

Zoltán Molnár: About the interbank HUF liquidity – what does the MNB’s new liquidity forecast show?*

Based on the decision of the Monetary Council of 6 September 2010, the MNB began publishing its HUF liquidity forecast. The central bank has been preparing forecasts on the liquidity of the banking system for internal use for a long time, but from now on it will share these with market participants on a weekly basis, before the MNB bond auction on Tuesday.¹

With this publication, the central bank tries to ensure – by supporting the liquidity planning of credit institutions – that the volume of the base instrument, the two-week MNB bond is as close to the ideal quantity as possible, i.e. to reduce the reliance of participants on the availability of the overnight loans and deposits of the central bank. The latter may divert the market interest rates from the level close to the base rate of the central bank. Publication may also reduce the uncertainty of liquidity managers in the banking system and encourage them to use the interbank markets more actively.

The MNB’s information advantage, which is the result of the existing institutional relations and the greater resources than those of the market actors, is another factor supporting the publication of the forecast. Although the central bank’s forecast cannot project the HUF liquidity of the banking system accurately, it still contains a considerable amount of additional information for credit institutions. With this publication, the MNB will disclose, at 10 o’clock on Tuesdays, before to the central bank bond auction, the average inter-bank HUF liquidity expected over the next week based on Tuesday.

INTRODUCTION

Apart from the lack of mutual trust of liquidity managers within the Hungarian banking system which has been present since the crisis, their current uncertainty relates to the aggregated liquidity shocks experienced by the banking system. The actors face unforeseeable external shocks from time to time, as a result of which the volume of system level HUF liquidity available for them changes. Publication of the central bank’s liquidity forecasts may contribute to reducing the uncertainties concerning these shocks.

In the first half of my article, I define the concept of interbank HUF liquidity and list the factors that influence its volume. I then explain how publication of the central bank forecast can support credit institutions and the methodology with the help of which the MNB may provide the best possible assistance. Finally, I compare the mistakes of the aggregated forecasts of the central bank and the

banking system, based on which the additional information of the MNB forecast may be quantified.

INTERBANK HUF LIQUIDITY – VOLUME OF THE CENTRAL BANK MONEY IN THE BANKING SYSTEM

The MNB uses the following definition for inter-bank HUF liquidity: the net HUF claims of credit institutions against the central bank, settled by the actors in central bank instruments. Credit institutions keep central bank money in their HUF current accounts², facilitating their daily payment turnover. The monthly average account balance must be equal to a pre-defined level, with which the actors fulfil their central bank reserve obligations, or in other words, the mandatory reserve.

At present, there is a large amount of structural liquidity surplus in the Hungarian banking system. This means that

* 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.

¹ The MNB’s liquidity forecast is available on the following website:

http://english.mnb.hu/Monetaris_politika/mnben_jegybanki_eszkoztar/liquidity-forecast.

² The larger credit institutions, which have access to the instruments of the central bank, keep their HUF current accounts at the MNB, while numerous other market participants keep their accounts at another corresponding credit institution.

ABOUT THE INTERBANK HUF LIQUIDITY – WHAT DOES THE MNB’S NEW LIQUIDITY FORECAST...

apart from the reserve fulfilment, market actors have surplus liquidity which is used for purchasing two-week MNB bonds under ordinary market circumstances, thus enabling the central bank to sterilise, i.e. to extract the surplus liquidity from the banking system week by week.³ Market actors earn the base rate of the central bank on both their account balance and MNB bond portfolio.

In addition, the central bank also offers overnight deposits and collateralized loans to the banking system which, apart from the reserve fulfilment, also support the daily liquidity management of credit institutions. However, interest on these instruments is less favourable for the actors, as it is the base rate-1 percentage point (bottom of the interest rate band) on deposits, and base rate+1 percentage point (top of the interest rate band) on secured loans.⁴ During the crisis, the MNB also introduced two-week and six-month collateralized loans for the purpose of managing the individual liquidity shocks of banks, although demand for these instruments has dropped to a minimum since the spring of 2009. Consequently,

interbank HUF liquidity = *balance of the current accounts (reserve fulfilment) + MNB bonds + overnight deposits – overnight collateralized loans – long-term loan instruments,*

i.e. the inter-bank HUF liquidity, is the net balance of the HUF receivables and liabilities of the banking system from and to the central bank. The impact of a transaction affecting liquidity, i.e. affecting the level of interbank HUF liquidity, can be captured first in the balance of the current

Chart 1
Development of the components of the inter-bank HUF liquidity

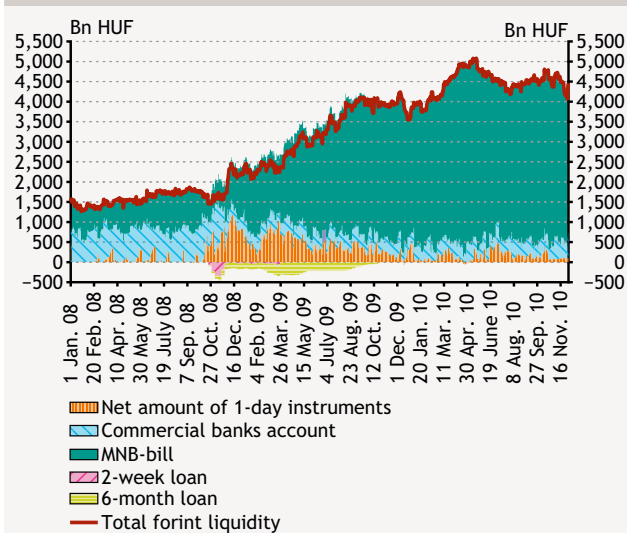


Table 1
MNB main balance sheet items
(HUF billion, 31 October 2010)⁵

Assets		Liabilities	
FX reserve	9,337	Capital and reserves	59
Other assets	194	Other liabilities	1,817
Forint T-bond	251	Government FX deposit	742
Forint mortgage bond	36	Government treasury account (KESZ)	333
Longer maturity (2-weeks, 6-months) collateralized loans	0	Currency in circulation	2,343
1-day collateralized loan	0	MNB-bill	3,973
Total	9,818	Commercial banks account	322
		1-day deposit	229
		Total	9,818
Off-balance-sheet:			
Central bank forint FX-swaps	281	Central bank forint FX-swaps	281

³ The duration of the MNB bonds is two weeks, while tenders are launched weekly, therefore two series always run parallel with each other. In contrast to Hungary, the euro area is characterised by a structural liquidity deficit. Consequently, the ECB’s base instrument is a one-week secured loan (repo), with the help of which the central bank lends central bank money to the banks week-by-week enabling them to comply with their reserve requirement.

⁴ For more details of the central bank instruments, see MNB (2009b).

⁵ Based on the MNB monetary statistics. FX reserve may also affect HUF liquidity through FX intervention, if a peg exchange rate regime were applied instead of the current free flotation. For more details, see the ‘Liquidity impact of new and extraordinary central bank instruments’ chapter.

accounts, and subsequently in the other instruments making up HUF liquidity (primarily in the two-week bond in the longer term). Before the crisis in the autumn of 2008, interbank HUF liquidity was approximately HUF 1,500 billion, then gradually increasing to HUF 4,500 billion with the IMF and EU loans taken by the government.⁶

The central bank has introduced numerous other instruments since the crisis broke out. According to the MNB definition, these instruments are not part of HUF liquidity, but affect it. The items of the central bank balance sheet may be divided according to whether they are part of inter-bank HUF liquidity, or directly affect it, or do not have any direct impact on HUF liquidity.

Apart from the balance sheet items specified above, the interbank HUF liquidity is also affected by profit and loss items (interest expenses and revenues, operating costs). The MNB liquidity forecast is the result of the joint projection of the liquidity impact of the various items that affect HUF liquidity.

BALANCE SHEET ITEMS AFFECTING HUF LIQUIDITY

Liquidity impact of the Single Treasury Account

The government's HUF current account is kept by the MNB under the name of the Single Treasury Account (KESZ). Transactions affecting the KESZ may be divided into two categories according to whether they relate to an external economic actor or the MNB. The former ones have a liquidity impact, while the latter ones (KESZ-MNB settlements) do not.

When economic actors deposit money into the KESZ (e.g. VAT payment, issue of government securities), the liability side of the central bank balance sheet changes. The KESZ balance increases, while the liquidity of the banking system decreases as customers' accounts are drained. The credit institutions realise this when the balance of their current accounts drops. If a payment is executed from the KESZ (e.g. pension payments, public sector wages), an opposite process takes place. The government intends to keep the KESZ balance at a level that it considers desirable and sound in terms of financing. This is why the Government Debt Management Agency (ÁKK) smoothes the balance with the help of repo transactions with banks, pushing it to a satisfactory level, which also has a liquidity impact.

On the other hand, KESZ-MNB settlements do not have any direct impact on the level of interbank HUF liquidity. If the government intends to spend its FX (foreign currency) assets in HUF (e.g. EU transfer, IMF loan, government FX deposit), the MNB converts the currency into HUF and credits it to the KESZ. The KESZ balance then increases, and either the central bank FX reserve also increase, or the government's currency deposits decrease, depending on whether the source currency was raised outside the central bank or was taken from the government's FX account kept by the MNB. If conversion takes place in the opposite direction (e.g. currency bond repayment), the KESZ balance then decreases without any liquidity impact. The majority of KESZ-MNB settlements are FX conversions, but the balance of the Treasury account may be altered without any liquidity impact by numerous other central bank items. They include, for example interest on the KESZ balance, the MNB dividend to the Treasury, or the Treasury's loss reimbursement, or interest and principal payment based on the government securities portfolio held by the central bank.

The KESZ liquidity impact shows monthly seasonality, as a large number of the items (tax and contribution revenues, pension, public sector wages) are due on a particular date each month. These transactions can be easily predicted, but they only represent some of the total items. As there is an extremely large number of treasury clients (municipalities, ministries, government agencies), there are many components of which the volume or timing is uncertain, and therefore the liquidity impact of the KESZ may be forecasted only with considerable errors. The volume of repo transactions of ÁKK is another uncertainty factor, because the government debt management agency often runs into barriers on the market due to the few partners and narrow limits and transacts only for a lower volume than required. In many cases, the MNB does not have any information on the future FX conversions either. As conversions indirectly affect the KESZ liquidity impact, they significantly contribute to the forecast errors.

On the other hand, any inaccurate forecast concerning the KESZ is not a central bank specific problem. The Hungarian State Treasury, the information of which is also used by the MNB, can prepare its own projections also with a similar degree of forecast errors. The errors of the MNB liquidity forecast are mostly related to the uncertainty concerning the KESZ liquidity impact.

⁶ For more details of the causes of the structural liquidity surplus, and the increase of HUF liquidity during the crisis, see Balogh (2009).

Cash in circulation

Cash in circulation represents a claim against the central bank, and any increase reduces interbank HUF liquidity, while any decrease increases interbank HUF liquidity. The general public and companies obtain cash through the banking system, while banks replenish their cash desks from the MNB by debiting their current accounts. Household demand is the biggest factor influencing demand for cash, because the volume of cash of banks and companies (petty cash) varies only very slightly and can be considered constant.

The volume of cash shows strong, weekly, monthly and annual seasonality. Within a week, the volume of cash is usually the highest around the weekend, i.e. it significantly increases on Thursdays and decreases on Tuesdays. The volume also rises in the first half of each month, parallel with the payment of wages and pensions. In terms of annual seasonality, the period around Christmas stands out. Over the period of a few weeks before Christmas, the volume of cash increases by more than HUF 100 billion and then drops rapidly. Apart from the seasonal effects, the long-term trends of cash volume are mostly affected by household

consumption expenditure, driven primarily by the economic growth.

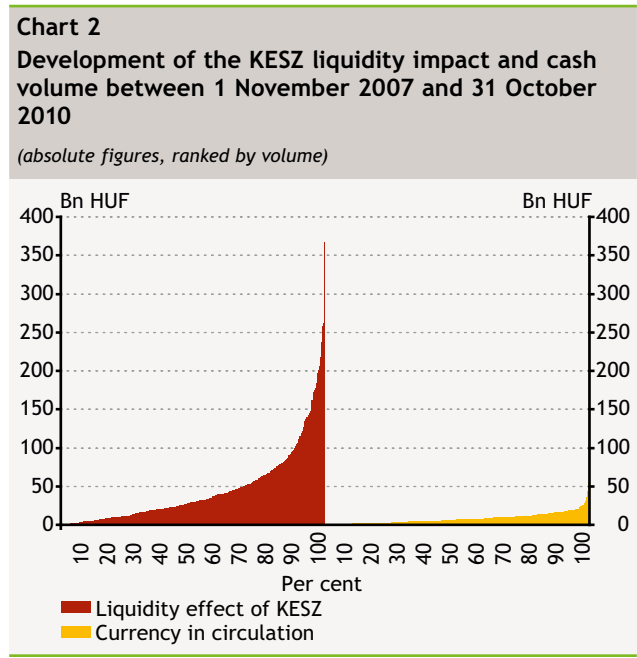
The average daily fluctuation in cash volume is lower than the KESZ liquidity impact and can be forecasted better, so its forecast error is only a small fraction of what is observed in case of the KESZ. However, in extremely turbulent periods the cash volume may rise significantly above the amount determined by historic figures and the figures of the forecast model, temporarily deteriorating the quality of projections. This last happened in October 2008 and in March 2009.

Chart 2 shows that the KESZ liquidity impact is much greater than the variation in cash volume. In more than 10 percent of the working days (i.e. slightly more frequently than every two weeks), the KESZ causes a shock of more than HUF 100 billion.

The KESZ liquidity impact and cash volume in circulation can together be referred to as autonomous factors, because their development is neither affected by the central bank nor the credit institutions.⁷

Liquidity impact of new and extraordinary central bank instruments

Since the international crisis hit Hungary in autumn of 2008, the central bank has intervened in numerous markets by introducing new instruments, which have also had liquidity impacts.⁸ In reaction to dwindling FX liquidity, several instruments were introduced on the FX-swap market, of which two instruments – the overnight and three-month EUR/HUF instruments – are used currently.⁹ The FX-swaps are both claims and obligations at the same time, and are considered off-balance sheet items. In the case of both instruments, the MNB lends EUR for HUF, and therefore, when in use, they reduce interbank HUF liquidity and the FX reserves on the asset side of the central bank balance sheet. When the FX swap instrument matures (i.e. the MNB repurchases the EUR for HUF), HUF liquidity in the banking system increases and the FX reserves also rise. In terms of HUF, these instruments represent overnight and three-month central bank deposit for the participants.



⁷ On the other hand, credit institutions have a limited effect on the KESZ liquidity impact. This is because within the framework of ÁKK's smoothening repo transactions, market actors can consider whether or not to accept the offers of the Government Debt Management Agency.

⁸ For the motivation and details of the central bank measures in the autumn of 2008 and at the beginning of 2009, see MNB (2009a). Information on the recently introduced instruments is available at the following website: http://english.mnb.hu/Monetaris_politika/mnben_jegybanki_eszkoztar/mnben_eszkoztar_tenderek.

⁹ An FX swap is a transaction, within the framework of which the participants exchange their currencies with each other, and the swap is reversed upon maturity, when the interest difference of the two currencies is also settled. For more details of the FX swap transactions and on the Hungarian market, see Mák and Páles (2009).

Security purchases by the MNB in the recent past have also had a liquidity impact.¹⁰ In the autumn of 2008, the MNB purchased government bonds for more than HUF 200 billion, which increased the liquidity of the banking system. At the beginning of 2010, the central bank announced its mortgage bond purchasing programme, within the framework of which it purchased mortgage bonds for HUF 36 billion on the primary and secondary markets by the end of November 2010, further increasing liquidity.

If the current exchange rate regime¹¹ were replaced by a peg regime, the MNB would be forced to intervene at the two edges of the band, which would simultaneously change the level of HUF liquidity and FX reserve. The central bank would purchase HUF, intervening at the weak end of the band (exchange rate strengthening), while it would sell HUF on the FX market intervening at the strong end of the band (exchange rate weakening). The former action would simultaneously decrease HUF liquidity and FX reserves, while the latter one would increase them. However, in the currently applied freely floating exchange rate regime, the MNB is not forced to use this instrument.

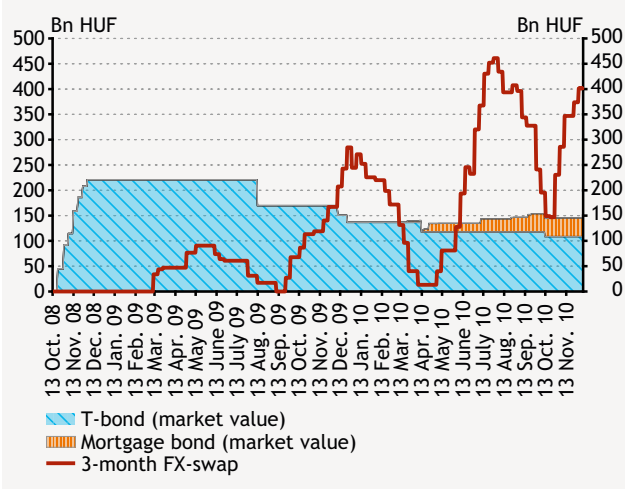
The liquidity impact of the new central bank instruments can be forecasted well. At the moment, only the three-month FX-swaps are used intensively by the banking sector. The auctions of the instruments are held on Mondays, and financial settlement takes place on Wednesdays. Consequently, the liquidity impact can be calculated accurately on Tuesdays.

P&L ITEMS AFFECTING HUF LIQUIDITY

Interest payments

In addition to the items referred to above, the interest on the components of HUF liquidity raises HUF liquidity evenly and significantly over the longer term, due to the

Chart 3
Development of the central bank HUF securities portfolio and the three-month FX swap instrument¹²



surplus liquidity in the system. In 2010, the MNB is expected to pay out HUF 20 billion on reserve fulfilment, HUF 7 billion on the net balance of overnight assets, and HUF 217 billion in interest on the two-week bond portfolio. This is the total cost of the withdrawal of the surplus liquidity from the banking system for the central bank, which is also a condition for keeping the base rate effective, i.e. the interbank interest rates around the base rate.¹³ These items can be projected almost perfectly for a one-week period.

Operating costs

As an institution, the MNB is financially independent from the government, and therefore the payments required for its operation are made from its own operative account and not from the KESZ. Consequently, any payment denominated in HUF (e.g. wages, utility bills, costs of bank note and coin production) creates money, and raises interbank HUF liquidity.¹⁴

¹⁰ The securities purchases by the central bank after the onset of the crisis is also described in the international literature as quantitative easing, when its purpose is to increase the liquidity of the banking system. On the other hand, the main purpose of the MNB purchases was to back up the market because there was already surplus liquidity in the system.

¹¹ Such regimes include the crawling peg policy applied in the 1990s, the exchange rate band applied until 2008, or the ERM-II exchange rate mechanism.

¹² The MNB does not publish the volume of use of the overnight EUR/HUF swap instrument. The value of the central bank securities portfolio is not the same as stated in Table 1. This is because the MNB held government securities even prior to the crisis, while Chart 3 illustrates only the purchases made after the onset of the crisis.

¹³ The HUF liquidity inherent in the system is endowment for the credit institutions, which can pass it on to each other on the interbank market at the individual level, without changing the total quantity. Market participants do not earn any interest on their account balance over the reserve requirement, and therefore they must deposit any central bank money over this obligation and the instruments assisting liquidity management (overnight facilities and long-term loans) at the MNB in bonds in order to avoid any yield losses. Without this central bank instrument, the HUF interest rates would also drop to zero because of the excess supply of liquidity. The market yields are adjusted to the interest rate paid on the two-week bonds, the central bank base rate.

¹⁴ As the operating costs affect the MNB results, in the longer term, their impact is reflected on the KESZ as potential dividend or loss reimbursement. The MNB pays any dividend (if applicable) to its owner, the KESZ each year, while the state as the owner must reimburse the central bank for any potential loss.

In 2009, operating costs amounted to HUF 13.7 billion. Part of these costs denominated in HUF are negligible for a one-week period of the forecast compared to the other items affecting liquidity.

THE LIQUIDITY FORECAST MAY ALSO CONTRIBUTE TO THE RE-GENERATION OF THE INTERBANK MARKETS

At the moment, the role of the interbank markets responsible for redistributing HUF liquidity is significantly weaker than it would be in an ideal situation, and market participants prefer central bank instruments to interbank trading. Consequently, banks regularly demand fewer MNB bonds than would be required, and keep rolling their surplus HUF liquidity in central bank overnight deposits, which serve as a buffer against potential individual or systemic liquidity shocks.¹⁵ Regular use of the overnight central bank deposits pushes the overnight interbank interest rates (HUFONIA) into the lower half of the interest band. This is not only harmful for the efficiency of the base rate, i.e. interest rate transmission, but also for the participants, who continuously lose interest with the current practice of central bank deposit accumulation. This phenomenon can be explained with two fundamental factors.

As a result of the international crisis in the autumn of 2008, credit institutions developed a great deal of uncertainty; consequently, interbank limits shrank and several participants fully withdrew from the markets. However, this process could be observed not only in Hungary: in the euro area, where the majority of parent banks of Hungarian banks operate, limits were also reduced. The markets have only partially consolidated since then, and market participants manage their liquidity increasingly prudently, because they cannot rely so intensively on the interbank market to manage any shock.

The other factor is the uncertainty of the market participants concerning liquidity shocks. Regular use of overnight deposit by the banking system can be explained not only by the lack of trust of banks in each other, but also by the inaccurate systemic liquidity forecast, the error of which is higher than that of the MNB. Apart from the wider information base and higher resource cost of the central bank, this is justified by the periods during which a considerable amount of overnight secured central bank loans were taken in the recent past, and is also supported by the experiences prior to the crisis, when central bank deposits were made frequently even when the interbank markets were still liquid.

Examples of overnight secured central bank loans taken in the recent past

In the recent past, overnight secured central bank loans were taken typically when the credit institutions significantly overestimated the available HUF liquidity in the MNB bond tender, and were therefore subsequently forced to take central bank loans. The loans were taken because the banks faced an unpredicted liquidity reducing shock, which exceeded their precautionary reserves (overnight deposit portfolio + current account balance). However, in these cases, the MNB had more accurate information about the liquidity of the system, and according to its projection, it deemed the volume of two-week bond purchases to be excessive.

On 15 December 2009, the banking system was not prepared for volume of the liquidity reducing effect of the monthly due contribution payments according to the use of the central bank instruments, and therefore it was forced to take an overnight loan of more than HUF 100 billion. From the following day, the market participants reduced the portfolio of their two-week bonds by more than HUF 500 billion, and thus the loan disappeared.

On 21 April 2010, the credit institutions underestimated the volume of the monthly due VAT payments at accumulated level. On the same date, the portfolio of the two-week bonds increased by more than HUF 200 billion, and therefore the market participants were continuously forced to take HUF 50–80 billion overnight central bank loans over the next week, until they could reduce their bond portfolio.

The balance of commercial banks accounts did not provide a sufficient buffer for the total absorption of the shock in either case. According to the MNB estimates, the central bank’s forecast error represented one-half or two-thirds of the error made by the banking system in the above two cases. Had the projection been available, banks could have better predicted the liquidity shocks affecting the system, and would have purchased two-week bonds in a volume closer to the ideal quantity.

¹⁵ The striking difference between the net balance of the overnight central bank instruments before and after the crisis is illustrated in Chart 1.

The central bank’s liquidity forecast may have only an indirect effect on the first factor. In order to regain trust and extend the limits, international processes must also take a favourable turn, because in many cases the reduced activity is the result a decision made by the foreign parent banks. However, by dispelling the uncertainty concerning the liquidity shocks, the central bank can promote elimination of the second factor. On the other hand, it could also indirectly affect the first factor, if the market actors see that the central bank projection reduces the uncertainty for each actor of the banking sector, that could indirectly increase trust in each other.

Apart from the MNB, several other central banks of the region (ECB, Czech, Lithuanian central banks) also publish a liquidity forecast. Aggregating the individual forecasts of the central banks of the euro area, the ECB also publishes weekly projections on the overall liquidity impact of the autonomous factors in line with its repo transactions.

CONTENTS AND METHODOLOGY OF THE PUBLICATION

The liquidity forecast helps the banks’ liquidity management best, if it provides guidance about the ideal size of the two-week bond portfolio in the system. The two-week bond portfolio reaches its ideal size, if the HUF liquidity remaining with the market participants over and above the portfolio just satisfies the reserve requirements. Then

- the net balance of the overnight central bank instruments (deposit and secured loans) is zero,
- there is no demand or supply pressure on the overnight interbank markets,
- the overnight interest rates are very close to the base rate.

The MNB publishes the average impact of the factors affecting the HUF liquidity for the following one-week period

(from Wednesday to the following Tuesday) on each Tuesday at 10 a.m., prior to the bond auctions. The forecast should cover this period, because the period from Wednesday to the subsequent Tuesday is the period during which the central bank’s bond portfolio does not change.¹⁶ The example in Table 2 illustrates the exact composition of the projection.

The first line of the table contains the total net shock affecting the banking system from the factors listed above on the individual days of the period, while the second row contains the cumulated figure thereof compared to Tuesday. The last row shows the average variation of HUF liquidity projected for one week and is calculated as follows:

$$(-40+40+20+20+20+180+40)/7 = +40$$

Consequently, in this case, the MNB projection would be HUF +40 billion, which means that based on Tuesday as the current date, liquidity will be higher on average by HUF 40 billion from Wednesday to the subsequent Tuesday. Assuming that the actual reserve fulfilment and the cumulated reserve fulfilment for the period of the month to date equal exactly the reserve requirement, as a result of this only factor the credit institutions may raise their two-week bond portfolio by HUF 40 billion on the auction held on Tuesday. In this case, their subsequent weekly actual reserve fulfillment will equal their requirement.

Chart 4 illustrates the ideal liquidity management of the banking system after publication of the forecast. Let us assume that on Tuesday, on the date of the tender, the momentary overall balance of the reserve requirement and the current accounts is HUF 500 billion, and during the period of the month to date the actual average reserve fulfilment were also HUF 500 billion, i.e. the banks intend to have on average the same amount of reserves in the outstanding period of the month. The two-week bond portfolio is HUF 4,000 billion.

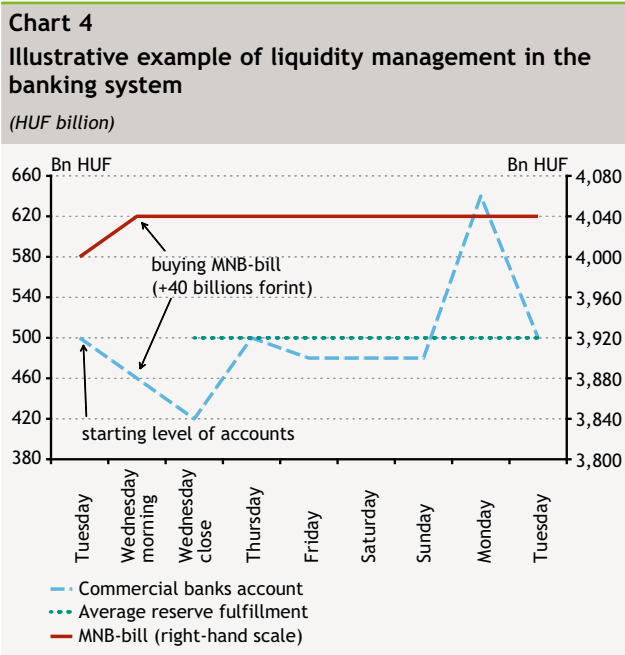
Within the framework of the tender on Tuesday, market participants increase the bond portfolio by HUF 40 billion

Table 2
Illustrative example of the weekly liquidity projection

(HUF billion)

	We	Th	Fr	Sa	Su	Mo	Tu
Total daily effect to the level of liquidity	-40	+80	-20	0	0	+160	-140
Cumulative total liquidity difference from Tuesday	-40	+40	+20	+20	+20	+180	+40
Average liquidity difference from Tuesday (publishing data)	+40						

¹⁶ The bond auction’s calendar may change in relation to holidays. At such times, the MNB liquidity forecast is adjusted to the changed calendar.



based on the liquidity projection defined in Table 2, and therefore on Wednesday morning the actual reserves drop to HUF 460 billion, while the bond portfolio increases to HUF 4,040 billion when the financial settlement of the bond auction takes place. Then the actual reserves follow the shocks indicated in the table, i.e. at the end of Wednesday, the total balance of the current accounts closes with HUF 420 billion, followed by HUF 500 billion again on Thursday and HUF 480 billion on Friday, etc. Thus, by the subsequent Tuesday, the average actual reserves will be exactly HUF 500 billion, i.e. it equals the reserve requirement.

THE MNB’S FORECAST ERROR IS ESTIMATED TO BE SIGNIFICANTLY SMALLER THAN THAT OF THE BANKING SYSTEM

The usefulness of the publication may be assisted by estimating the average relationship between the aggregated forecast error of the banking system and the error of the MNB forecast, i.e. the extent by which it could reduce the error of the market participants. The forecast error of the credit institutions may be captured primarily in the use of the overnight central bank instruments.

As we saw before, demand for the overnight instruments is affected by two components: the lack of mutual trust and uncertainty concerning the liquidity shocks. Before the autumn of 2008, the impact of the first component was negligible, because during this period the interbank market worked properly, and apart from the last days of the reserve periods market actors only used overnight instruments to a negligible extent. They were able to offset

their errors in the first half of the month at the bond auctions during the subsequent period. This is why the average forecast errors of the banking system can be estimated on the basis of this period. We can assume that this error has not changed significantly over the last two years, because the KESZ shocks and uncertainties concerning cash volume and P&L items have not changed. The new central bank instruments introduced in the meantime have also not significantly increased the uncertainty of market actors.

Prior to the 2008 autumn crisis, the overnight deposit portfolio regularly increased to HUF 100-400 billion from the previously low level over the last few days of the reserve periods, and this portfolio was related almost exclusively to the projection error. Between April and September 2008, on average HUF 65 billion worth of overnight instruments were in use, while the figure went up to the average HUF 246 billion in periods following the last bond auction of the reserve periods. On the other hand, this high portfolio was also the result of a certain degree of prudence, which may have stemmed from the idea that market participants prefer to begin a new period with high actual reserve fulfillment.

In our opinion, the forecast error of the banking system can be estimated at between HUF 65 billion and HUF 246 billion. If market actors decide on the volume of the two-week central bank bonds based on the MNB liquidity forecast, then on average in this period they would have made an average error of only HUF 28 billion, assuming that at system level they could reach a volume consistent with the forecast. At the same time, only a smaller portion of this amount would have been reflected in overnight instruments, because the errors made at the beginning of the month could have been corrected later. On the basis of the above calculations, the projection error of the banking system may be reduced to 43 percent of the original figures (HUF 28 billion/HUF 65 billion) even according to a conservative estimate. The low estimate should be applied also because banks are not necessarily able to adjust their individual liquidity forecasts at a rate that exactly reflects the more accurate projection for the whole banking system.

Using a similar methodology, we can also estimate the projection error of the banking system for the period after the outbreak of the crisis. We can assume that the first component, which arises from the lack of mutual trust, has a permanent level within a particular month. We check the use of the overnight instruments after the last bond auction of the month. Its deviation from the monthly average figure may be considered the estimation error of the banking system. Between December 2009 and May 2010, the net

demand for overnight instruments was on average HUF 122 billion, while the average balance of the few days after the last bond auction deviated from it by HUF 81 billion on average. The error of the central bank projection was HUF 50 billion in this period, based on which the projection error of the banking system can be reduced to 62 percent of the original figure (50/81).

Consequently, our estimates indicate that integration of the MNB forecast could improve the banks' forecasts significantly, at least by approximately 40%.

CONCLUSIONS

The MNB liquidity projection is unable to accurately forecast the HUF liquidity in the banking system, due to uncertainties related to the KESZ. On the other hand, due to the wider information base, the size of the error is smaller than in the banking system, and therefore by publishing its forecast the central bank clearly provides additional information to market participants. The forecast published on Tuesdays gives guidance for credit institutions to obtain the ideal size for the two-week bond portfolio.

The central bank projection reduces the uncertainty of market actors concerning liquidity shocks, if the liquidity managers of the banking system use it for their own aggregated forecasts. According to the MNB's expectations, similarly to the introduction of the optional reserve rates, publication of the central bank forecast¹⁷ will contribute to the recovery of the interbank markets over the longer term. However, the disappearance of mistrust in each other and the expansion of limits are also absolutely necessary for the markets to recover the role they fulfilled prior to the crisis.

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¹⁷ From 1 November 2010, the credit institutions subject to mandatory reserve requirements may opt not only for the current 2 percent, but also for 3, 4, or 5 percent mandatory reserve ratio, which also makes their liquidity management easier. For more details see Varga (2010).