

Miklós Luspay and Annamária Madarász: The effects of the introduction of intraday clearing on turnover in Hungarian payment systems*

This article investigates how turnover has changed in the Hungarian payment system over the almost 18-month period since the introduction of intraday clearing (2 July 2012). A development exercise of a similar scale took place in Hungarian payments when VIBER was introduced in 1999, which allowed the central bank to estimate the effects on payment turnover and bank liquidity in preparation for this project. This article once more poses the questions most frequently encountered during the development project and offers answers based on the experience available today. Even before the introduction of intraday clearing, it was clear that this new clearing system would be beneficial for retail and corporate clients alike, but it is only now, after more than a year, that we are able to assess the changes in turnover and the effects on liquidity. This article presents the types of transactions that have moved from VIBER to the intraday clearing system and the extent of such, and it also looks at how the agents of the Hungarian banking system have grappled with the liquidity aspects of the introduction of the new system and what additional mechanisms are available to them to improve their liquidity.

A BRIEF DESCRIPTION OF THE HUNGARIAN PAYMENT INFRASTRUCTURE

Interbank payments are essentially transacted via three clearing and settlement systems in Hungary: the Real-Time Gross Settlement System (VIBER), the Interbank Clearing System (ICS), and the securities clearing and settlement system operated by the Central Clearing House and Depository (KELER) Group. Transactions in the latter are connected to securities trading, which was not affected significantly or directly by the introduction of intraday clearing and is therefore not addressed in this article.

VIBER is a real-time gross settlement system operated by the MNB, which primarily serves the purpose of clearing high-value and time-critical payment transactions. Forint-denominated and foreign currency payments, the cash side of capital market transactions and other urgent, time-critical customer transactions (such as home purchase payments) are cleared in this system. The clearing and settlement of transactions is not separated in the system. The system is real-time, therefore if the funds are available (gross principle), the

transactions are executed finally and irrevocably, in central bank money (on payment accounts managed by the MNB).

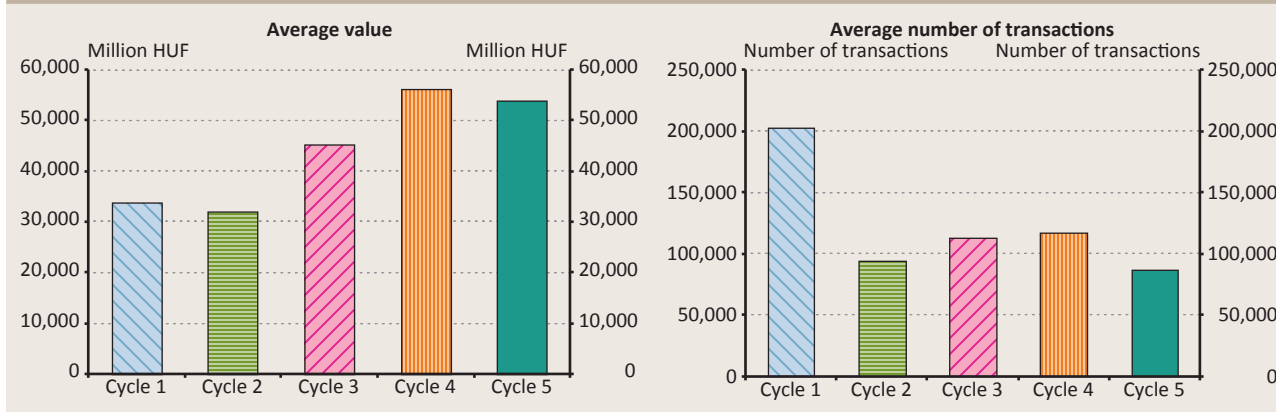
ICS is a domestic low-value gross payments system operated by GIRO Zrt.; the transactions are submitted to the system, and thus accounted for, in batches. The gross principle of operation means that credit risk is not incurred in the clearing process, since transactions submitted by the participants are cleared only up to the amount of funds available. In ICS, the clearing and the settlement of transactions are separate. ICS “merely” performs the clearing of the payment transactions (determining the mutual payment positions of the banks), whereas settlement (the actual funds transfer) is the responsibility of the MNB as settlement bank. Under the standard conditions of overnight clearing, settlement takes place in the MNB’s InFoRex account management system. If items are queued due to lack of funds or if the participants submit the message late (after 1:00 am), clearing is completed in an extraordinary clearing phase. Settlement for this phase then takes place in the morning in VIBER. Consequently, ICS as payment system is dependent on the MNB’s systems at three points of the process: it receives the participants’ liquidity data from the MNB (in the evening); the items from overnight

* The views expressed in this article are those of the author(s) and do not necessarily reflect the official view of the Magyar Nemzeti Bank.

Chart 1

ICS intraday turnover figures per cycle

(July 2012–September 2013)



clearing are settled in InFoRex (in the morning, before start-of-day in VIBER) and its transactions cleared in the morning (i.e. transactions that were not cleared overnight due for instance to queuing) are settled in VIBER.

Introduced in July 2012, the new ICS intraday clearing system offers five cycles during the day for clearing transactions instead of the earlier overnight clearing solution.¹ In the new clearing arrangement, clearing and settlement continue to be distinct processes. In the past, when only overnight clearing was available, the transactions were only completed the following morning, whereas the new system now offers the possibility for executing low-value payments (primarily retail and corporate transactions) within the day. In addition to significantly accelerating payments in Hungary, the new system has, for certain transactions, created a sort of competition for VIBER owing to its lower transaction fees and faster administrative processes among other factors.

In the following section, we present ICS intraday turnover values and quantities across a day and a month, discuss how members have adapted to the newly introduced system and what opportunities they have for further adjustment (in terms of liquidity management). We investigate whether there are any signs to confirm banks' preliminary concerns regarding the liquidity difficulties expected from the intraday clearing system, whether there have been any symptoms of this, such as queues, rollovers from one cycle to another or non-executed transactions. We shed light on the effects of the deployment of intraday clearing by addressing the questions frequently asked prior to introduction.

TURNOVER

How did turnover change within each day and within each month after the new clearing arrangement was introduced in ICS?

Clearing in ICS takes place in five cycles, at predefined points of time during the day. Following the introduction of intraday clearing, almost half of all ICS items and four fifths of the total value were executed in the intraday clearing system. Transactions submitted on paper, direct debits and the outgoing items of the Hungarian State Treasury continued to be executed in overnight clearing. Daily turnover is spread over the cycles unevenly, with major differences in terms of value as well as quantity. The average number of items is the highest in the first cycle, when high-value and low-value transactions are executed. One reason is that, for example, this is the cycle for clearing those retail transactions that the banks had accepted after their deadline for processing within the particular day and forwarded to the payment system only on the following day; forward-dated orders are also cleared in this cycle. In contrast to the first cycle, the last two cycles have much lower quantities and significantly higher values. This is presumably due to the fact that a large portion of high-value (primarily corporate) transactions and regular tax payments (e.g. VAT, tax advances) are executed in the 4th cycle, which is clearly demonstrated by the fact that this is the cycle with the highest average transaction value (Chart 1).

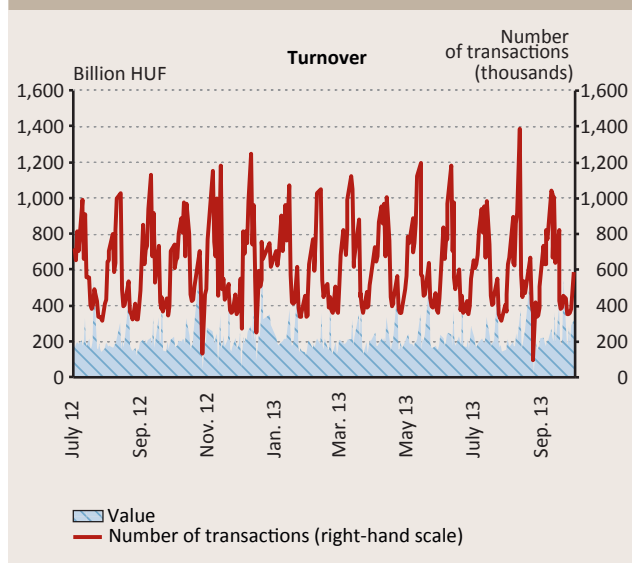
ICS intraday turnover features major outliers from time to time, mostly on the days when taxes and contributions are paid.

¹ Cycles and post-cycle settlement periods: Cycle 1: 06:30 am – 08:30 am (08:30 am – 09:40 am), Cycle 2: 08:30 am – 10:30 am (10:30 am – 11:40 am), Cycle 3: 10:30 am – 12:30 pm (12:30 pm – 1:40 pm), Cycle 4: 12:30 pm – 2:40 pm (2:40 pm – 3:50 pm), Cycle 5: 2:40 pm – 4:30 pm (4:30 pm – 5:55 pm).

Compared to other days, banks' debit turnover increases on the 12th and 20th² of each month (or if these are non-banking days, on the first following workday) across all five cycles due to the payment of tax advances, with the highest turnover being transacted in cycles 4 or 5. The highest outgoing turnover figure after the introduction of intraday clearing was observed on 20 December 2012, which was attributable to the deadline for topping up advance tax payments. In intraday clearing, banks are unable to estimate in advance the amount of turnover in their system for a particular day or a particular cycle. This may represent a problem primarily on days with intense movements of funds, because if banks do not have sufficient liquidity, they have to obtain the missing amount. The situation may be particularly critical on days when taxes are paid, because on such occasions every actor across the entire sector is making tax payments to the Hungarian State Treasury, which represents a liquidity outflow from the system that might cause hiccups in liquidity management for banks (making it difficult for them to obtain funds from one another). Major fluctuations in ICS intraday clearing turnover may reach as much as HUF 300 billion on days when tax is paid.

Chart 2
ICS intraday daily turnover

(July 2012 – September 2013)



For what VIBER transactions would intraday clearing serve as a realistic alternative?

Following the introduction of ICS's intraday system, there is no crucial need to use VIBER, the Hungarian high-value payments system, whenever the parties to a time-critical transaction wish to submit it for execution within the day. In the new system, the payment orders submitted electronically by banks' clients must be executed within no more than four hours.³ However, intraday clearing only offers a genuine alternative to transacting via VIBER only for certain types of transactions, because certain types (foreign exchange market transactions, interbank transactions) have specifics limiting their prompt execution in VIBER. The difference between the diverging "rationales" for ICS and VIBER is demonstrated clearly by the fact that the annualised average item value was approximately HUF 780 million in VIBER and HUF 250,000 in ICS in 2011.

The central bank does not have clear information about which items were cleared in ICS rather than VIBER after the implementation of intraday clearing; therefore, we had to resort to a simplified estimate in an effort to arrive at this information. In our analysis, we have reduced VIBER turnover to transaction types which may potentially shift to ICS and compared those to one of the transaction types in intraday clearing (the simple credit transfer). We assumed that if there are transactions that have shifted from VIBER, then these are very likely to have been VIBER customer transactions, seen in ICS as simple credit transfers.⁴ Accordingly, we chose the simple credit transfers from the entire intraday turnover in ICS for our analysis, since this is the transaction type most easily matched to specific VIBER client items. In our comparison, we only took into consideration the executed transactions among all the simple credit transfers, i.e. we subtracted items rejected from transactions initiated. In this way, we arrived at the actually cleared and executed intraday ICS turnover.⁵ Our analysis considers the highest value band of over HUF 100 million separately, because this is the segment that corresponds best to VIBER's customer transactions of considerably higher average value. We assume that if there is a shift from VIBER turnover to intraday clearing, then it will have primarily involved these items.

² With the exception of one or two minor public finance revenue items, these two days are stipulated as payment deadlines; personal income tax and VAT due dates are both on this day.

³ This only holds true if the credit institution managing the client's account executes the transaction by the deadline and in the manner stated in the general terms and conditions.

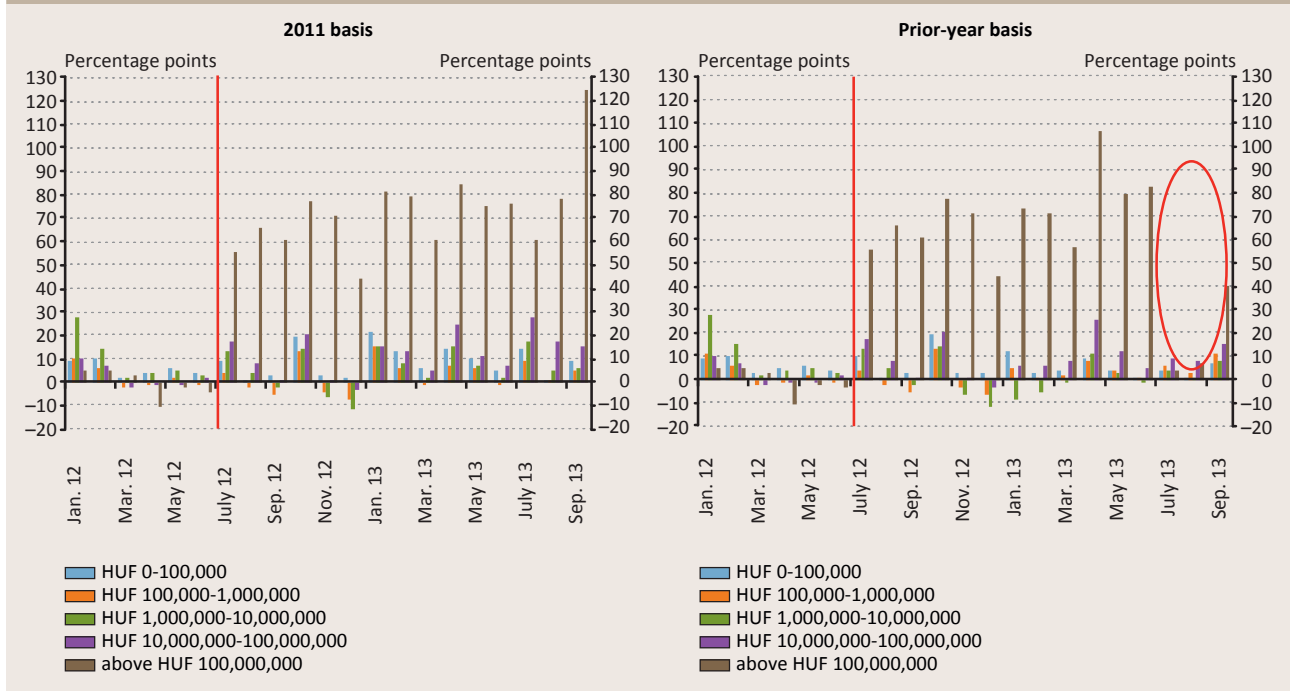
⁴ We are able to make this simplification in the light of the special nature of the rest of the transaction types.

⁵ We could have investigated the initiated transactions separately, since the likelihood of error is always higher when a "new system" is put to use, in this case when banking transactions are submitted to intraday ICS rather than VIBER, resulting in a higher ratio of rejected items. Initiated transactions may express "intention", and the analysis of intentions may also be significant following the introduction of an intraday clearing system. We did not opt for this alternative due to the low rate of rejection.

Chart 3

Simple credit transfers in terms of the 2011 basis and the prior-year basis

(January 2012–September 2013)



How did ICS turnover change after the introduction of intraday clearing?

The analysis reveals that after the launch of intraday clearing the total value of simple credit transfers in ICS grew significantly from the 2011 basis levels in the above HUF 100 million value band. Prior to the introduction of intraday clearing, ICS's simple credit transfer turnover for items exceeding HUF 100 million practically decreased in the period January to July 2012, after which the rate of value growth was between 40 and 120 percentage points in the period July 2012 to September 2013. Comparing the turnover figures to the previous year as a basis, we find that turnover in July and August 2013 was nearly equal to the turnover in the year of introducing IG2 (Chart 3).

The number of transactions in excess of HUF 100 million also grew significantly after the introduction of intraday clearing. The only difference identified by the analysis of the number of items versus the transaction values is that the introduction of intraday clearing had a smaller impact on the number of items exceeding HUF 100 million (growth between 20 and 60 percentage points). This clearly demonstrates that the expansion was generated by the large-amount, high-value transactions, which, knowing the average size of VIBER customer transactions, once again confirms the assumption that the increase in ICS turnover in 2012 was caused by a shift of some of VIBER turnover to that system (Chart 4).

The process of shifting is presumed to have mostly ended by the middle of 2013 and a similar degree of turnover expansion is not expected in the future. An analysis of simple credit transfers in excess of HUF 100 million reveals that turnover continued to expand considerably until June 2013, but grew more moderately afterwards. This may mean that by mid-2013 banks and clients will probably have moved the items for which intraday clearing is a genuine “replacement product” for VIBER to ICS and that this led to a slowing in the rate of growth (Charts 3–4).

In all probability, HUF 600–1000 billion in turnover value shifted per month from VIBER to ICS intraday clearing. Analysing the shift from VIBER turnover, we looked at trends in changing turnover in previous years to identify how the value and number of transactions in excess of HUF 100 million would have changed, *ceteris paribus*, if intraday clearing had not been introduced (Chart 5). This involved identifying the growth in ICS turnover in 2010 and 2011, which then served as the basis for our calculation of how much turnover would be “justified” in 2012. The results indicate that ICS turnover predicted by earlier trends would have been below the turnover actually realised by the system. In terms of value, the difference between estimated and actual turnover appears to show HUF 600–1200 billion surplus over the 2010 trends, whereas the figure on the 2011 basis is around HUF 600–800 billion. This means that the introduction of intraday clearing has caused turnover in ICS to exceed by this amount the turnover

Chart 4
Number of simple credit transfers on a 2011 basis and a prior-year basis

(January 2012 – September 2013)

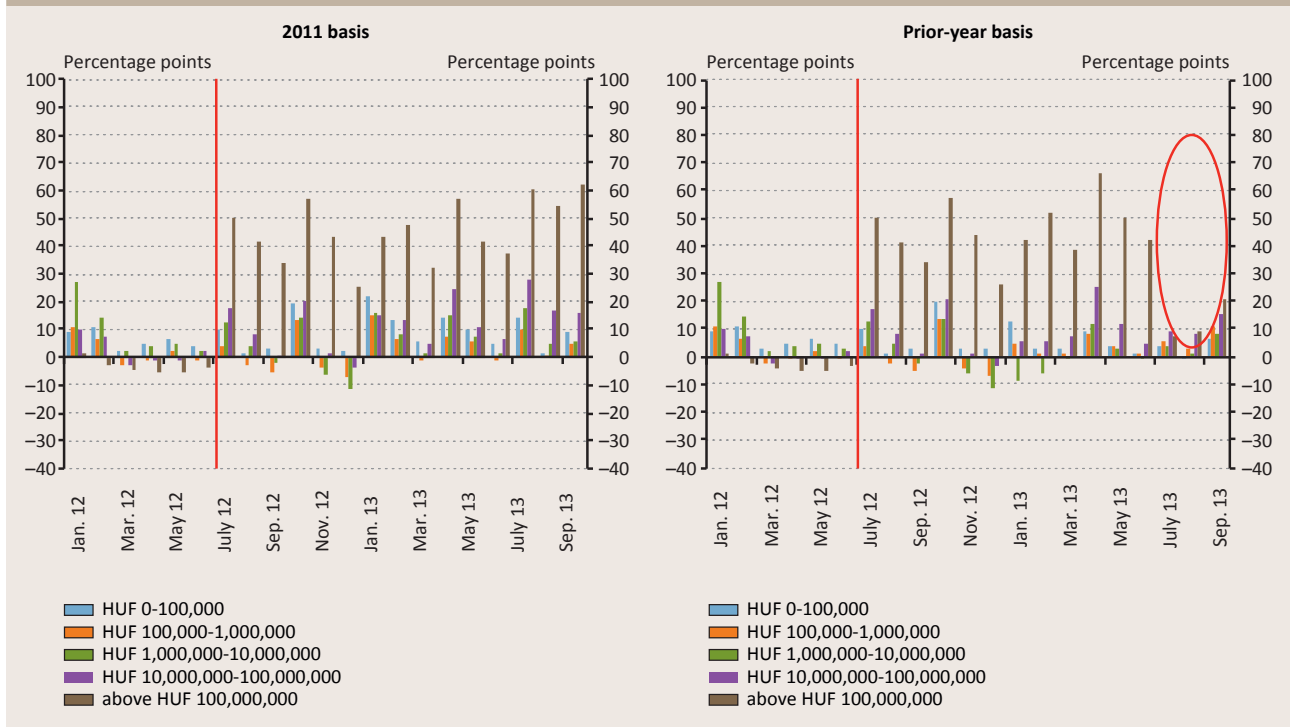
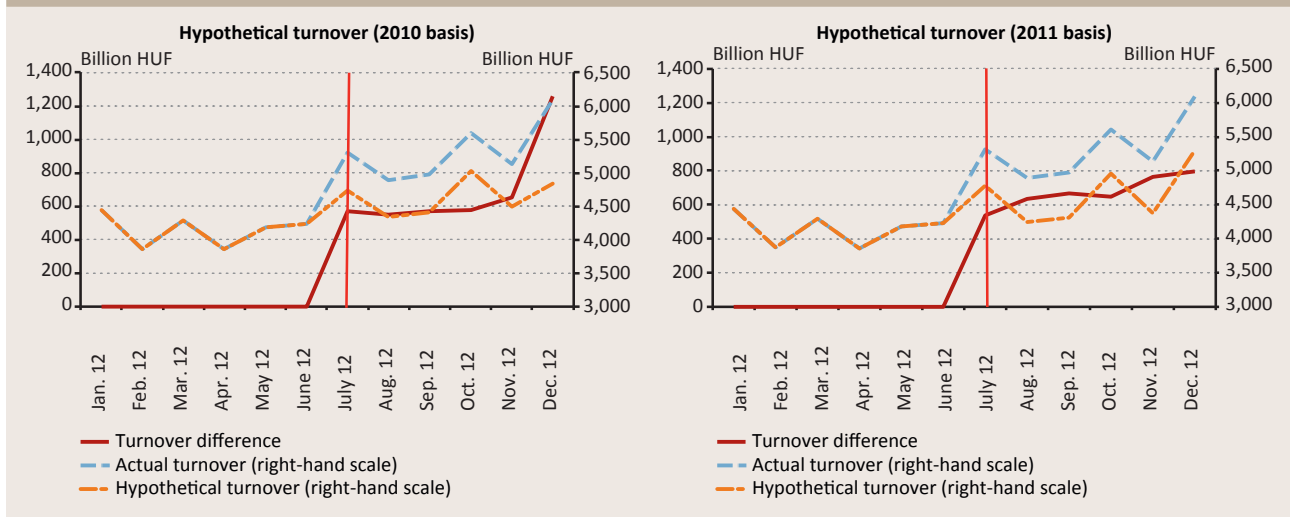


Chart 5
Actual and hypothetical ICS intraday clearing turnover in the case of transactions in excess of HUF 100 million

(2012)

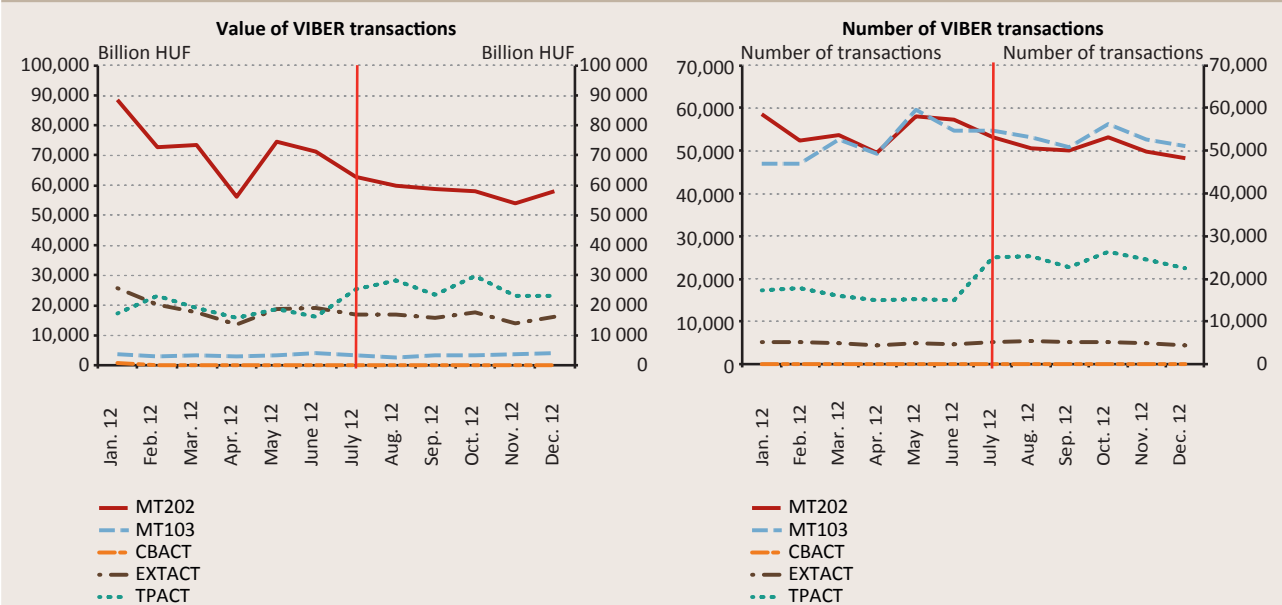


forecast from trends in prior years. Assuming average monthly turnover growth of HUF 700 billion, annual growth in turnover will exceed HUF 8000 billion and if all this represents shifts from VIBER, then a similar amount of decrease will have materialised in VIBER.

The shifts due to the introduction of intraday clearing do not have a marked effect on the level of turnover in VIBER (Chart 6).

The customer transactions presented above represent only a smaller part of VIBER turnover. The larger part of VIBER turnover (approximately 60 per cent) comprises interbank transactions. These are the transactions embodying the forint side of interbank transactions (swaps, depots). DVP items, which represent the execution of the forint side of securities transactions, account for 15 per cent of total transaction value. By contrast, customer transactions account for only 5

Chart 6
Changes in VIBER turnover per message type
 (2012)



Note: MT202: Interbank transactions, MT103: Client items, CBACT: Transaction for manually posted central bank transactions, EXTACT: Automatically posted central bank transactions, TPACT: Securities transactions posted by KELER.

per cent of total VIBER turnover, while in terms of the number of transactions they are the predominant transaction type, accounting for nearly 40 per cent of total volume. It is primarily high-value retail and corporate transactions that are executed as customer transactions in VIBER. The average item size of these transactions (around HUF 100 million) is considerably below the average item sizes of interbank transactions (around HUF 1.2 billion) and DVP items (around HUF 670 million). These items, which are low-value from a VIBER perspective, are the ones that may potentially appear, and have indeed appeared, in ICS as simple credit transfers.

In summary, the total value and the number of items in excess of HUF 100 million have both grown in ICS since the introduction of intraday clearing. This clearly indicates that growth in ICS turnover originated from the high-value transactions, which – recognising the average size of VIBER customer transactions – confirms the assumption that the shift of some of VIBER turnover was the underlying cause in the increase in this segment of ICS turnover. However, while there is significant growth in terms of value (nearly 140 percentage points over the 2011 basis), the increase in terms of the number of items is much smaller (70 percentage points). Nevertheless, the items already shifted or potentially shifting

in the future will not have a substantial effect on turnover in VIBER in terms of either value or quantity.

What might explain the shift of some of VIBER turnover to ICS?

One reason for the shift may be the significantly lower fee charged by banks to their clients for submitting transactions to ICS as opposed to VIBER. At most banks, VIBER fees are an order of magnitude higher⁶ than the fees charged for simple credit transfers,⁷ making it far cheaper for clients to submit to ICS rather than VIBER any transactions that are urgent but for which the 4-hour deadline for execution is still sufficient. This leads to the conclusion that clients may have had financial reasons for switching some transaction types previously submitted to VIBER over to ICS after the launch of intraday clearing. It is of course possible that banks negotiate non-standard fees with some of their clients, fees that are lower than the published prices. Even so, it would be hard for these prices to compete with the fees charged by banks for ICS services.

Another reason for the shift might lie in the fact that it may be technically easier and faster for banks to submit certain items to ICS. Part of the transaction clearing process that

⁶ The minimum fee per transaction is approx. HUF 10-13,000 for retail clients and HUF 10-20,000 for corporate clients.

⁷ The minimum fee per transaction is approx. HUF 100-300 for retail clients and HUF 100-500 for corporate clients.

used to be limited to VIBER due to the time constraints can now be executed in ICS as well, and while VIBER client items are processed manually at many of the banks, ICS is fully automated at most of banks, which speeds up processing.

Banks' liquidity management considerations may also underlie the shift. If ICS rather than VIBER is selected for clearing items by setting the gross parameter,⁸ the liquidity effect may be positive, since some of the liquidity (incoming transactions) will be credited within a maximum of 10 minutes after GIRO's end-of-cycle removal of funds. This would benefit the bank, as the case may be, since it would need to cope without the liquidity for only the duration of clearing (around 10-15 minutes). The liquidity impact might be even more favourable if the parameter were set to net funds. In this case, ICS will take liquidity only to the extent that debit turnover exceeds credit turnover. In terms of a bank's liquidity therefore, it may appear a rational solution to submit certain items to ICS instead of VIBER, with the parameter set to net funds request, which may explain some of the shift of VIBER turnover. This last liquidity consideration is unlikely to serve as sufficient motivation for the members of the clearing systems, since only two clearing members have selected the net and two the net+ funds request parameters since the launch of intraday clearing, with the rest opting for the gross parameter setting (this is covered in depth later in this article).

What type of transactions may boost ICS turnover further?

The increase in intraday clearing turnover may be attributable to a number of other factors in addition to the shift from VIBER. In some cases, the use of intraday clearing may have resulted in the integration of many transactions previously executed in cash. These are items where the most popular and fastest solution used to be cash in order to make the payments within the same day. With the introduction of intraday clearing, however, these transactions can now be executed in the payment system within the same day. Still, these potentially shifting items are presumably low-value transactions, since it is only in the case of these transactions that high VIBER charges would have prompted a decision to carry out the transaction in cash (as VIBER would have facilitated intraday execution as well). Nevertheless, the analysis of the existing ICS data does not provide evidence of this type of shift.

Another factor driving the increase in turnover may be the fact that clients used to cluster their transactions in a single bank to achieve faster and cheaper execution. Many, especially corporate clients, selected their account manager so that their incoming and outgoing payments were on an

intra-bank basis, i.e. their own account manager should be the same as that of their partners. This would have been a rational decision in terms of cost as well as liquidity. After the introduction of intraday clearing, the former cost and liquidity advantages were in part lost or at least considerably reduced and it is no longer necessary to select a bank as account manager for reasons of payment rationalisation, which opens up the possibility for switching banks motivated by the bank's other services. After the introduction of intraday credit transfers, transactions between banks can also be executed within the same day, quickly and considerably more cheaply than before (VIBER).

LIQUIDITY

What features of intraday clearing can help banks' liquidity management and how?

The liquidity impact of intraday turnover in ICS on the entire payment system (its liquidity requirement) is highly dependent on the choice of liquidity parameters by the clearing members. In the intraday clearing system, clearing members are required to make available on their account with the MNB, for the period specific to the particular cycle, the funds necessary for settling the payments in the given cycle. Each month, clearing members can select whether they wish to provide the funds on the basis of (1) their net position vis-à-vis clearing members, as calculated by GIRO Zrt. for each cycle; or (2) their total debit/outgoing turnover (on a gross basis) or (3) as a combination of the aforementioned two options, on a net plus a given amount (net+) basis. If the gross funds parameter is set, then the items will be definitely cleared, regardless of the behaviour of the other clearing members, whereas in the other two cases the clearing will be dependent in part on the funds of the other clearing members, via the items received from them.

Beyond a choice of funds collection parameters, GIRO offers the banks a number of other means for making liquidity management easier. ICS accepts the transactions it receives after several rounds of validation and then clears them within the cycle boundaries (by a predefined time). After processing the transactions received for a given cycle, GIRO informs the clearing members of the liquidity required for the given cycle. On its account in VIBER, GIRO initiates the collection of the funds against the accounts of the clearing members also in VIBER. Prior to submitting the order for collecting the funds, ICS notifies in advance the clearing members of the liquidity required for the given cycle (their gross and net positions), which may help the clearing members in settling the turnover of the particular cycle in the event of a liquidity shortage.

⁸ The parameters will be discussed later.

Furthermore, at the end of the last cycle, ICS sends a circular message to the clearing members, informing them of the total-bank lack of funds figure. Also useful for the clearing members in managing their liquidity is the InterGIRO monitor, in which they can follow at all times the statuses of the orders submitted by them. The system makes real-time data available to the clearing members at all times, helping them manage their liquidity. In addition, VIBER has tools supporting intraday item and liquidity management (SWIFT inquiries, VIBER monitor, etc.). VIBER's most important tool for supporting liquidity is the blocking of not-yet blocked central bank eligible securities and thus increasing the intraday credit line.

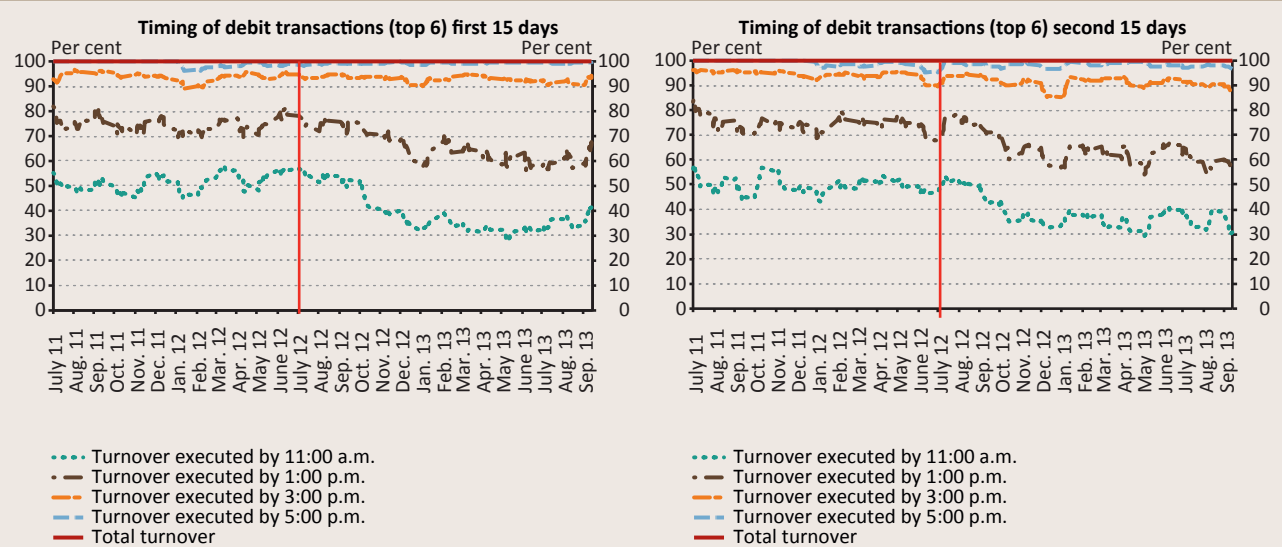
The liquidity that banks have for payments primarily consists of the current account balance and the credit line made available for up to the total of the securities blocked for the benefit of the MNB. The credit line is used if the bank's current account balance does not cover its outgoing payments (negative current account balance). In addition to the above two sources of liquidity, banks can also rely on incoming items as contribution to their funds. This is additional for the banks, since a bank experiencing a potential liquidity shortage will release its outgoing items only if it has accessed sufficient funds from its partners (incoming items). This behaviour can be analysed by inspecting the timing that the banks follow in submitting their items. If the banks wait for transactions to accumulate, then item submission behaviour is postponed to a later time, which offers them greater leeway to transact within

the limits of the amount of liquidity available (the total of the current account balance plus the credit line).

Has the introduction of the new clearing method caused liquidity difficulties in the payment systems?

Introduction of intraday clearing brought about a major change in the intraday item and liquidity management of credit institutions, but the transition did not generate liquidity problems. Following the introduction of intraday clearing, Hungarian credit institutions must manage the transactions of two clearing systems at practically the same time. In addition, intraday clearing settlement is a scheduled, i.e. time-critical process, which has posed an additional challenge for credit institutions actively managing their liquidity and their items in VIBER. In the initial period, the participants needed some time to adapt to the new operating conditions. If a system member does not have sufficient liquidity in VIBER during an ICS cycle (the transactions are executed ultimately in VIBER), then its transactions will roll over into the next cycle. Such temporary roll-overs of transactions occurred more frequently in the initial period following the launch of intraday clearing and only sporadically after six months, in 2013. Roll-overs occurred most frequently in the first cycle. These events represented merely momentary liquidity shortages, which is illustrated by the fact that all transactions rolled over were cleared in the next cycle (the roll-overs did not progress down a series of cycles). Rolling over from cycle to cycle does not in and of itself represent

Chart 7
Timing of debit transactions* in VIBER in the first and the second half of each month
 (July 2012–September 2013)



* As of 1 January 2012, VIBER operating hours were extended by one hour.
 Note: Item timing behaviour on the basis of the 10-day moving average of transactions.

a problem or jeopardise the stability of operations, but it is a sign of potential problems in the liquidity management of certain system members. The analysis of the specific cases revealed that each and every one of the momentary liquidity shortages and instances of rolling over would have been avoided if the system member had blocked some more of the securities available for blocking in their balance sheet, adding to its credit line available for payments. Thus, roll-over events were always motivated by a temporary liquidity shortage in the period after the introduction of intraday clearing. The reason was most likely the fact that intraday liquidity management (e.g. the management of central bank credit lines) and item management (e.g. the submitting and timing of items) had to be adapted to the time-critical VIBER items as arising from intraday clearing, which is confirmed by the analysis of banks' behaviour in the timing of their items.

The analysis of banks' timing behaviour in VIBER reveals that the banks now place considerably greater emphasis on liquidity management than in the period before the introduction of the new system and that the financing role of incoming items has also grown. This is demonstrated by the fact that a significantly larger proportion of outgoing items is now executed later as compared to previous periods (Chart 7). This applies to participants with high turnover and with low turnover in VIBER, although the change is more striking in the case of the major participants (the top 6 banks).

In the period since the introduction of intraday clearing, there has been sufficient liquidity in the payment systems both at the total-system level and at the level of the individual banks. Liquidity shortages have only occurred sporadically since the introduction of intraday clearing and only temporarily, within the day. This was due primarily to the fact that the banks hold a considerable free portfolio of securities in their balance sheet which they can block for the benefit of the MNB and they can achieve immediate intraday liquidity by blocking these. If the current account balance, which incorporates the items already received as of the given point in time, is not sufficient for executing the payments, then the current account balance may also take a negative value up to the limit of the credit line (intraday lending, overdraft facility). If a bank does not have a sufficient blocked balance to cover the settlement of a cycle as of the moment of funds collection, then the transaction will remain unexecuted until sufficient volumes of incoming transactions arrive or the bank has sufficient securities blocked.

The ample liquidity in the system is clearly demonstrated by the fact that the overwhelming majority of the banks has asked GIRO to set the funds collection parameter to gross. Accordingly, GIRO "collects" the total ICS debit turnover from the bank's account in each cycle, which demonstrates, given

the minimal level of item roll-overs, that the banks have the liquidity required for settlement. If this situation were to change, the banks could still opt for the net parameter to settle their intraday clearing transactions. In such a situation, however, they would run the risk of settling only a part of their transactions in the event that a liquidity shortage caused funds collection to fail at one of their partners. The positive impact of setting the net parameter can be observed only if the bank has incoming items too, not only outgoing ones. The favourable impact of the net parameter as an option is lost if there are no incoming items.

Overnight clearing turnover in ICS is marginal in comparison with VIBER turnover and liquidity. However, there have been several instances on tax payment days of the intraday clearing turnover exceeding more than 6 per cent of total bank liquidity. The analysis of the distribution of intraday turnover across cycles reveals that transaction values gradually increase towards the end of the day, as a result of which turnover is the highest in cycles 4 and 5. This does not cause a problem on an "average" day, as it does not affect the total liquidity in the system. However, this is true only to a limited extent on tax payment days, when there is a major transfer of funds (transfer of liquidity) to the Hungarian State Treasury, resulting in the removal of these funds from the system. If credit institutions are unable to calculate in advance the volume of outgoing items they are to expect, then they will have only about 1.5 hours to obtain the missing liquidity after the end of the last IG2 cycle upon the end of the day in VIBER (the last intraday clearing cycle is executed usually at around 4:30 pm). Since the tax payment days tend to "burden" the liquidity of the largest VIBER players the most, they are the ones in need of obtaining liquidity or, if they have sufficient liquidity merely to execute their own items, with their current account balance not falling below zero by the end of the day, the end result will be that they will be unable to lend to other banks due to a lack of surplus liquidity. The situation is further aggravated by the fact that tax payment days occur on or around the 20th of each month, a time when the banks are conducting the transactions at lower current account balances.

Since the introduction of intraday clearing, banks have exhibited a similar item submission behaviour in the second phase of the reserve period as in the first phase (Chart 7). Banks must adhere to the reserve level selected by them on average over a whole month, which offers them the opportunity to keep their end-of-day current account balances not permanently at the same level, which will evidently impact on the prevailing liquidity in the system. Most of the banks hold higher reserves in VIBER in the first half of the reserve period (i.e. they hold current account balances above the required level) and lower reserves in the second half of the month. In other words, they hold higher current account

balances in the first half of the month, as a result of which they have higher liquidity at an unchanged line of credit. In the second half of the month, the situation is reversed. The stability and liquidity in the system is demonstrated by the fact that the banks time their items in the second phase of the reserve period similarly to their timing in the first half of the month.

CONCLUSIONS

In the first period after the introduction of intraday clearing, some VIBER transactions shifted to the new clearing system, causing an increase in the total of ICS turnover on average by nearly HUF 700 billion per month. However, this “migration of items” did not have a negative effect on the operation of either VIBER or ICS. Since the shift in items applied to high-value transactions in terms of ICS, the change in the number of items was marginal in comparison with the change in total turnover. The most important reason for the shift was presumably the considerably different pricing applied by the banks to the two systems.

The introduction of intraday clearing in the Hungarian payment and clearing systems did not cause liquidity problems for the

system or the individual banks. This is attributable to the fact that the banks adjusted quickly to the new clearing method and that there continues to be ample liquidity available to them for the smooth execution of their payments, both at the level of the individual banks and the system as a whole. If the shifting trend continues to intensify and the liquidity demand on the system increases as a result, then banks would be able to select the net funds collection parameter in intraday clearing, to ultimately net out their incoming and outgoing payments for liquidity considerations. However, there is currently no need for this and, according to the central bank’s forecast, it will not be necessary in the future either.

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