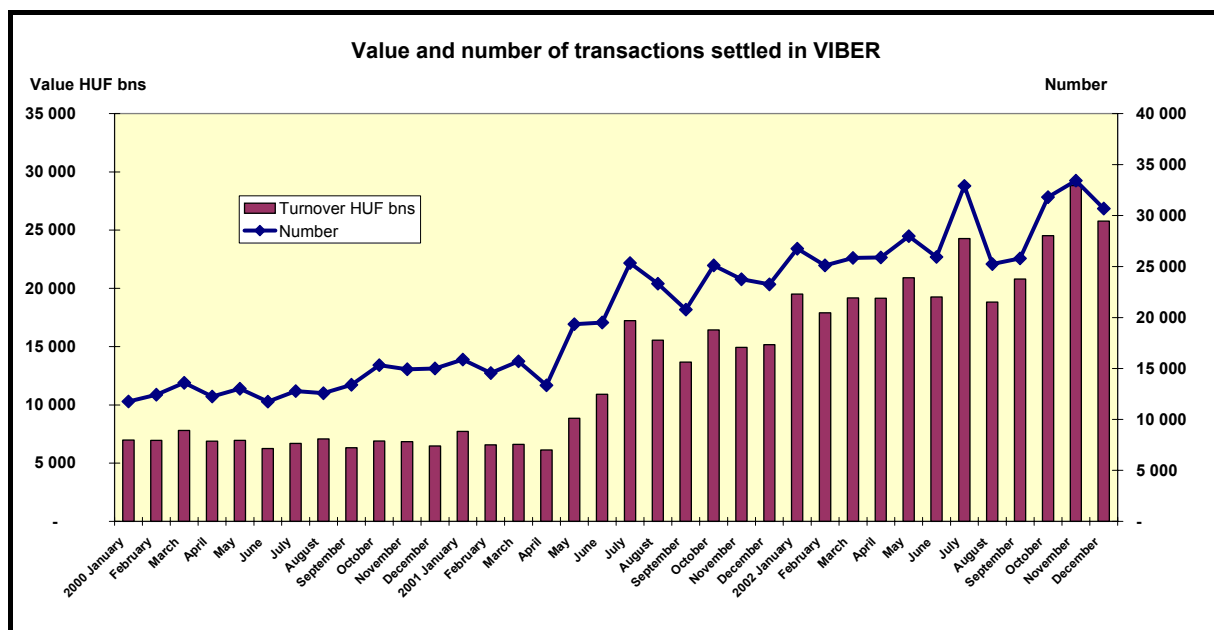


Chart 7

The development of the turnover in VIBER compared to domestic payment transactions settled in the EU member countries was the following:

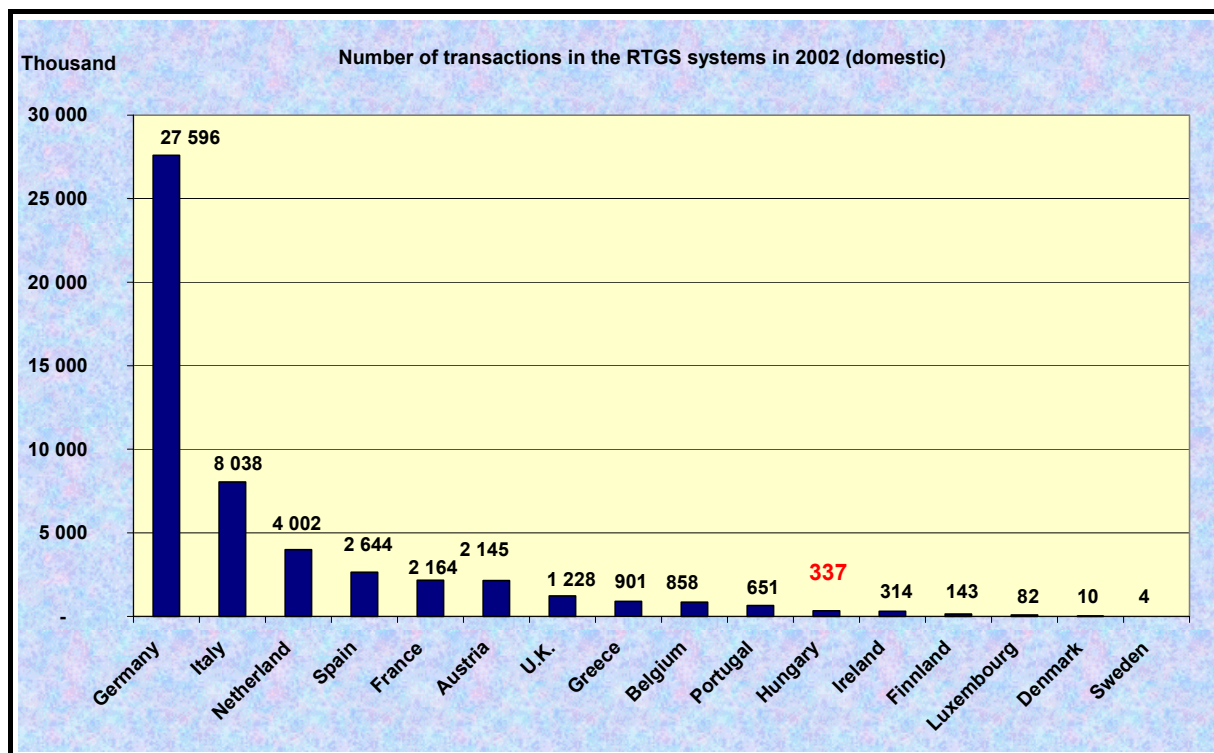


Chart 8



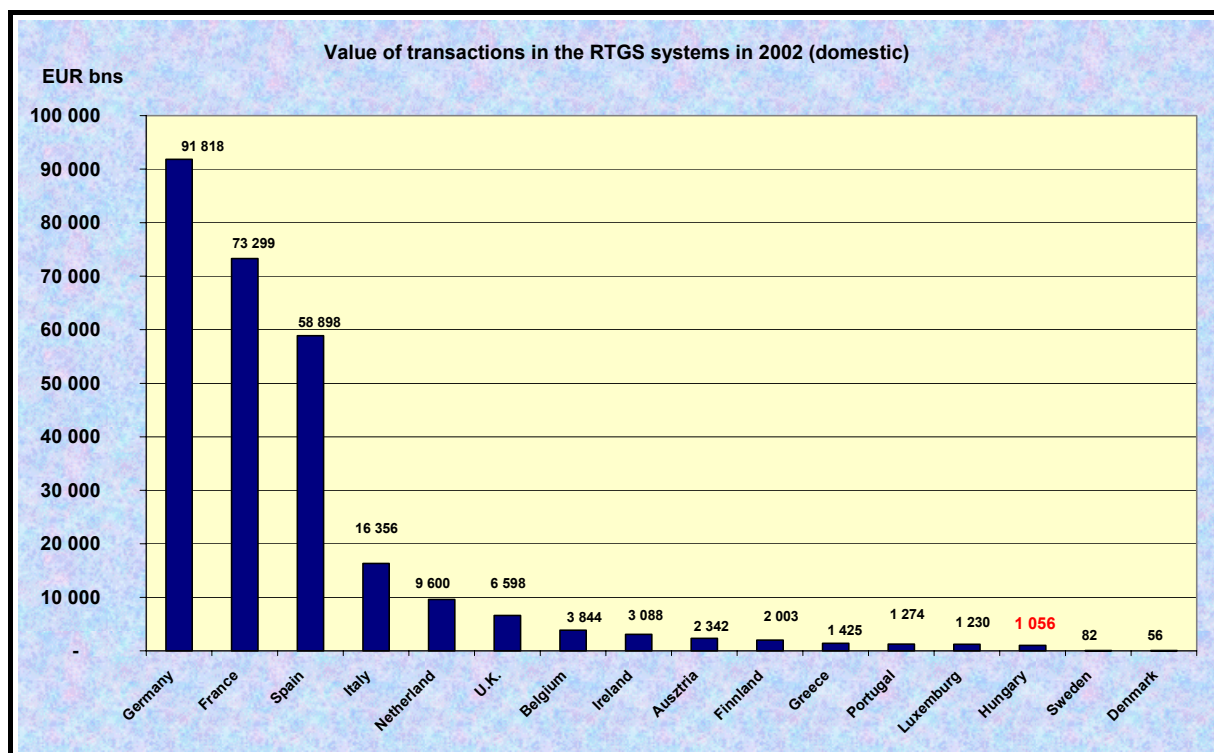


Chart 9

The average value of transactions in VIBER is increasing, especially among bank-to-bank transactions, which is partly due to the fact that the banks' foreign correspondents are behind these transactions. At the same time, the average value of ICS transactions is declining. The average value of transactions in the two systems is shown in the chart below.

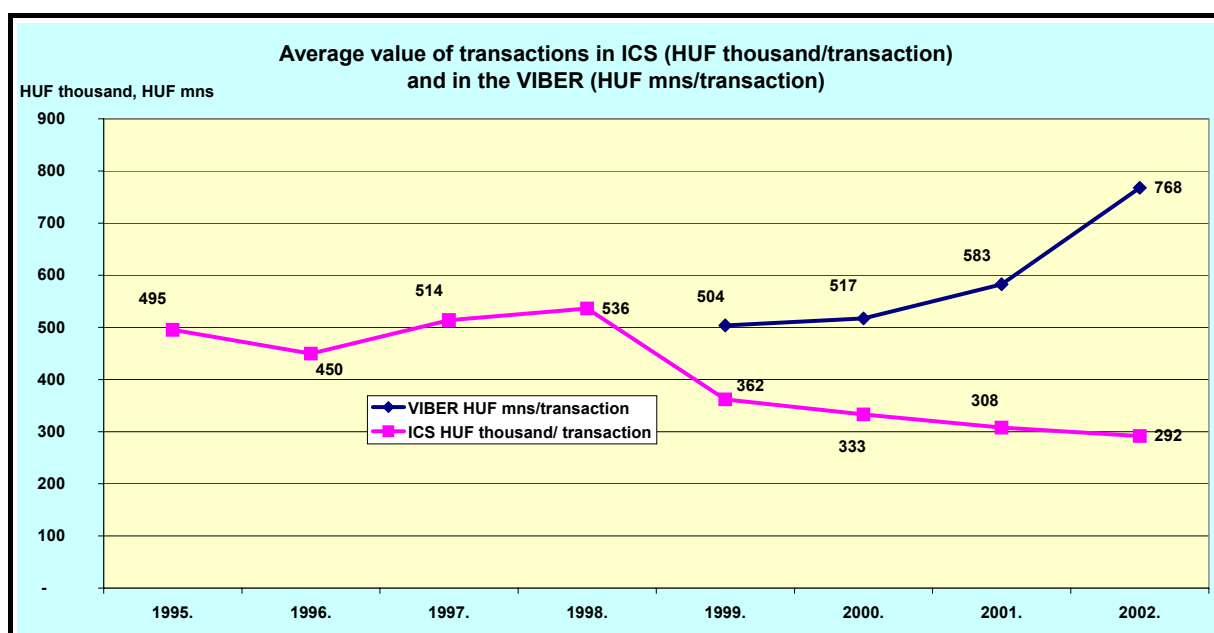


Chart 10

Rank of EU countries by average value of transactions is shown in the chart below.

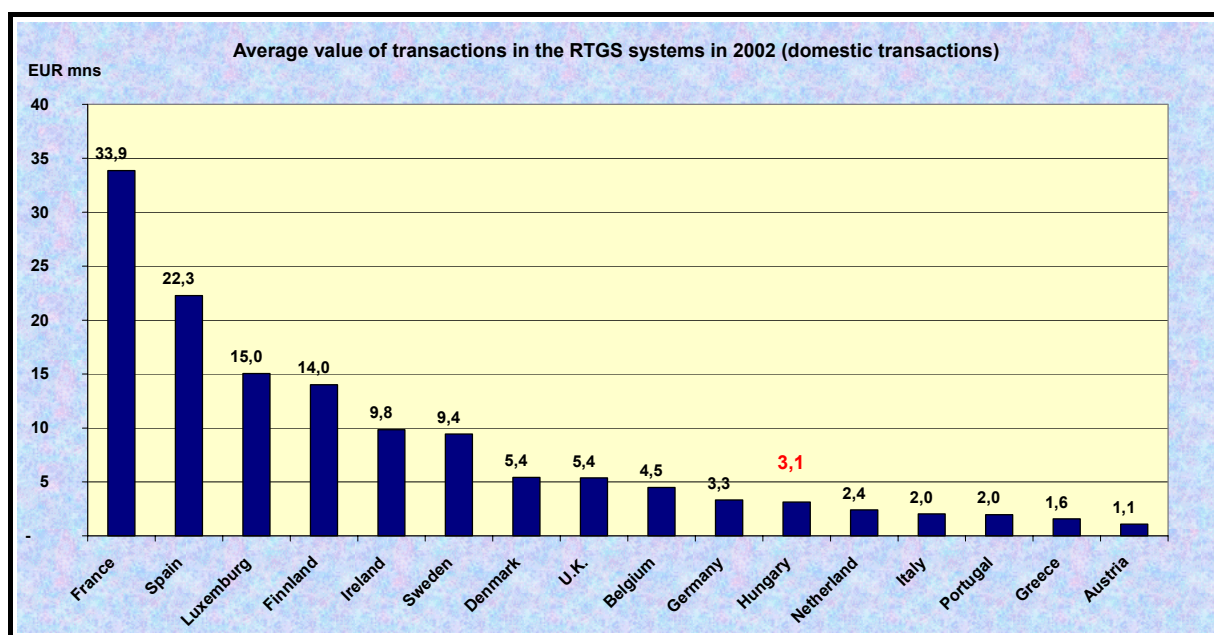


Chart 11

The average daily number of transactions in VIBER was 1 344 in 2002, compared to 955 in 2001, 1.4 times higher than in the previous year. The average daily turnover was HUF 1031.6 billion in 2002, 556.8 billion in 2001, a 1.85-fold increase. The highest daily number of transactions in 2002 in VIBER was 2 414 on November 21, the highest daily value was HUF 2 241 trillion on November 25. The maximum number and value days per month are shown in the two charts below:

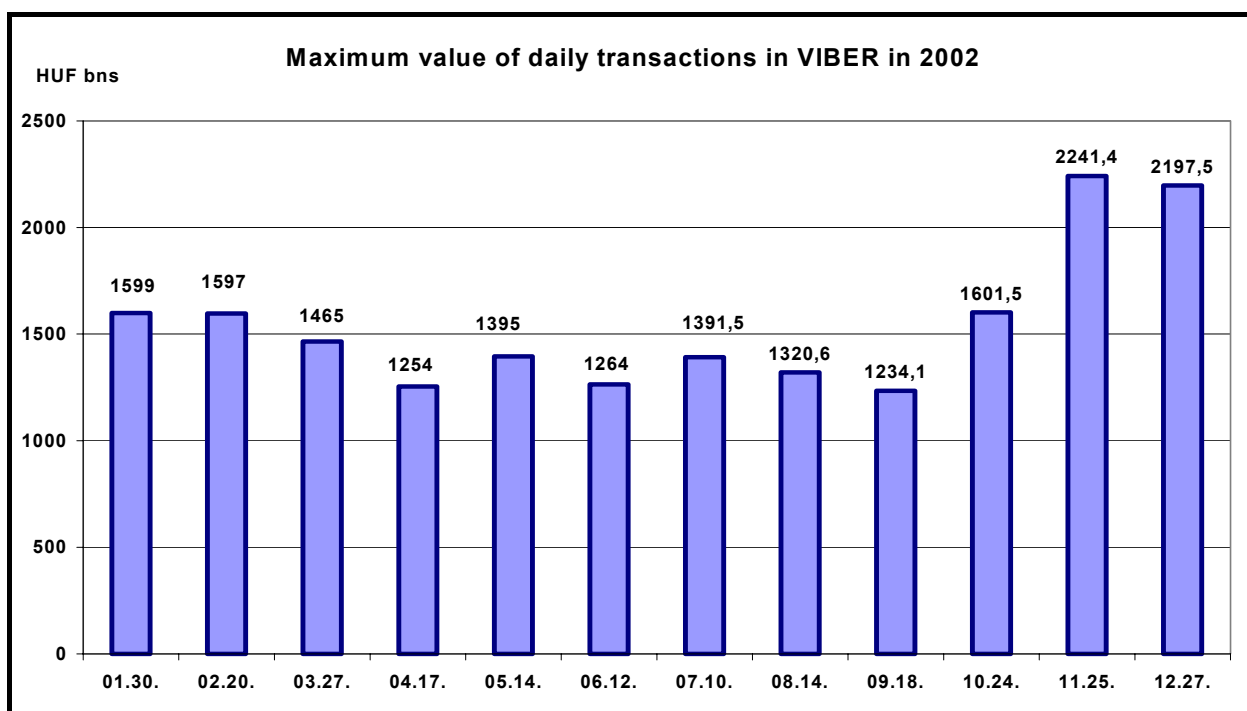


Chart 12

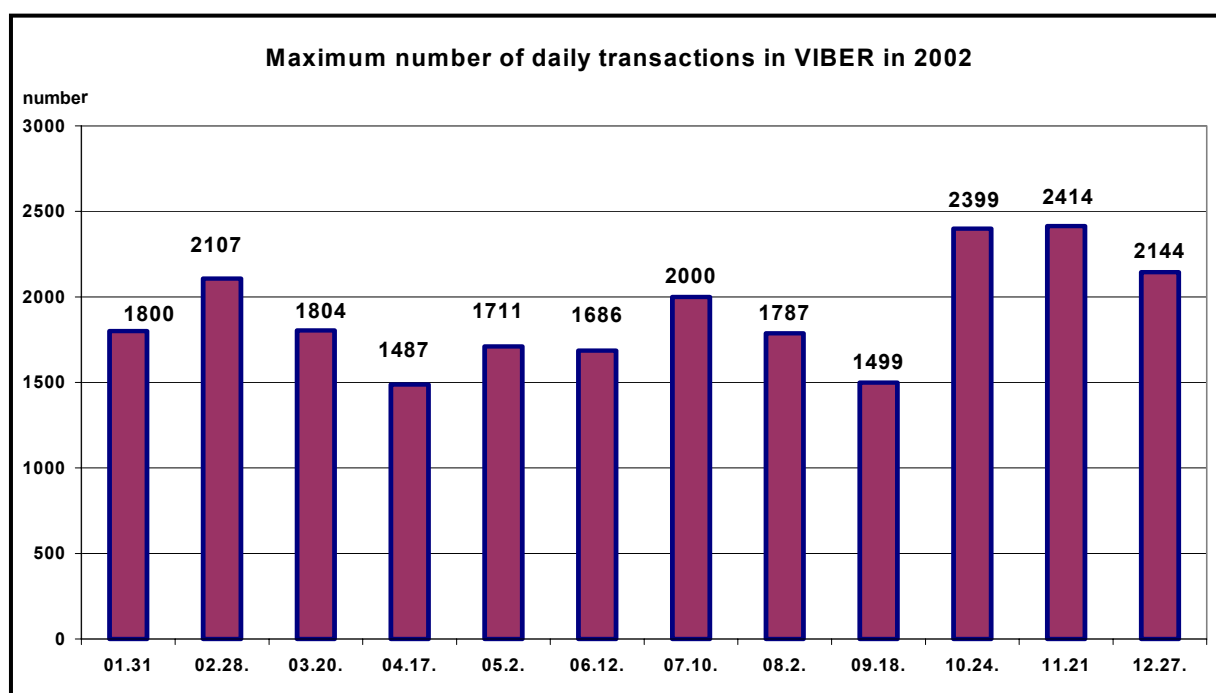


Chart 13

In the VIBER the turnover connected with interbank transactions is dominating both in volume and value. The growth both in the number (29.6 percent) and the value (77.2 percent) of transactions is significant compared to the previous year. Also the number of customer transfers increased dramatically (39.5 percent), the value of turnover calculated, however, has seemingly declined (by 22.6 percent), since in 2001 part of the interbank turnover, namely some payment instructions of foreign banks were categorised among these type of transactions. In the case of securities transactions a considerable growth was registered both in the value (80.6 percent) and number (42.3 percent) of transactions.

The two charts below demonstrate the breakdown of payment instructions settled in the VIBER by types of transactions.

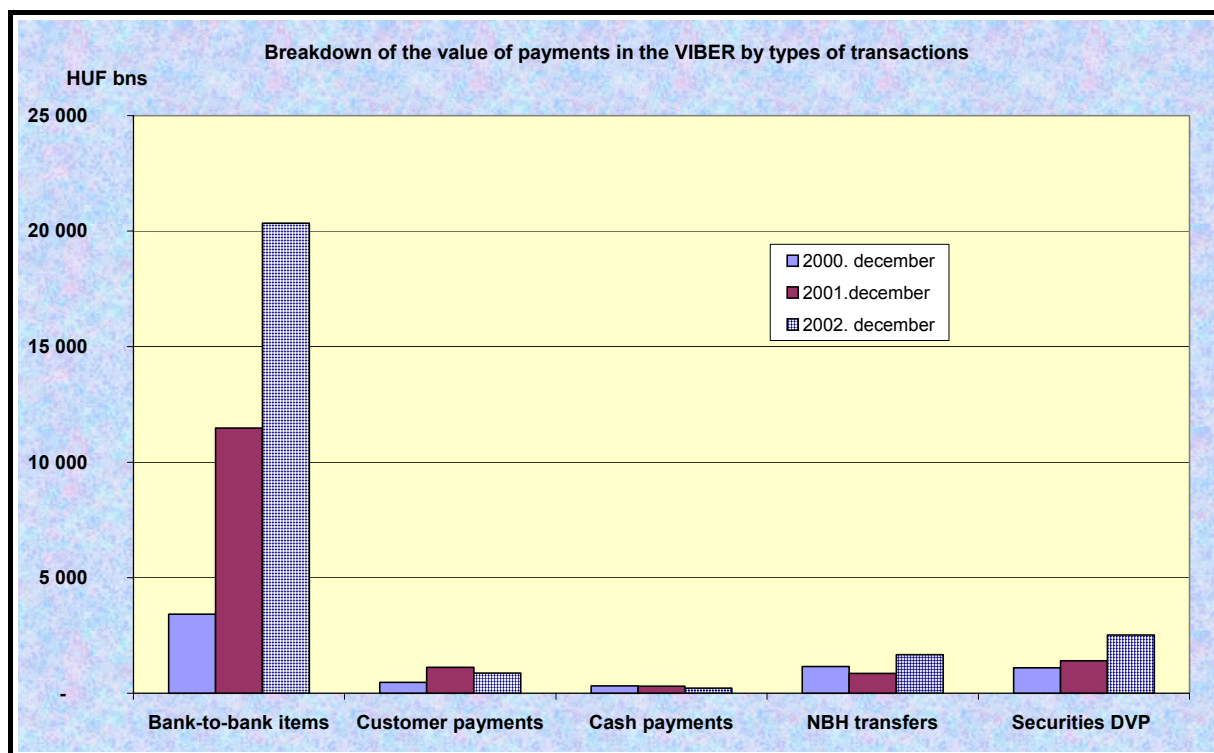


Chart 14

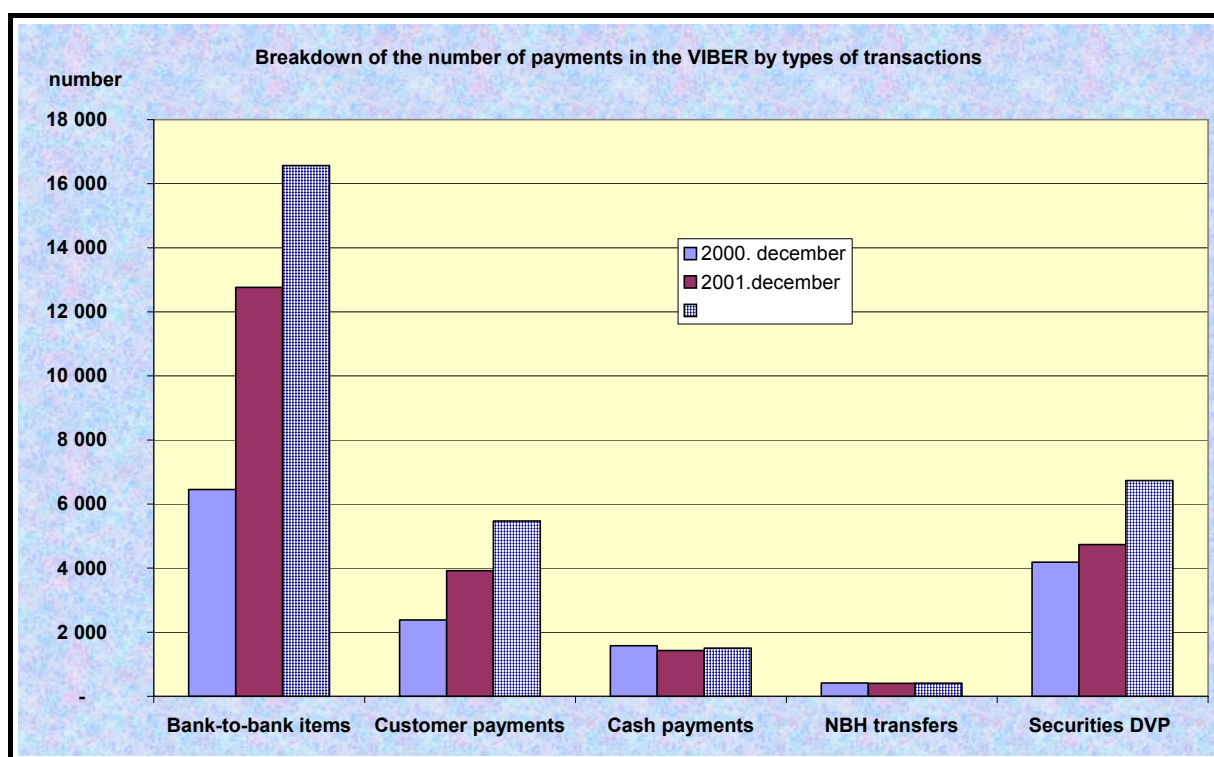


Chart 15

The average value of transactions increased by 28.1 percent in 2002 compared to 2001, within that among NBH items at the highest rate, first of all among deposits with the central bank (90.3 percent) and among interbank transactions (36.6 percent). The average value of transactions is indicated in the table below by types of transactions.

	Average value of transaction HUF mns					
	Bank-to-bank items	Customer payments	Cash payments	NBH transfers	Securities DVP	Total
2000. december	531,0	199,1	202,6	2 798,2	262,4	431,3
2001. december	899,5	286,3	210,3	2 129,7	295,5	652,1
2002. december	1 228,4	158,9	146,3	4 053,4	375,1	835,3

Table 8

Investigating value ranges used in the course of data collection it can be stated that the number of relatively small value individual payments (under HUF 10 million) increased from 26 to 27 percent, that of large value transactions (over HUF 1 billion) from 15 to 18 percent, whereas the share of other categories has declined. The breakdown according to individual values compared to the previous year is demonstrated in the chart below:

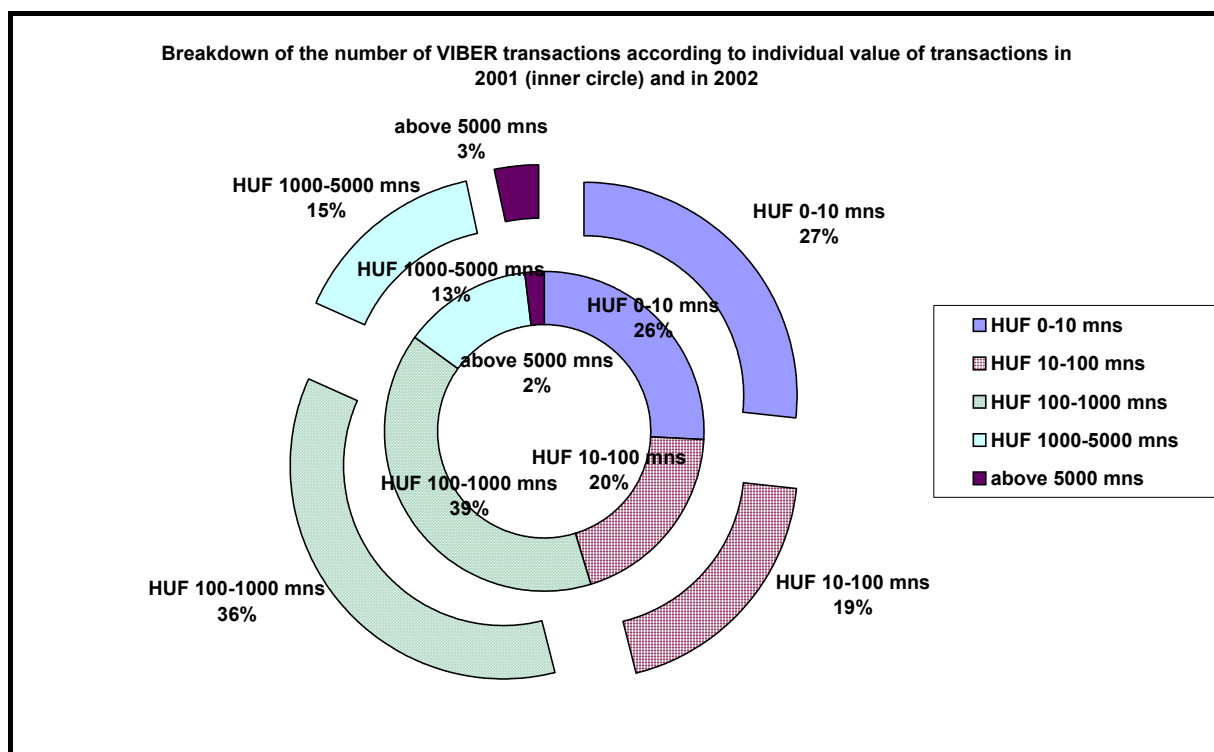


Chart 16

In 2002 45.1 thousand customer transfers were concluded in VIBER in a value of HUF 9.9 trillion; the number of transactions increased by 28 percent, the value decreased by 27 percent. The reason of that is enlightened in the explanations of the charts 14 and 15.

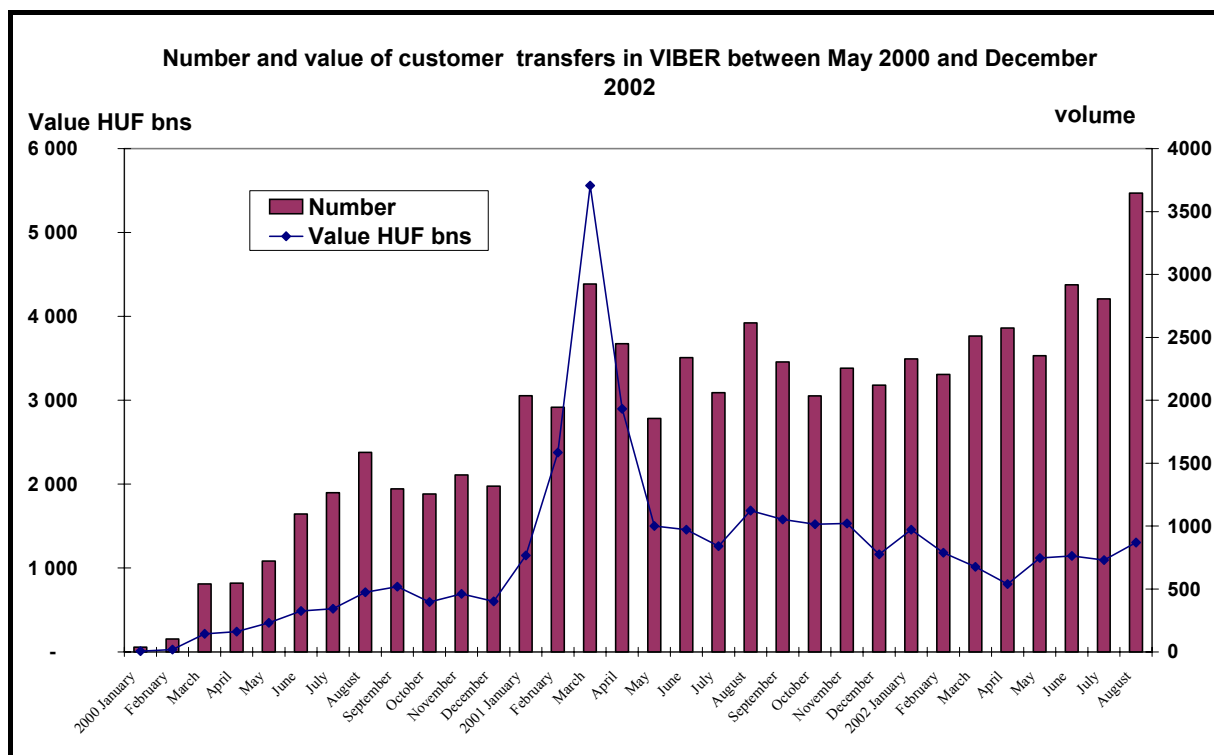


Chart 17

Customers of banks may indicate in their transfer orders if the order should be settled via ICS or VIBER. In 2002 95.8 million customer transfers were settled in the two payment systems together, of which only 0.05 percent, 45 thousand was settled in VIBER compared to 35 thousand, 0.04 percent in 2001. The value of customer transfers settled in the VIBER-system amounted to HUF 9.9 trillion, 19 percent of the total value of (ICS+VIBER) customer transfers.

Out of the ICS customer transfers with over HUF 10 million individual value and VIBER transfers (independent from the value) 31 percent on average was settled in the VIBER. The change in the proportion between the two systems is demonstrated in the chart below.

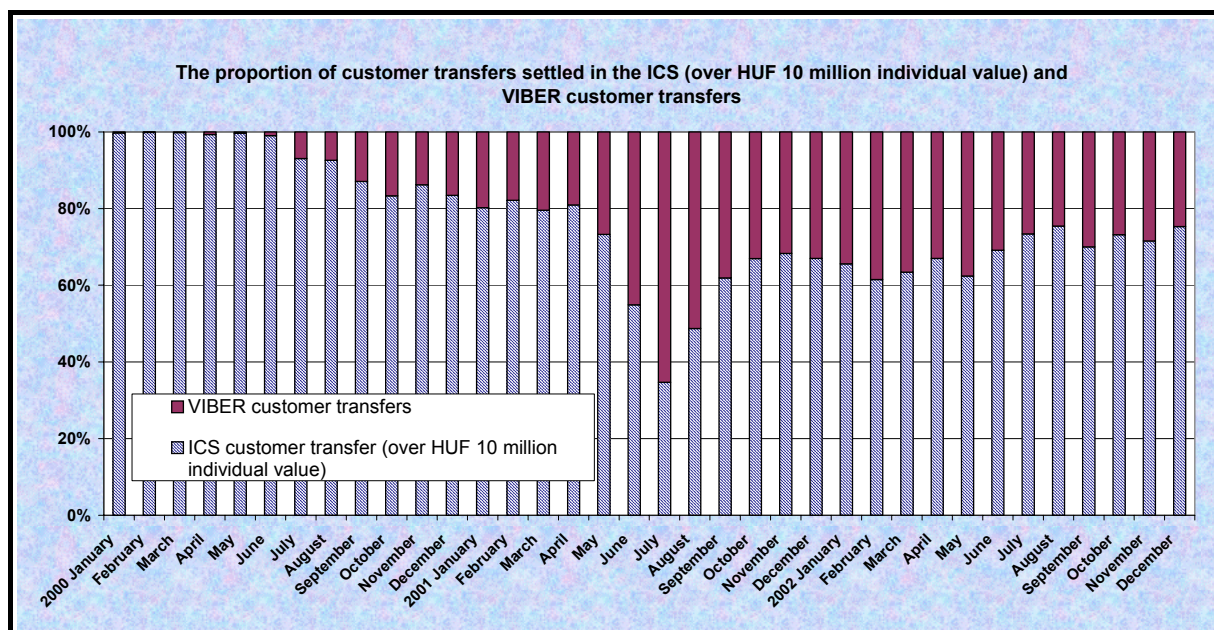


Chart 18

The distribution of payment settlements during the day has changed compared to the previous year; the proportion of the settlements in the later hours of the business day is higher. Data of two days in December indicate that in December 2002 67.5 percent of the number and 64.3 percent of the value of transfers was settled until 1:00 p.m., whereas in 2001 the proportion of the numbers was 82.9 percent, of the value 88.2 percent until that date. This tendency is indicated in the chart below.

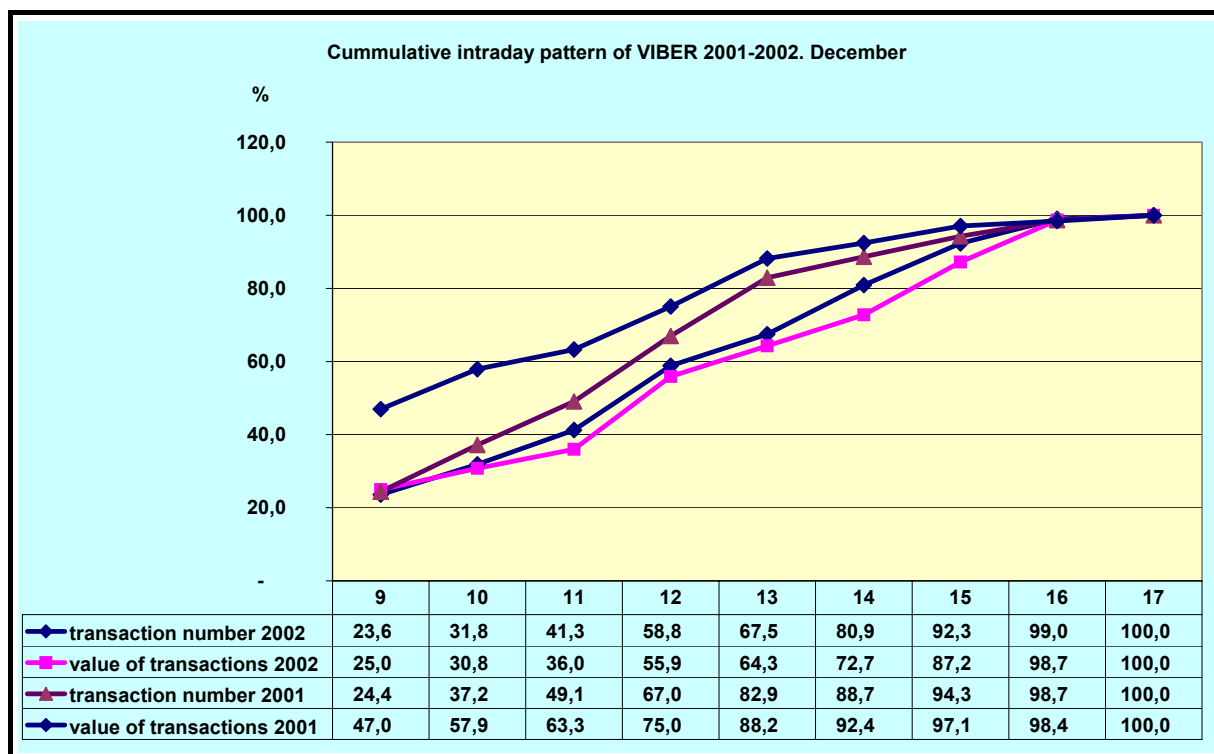


Chart 19

In the case of payment orders sent in to VIBER the value and occurrence of queuing<sup>1</sup> is growing year by year. In 2002 the yearly amount of orders opening the queues was HUF 32.3 trillion, 2.7-fold of the 2001 year amount. (Besides the liquidity position of the system this data indicates the increase in the average value of orders too.) Orders sent into the VIBER were settled in each case until the end of the day; the system didn't cancel any item in the queue due to the lack of funds.

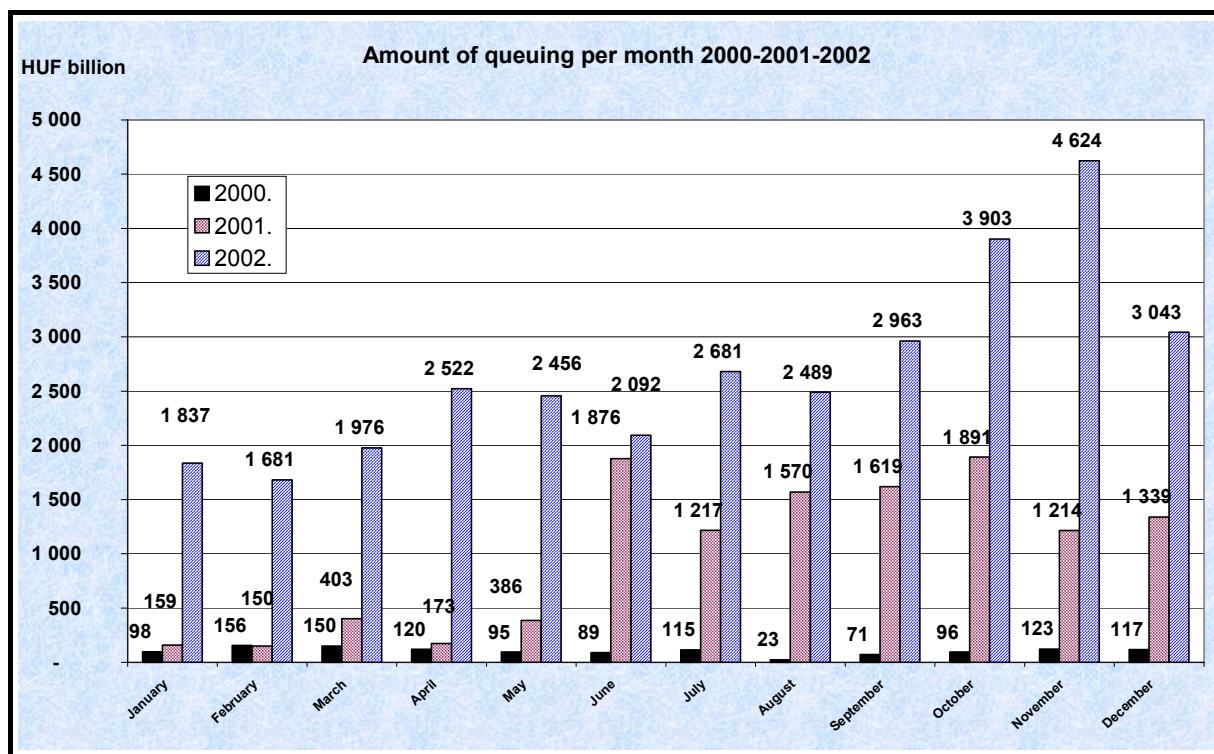


Chart 20

<sup>1</sup>The summary includes transactions of which the system sent the message “the transaction is queuing due to the lack of coverage”. (The system instructs the account owner VIBER member on the queue generated due to insufficient coverage, more precisely, if the instruction on the top of the queue doesn't move until 90 seconds. Next time a message is sent if the item on the top of the queue is changing – it will be settled or will be subordinated in the priority line – and there are more queuing items not performing within 90 seconds, i.e. there might be more items in the queue but there is no information on them). The *de facto* queuing might have been even higher.



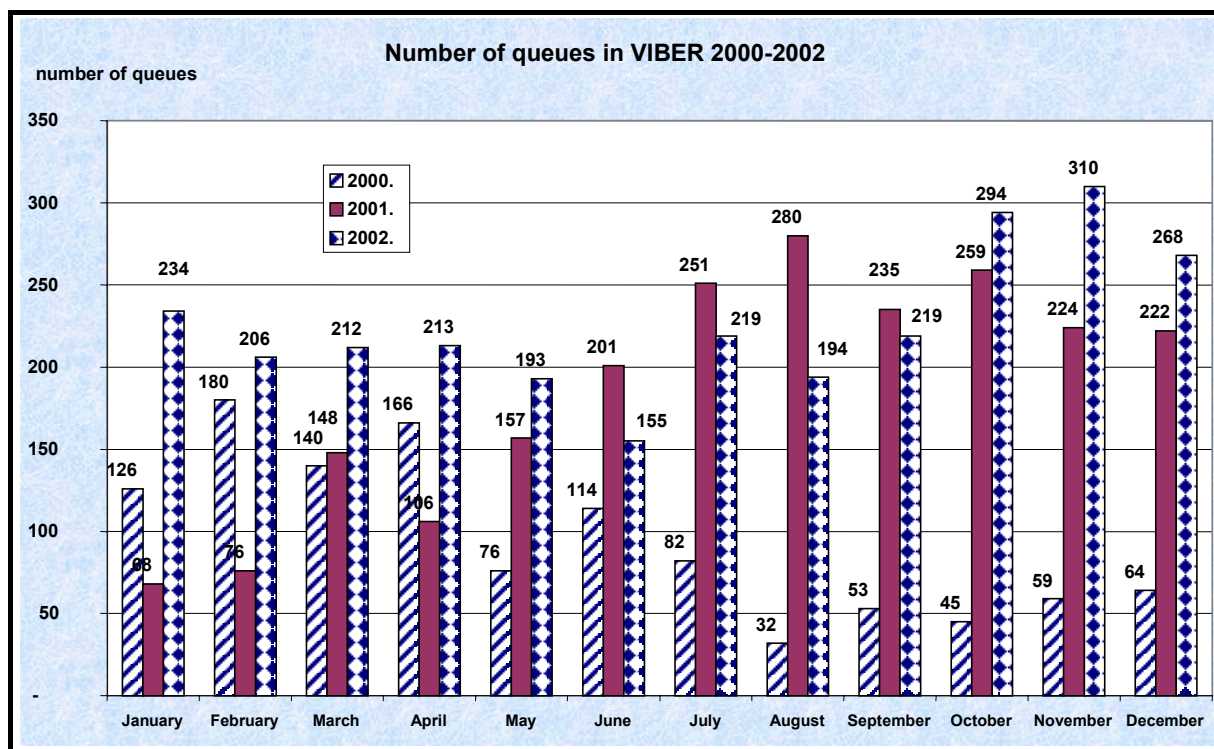


Chart 21

The availability of VIBER (i.e. the presence of the contact of the central element and of the SWIFT) indicates an improving tendency; the average yearly indicator was 99.03 percent in 2000, 99.59 in 2001 and 99.8 in 2002. (In 2002 the length of stoppages varied from 18 to 66 minutes). The availability of the system is shown in the chart below.

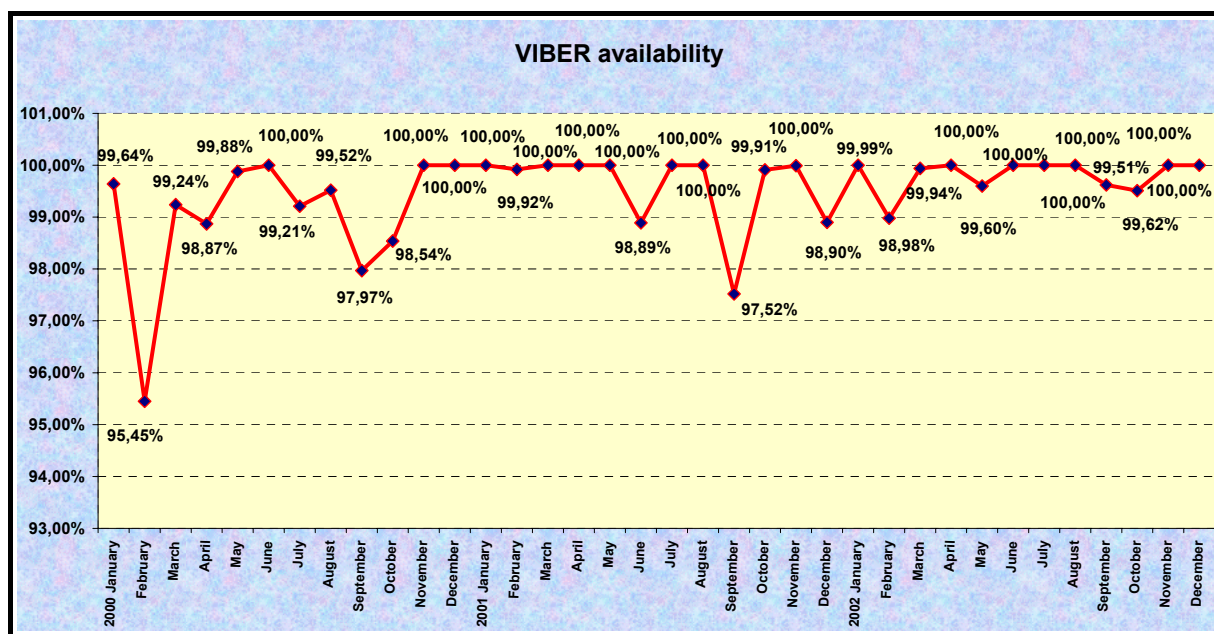


Chart 22

### 2.2.2. The customer account keeping system of NBH

The home accounting system of NBH performs the settlement of Forint transactions for VIBER participants before the opening and after the closing time of VIBER and during operating hours for non-VIBER participants. The value of that in 2002 was HUF 1.8 trillion,

the number of transactions 58 thousand. The turnover compared to 2001 declined to 68.8 percent (2001: HUF 2.6 trillion). The reason for that is the fact that in mid-2001 following the liberalization of FX transactions and the change in the exchange rate system the value of FX transactions suddenly and temporarily increased. The number of transactions increased by 15.9 percent. (In order to avoid double counting these data do not contain the matrix sum of interbank positions produced as the result of overnight ICS processes.) The distribution of that is shown in the chart below.

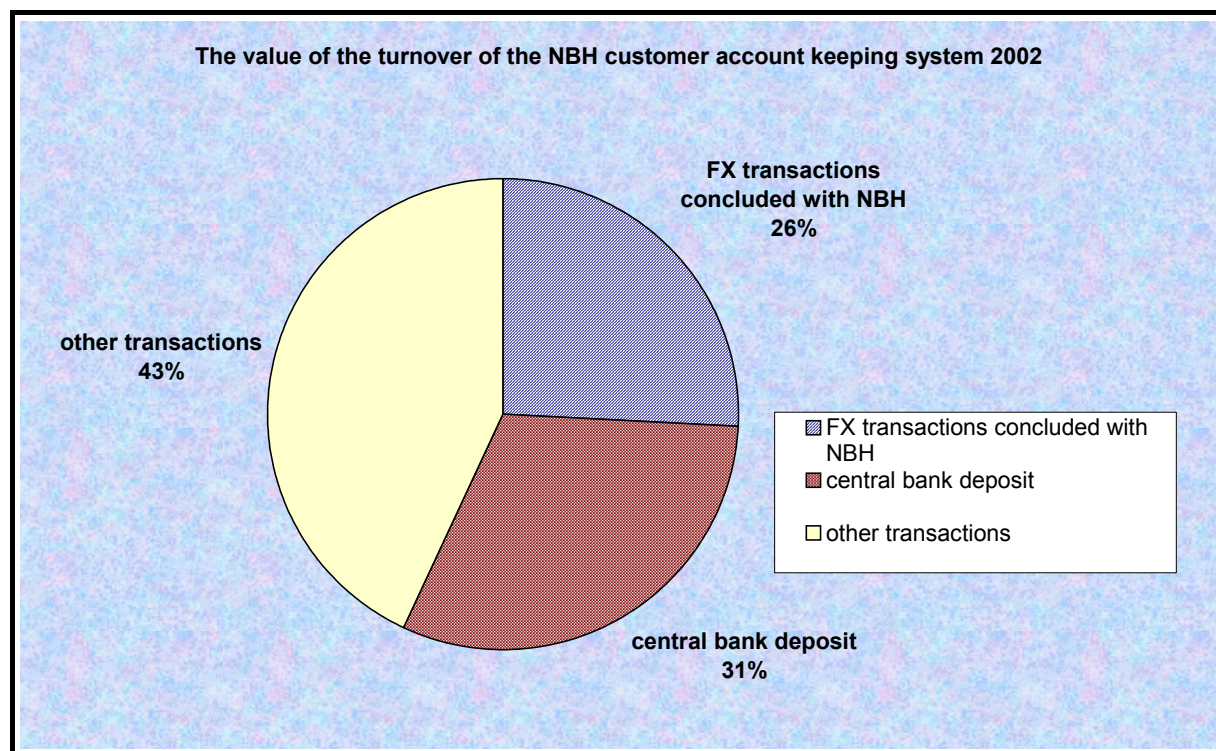


Chart 23

### 2.3. Securities settlements

The settlement of the equity, government security and futures trading of the Budapest Stock Exchange, the futures trading of the Budapest Commodity Exchange and the OTC government paper market transactions is concluded by KELER Rt. The total value of the three markets in 2002 was HUF 28.9 trillion, by 16.8 percent (HUF 24.7 trillion) higher than in the previous year. In 2002 the drop in the turnover of the Budapest Stock Exchange experienced in 2001 ceased (the turnover in 2001 plummeted to 39.9 percent of the previous year's value), and trading rose by 13.3 percent. OTC turnover is continuously increasing, although at a declining rate (33.4 percent and 17.8 percent, respectively). Futures trading indicates a 10.4 percent increase following a 26.3 percent decline in the previous year. These tendencies are shown in the chart below.

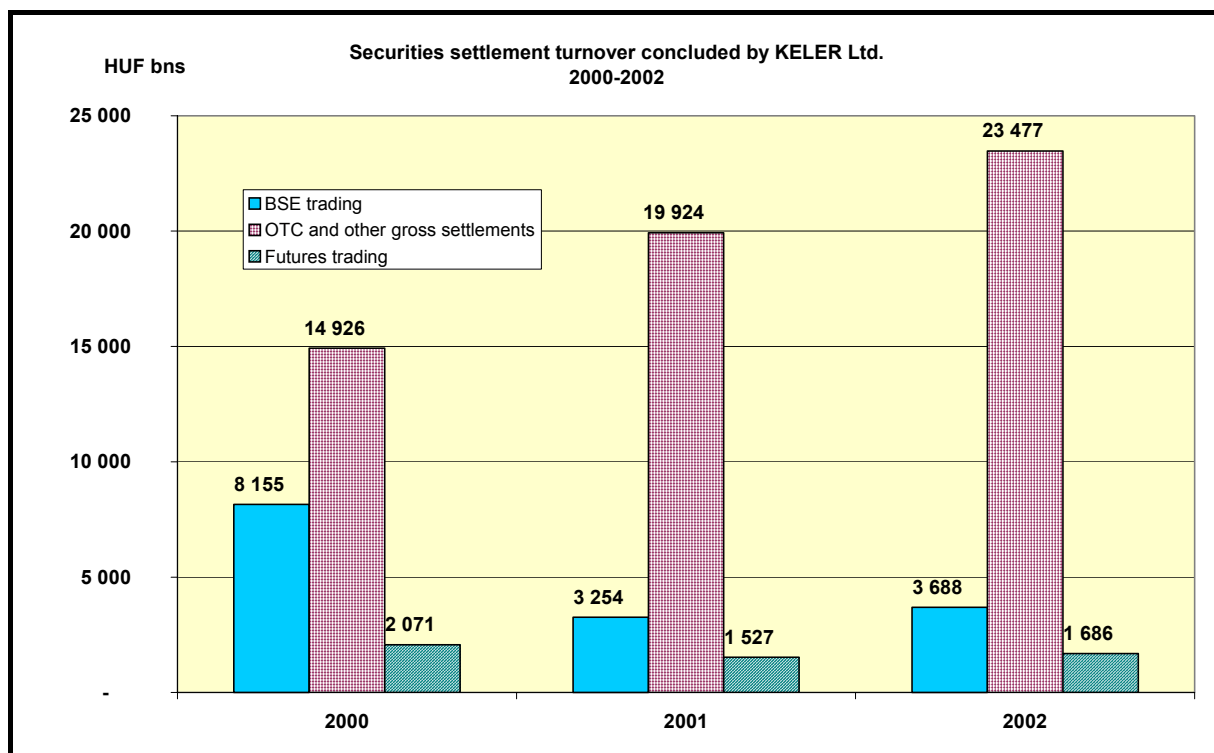


Chart 24

### 3. Management of liquidity in the different payment systems

The source of liquidity in the payment systems is composed of the account balance with the central bank and intraday credit limit against collateral. The proportion of daily liquidity over payment turnover has drastically changed in the last three years. The level of mandatory reserves declined, credit limits increased, as of mid-2001, however, the combined growth in the two liquidity components lagged considerably behind the daily average increase in payment turnover. This development is demonstrated in the chart below.

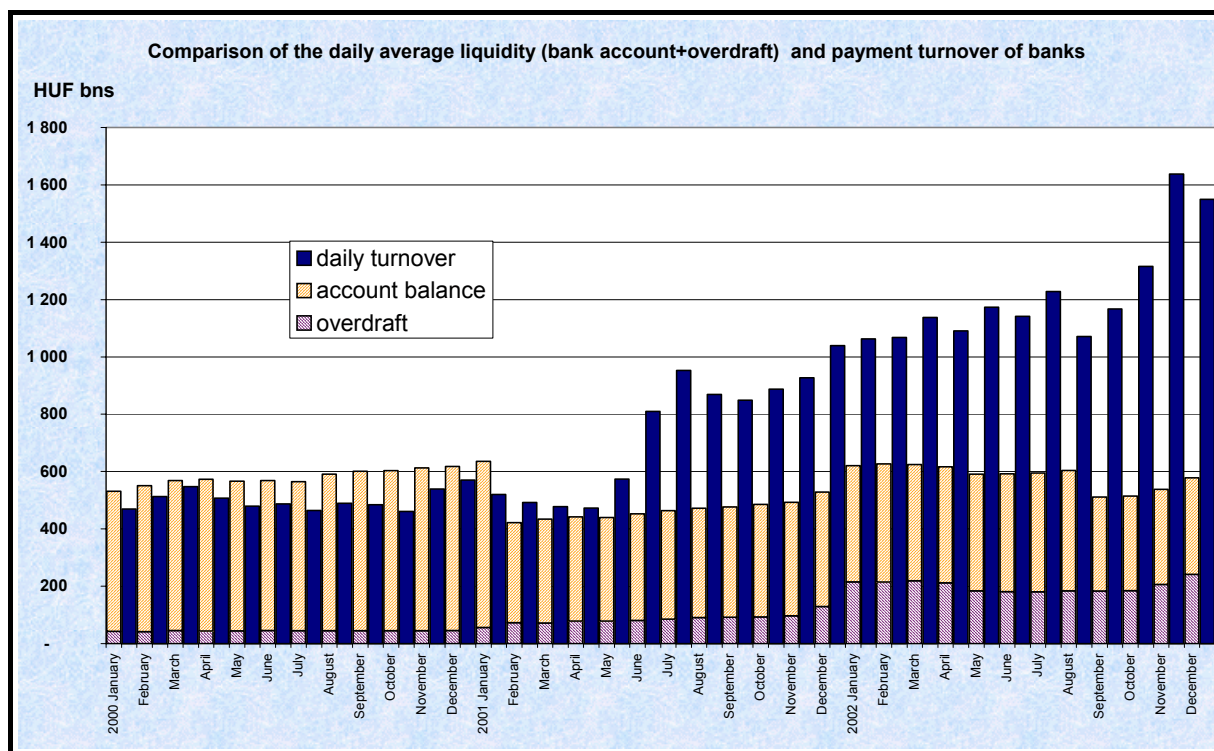


Chart 25

The average value of the daily initial intraday credit limit of banks was HUF 200.7 billion in 2002, compared to the daily HUF 85.5 billion on average in 2001. The amount of the limit is drastically fluctuating during the year and is increasing in the last months of the year. The fluctuation during the year is more robust than experienced in the previous years. The development of the daily initial credit limit is shown in the chart below.

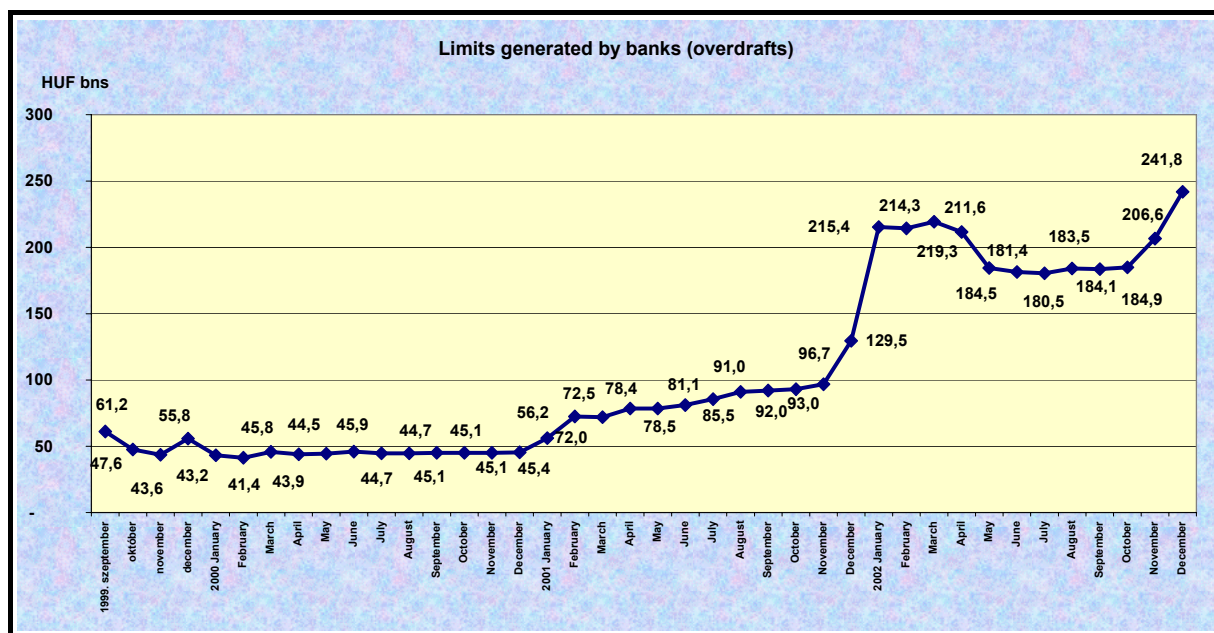


Chart 26

The daily payment turnover amounted to the double of the value of the daily average cover in 2002, whereas in 2001 this value was the 1.49-fold. (The value of the indicator equals one if

the value of daily debits is equal to the liquidity available.) Monthly fluctuation of coverage is demonstrated in the chart below (excluding Hungarian Treasury, Hungarian Post and NBH).

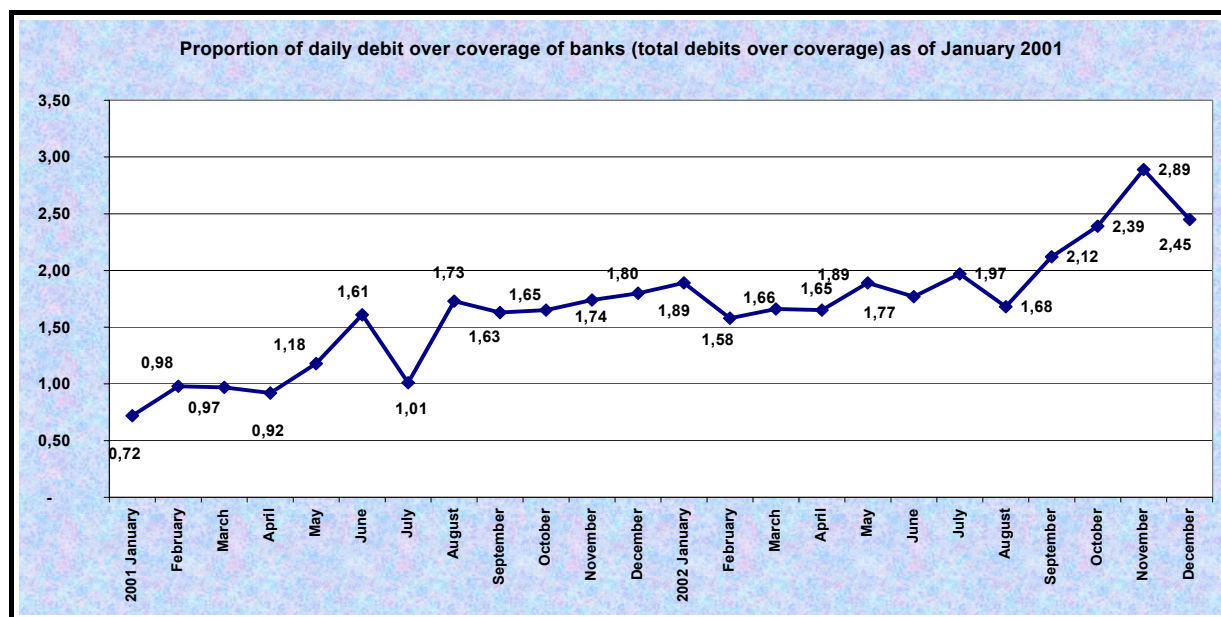


Chart 27

Should a bank not repay the intraday credit line drawn during the day on account of the limit by the end of the day, the central bank will extend an automatic overnight credit collateralised with securities. The annual turnover of the end of the day credit disbursement in 2002 was HUF 597.8 billion, compared to HUF 202.2 billion in 2001, a 2.95-times increase. Monthly fluctuation of the end of the day credit extended is demonstrated in the chart below.

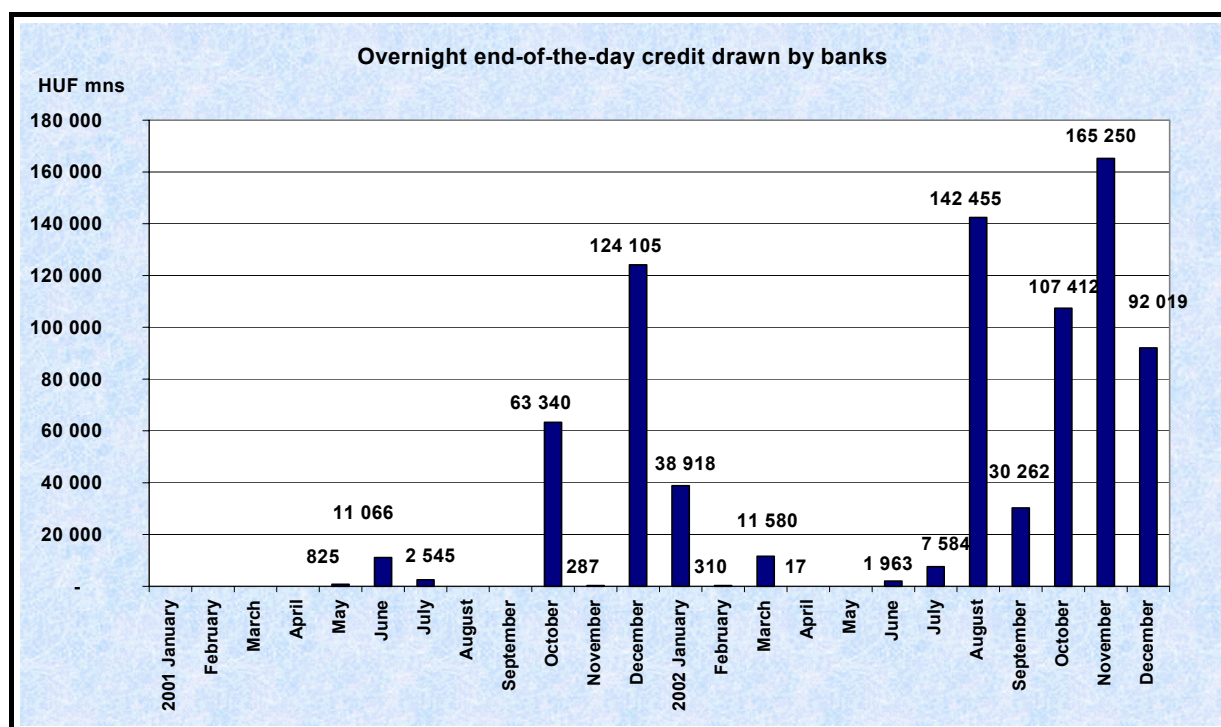


Chart 28