

# Judit Páles–Lóránt Varga: Trends in the liquidity of Hungarian financial markets – What does the MNB’s new liquidity index show?

*The Magyar Nemzeti Bank measures the trends in the liquidity of Hungarian financial markets by means of a liquidity index and a related set of liquidity sub-indices. These liquidity indices relate to the four most important domestic financial markets (the EUR/HUF spot foreign exchange market, the USD/HUF FX swap market, the secondary market of Hungarian government bonds and the interbank unsecured money market), and are based on indicators that quantify the different dimensions of market liquidity (bid-ask spread, return-to-volume ratio, average size of transactions, number of transactions). The timeliness of this topic is supported by the fact that, in relation to the impact of the US sub-prime crisis, analysts and experts have started to focus their attention on the development of financial market liquidity again. Until mid-2006, the liquidity of Hungary’s domestic financial markets increased steadily, but in 2007 the trend-like growth in liquidity ceased. Looking at the last period of more than a half year, the liquidity of Hungarian financial markets fell suddenly several times during the turbulent periods. The magnitude of the decline was particularly considerable in the period of the government bond market liquidity problems in early March 2008. In these periods, the decline in liquidity was mainly attributable to a decline in market tightness, i.e. to an increase in the costs of trading, while market turnover usually did not decline significantly.*

## INTRODUCTION

Monitoring the liquidity of financial markets and changes in liquidity is an important task for the central bank and market participants as well. An internationally widespread, simplified, but expressive form of this is the calculation of some sort of market liquidity index. The issue of market liquidity is important for central banks in terms of the efficient implementation of monetary policy operations, the reliability of the information content of money market price data, as well as the stability of financial markets and institutions.

*First*, the efficiency of central banks’ monetary policy operations is improved if they are aimed at liquid money market segments, because a drastic decline in the liquidity of interbank money markets may constrain the suitable operation of monetary policy instruments and the appropriate redistribution of the available liquid assets among banks. *Second*, in the event of liquidity problems, the reliability of the exchange rate, interest rate and inflation expectations derived from the prices of financial assets deteriorates, as the price fluctuations resulting from low liquidity may contain significant distortions, and in extreme cases price information may completely disappear from the market. *Third*, in the event of a significant fall in market liquidity, financial markets’ and institutions’ capacity to withstand economic shocks may decrease, and the effect of economic shocks on asset prices may strengthen. A drop in liquidity may be a sign of financial stability problems and reduced confidence in market operation.

## THE CONCEPT, DIMENSIONS AND MEASURING OF MARKET LIQUIDITY

The indicators discussed in this article quantify the trends in *market liquidity*. This is important to be stressed because economic and financial literature uses the term ‘liquidity’ to describe several, basically different concepts (see, for example, Balás and Móri, 2007; BIS, 1999 and Fleming, 2003). In examining market liquidity, we measure if large-volume transactions can be carried out in the given financial market within a short time and without a significant change in market prices (BIS, 1999 and Csávás and Erhart, 2005). Accordingly, the market liquidity of financial markets is determined by how easily and at what costs it is possible to trade in a given asset. Of other meanings of liquidity, we only mention the concept of *asset liquidity* briefly, which means the quantity of the various financial assets in the economy. Distinguishing this from market liquidity is also important, because they may show contrasting developments. It is possible, for example, that the participants of a market possess a considerable quantity of a financial asset, i.e. they are liquid in that one, while the market of the given asset still does not work properly for some reason, so the market itself is not liquid.

The concept of market liquidity includes several characteristics of a given market, and thus the level of market liquidity can only be determined by examining several dimensions together. Three basic dimensions of market liquidity are distinguished in international literature (Kyle,

1985 and Fleming, 2003): the tightness, depth and resiliency of financial markets.

*Tightness* of the market means the cost of performing a transaction within a short period of time and the cost of the liquidation of a position. For the measuring of tightness, international literature usually recommends the bid-ask spread,<sup>1</sup> i.e. the difference between the (best) bid and ask prices. In the case of a narrow bid-ask spread, the price at which individual transactions can be carried out is only a little bit different from the average market price, i.e. the transaction cost is low, so the given market may be considered as liquid. Under normal circumstances, the bid-ask spread is determined by structural factors, such as the outstanding amount of the given financial asset, the frequency and size of new issuances, the frequency and magnitude of trading as well as market concentration. In the case of an illiquid market, market makers increase the spread in order to compensate for the liquidity risk; this is partly attributable to the adverse selection stemming from the information asymmetry valid in the given market and partly to the inventory costs (Amihud, 2002). The relative bid-ask spread, which is the ratio of the bid-ask spread and the average price, is also often used as an indicator of tightness.

*Depth* is the minimum order flow required to change prices a given and considerable amount. In other words, when examining the depth of the market we measure the size of the largest order flow that can be carried out without changing the market price. A frequently used indicator of depth is the total volume belonging to the best or to all bids in the order book. If in a given market, order book or transaction level data are not available, this dimension is often measured with the average size of transactions or simply with daily turnover. The larger the turnover or average transaction size, the more probable it is that a larger transaction can be performed in a short time without a significant shift in market prices.

When measuring *resiliency*, we examine the speed at which prices return to the new equilibrium level following shifts resulting from information shocks that affect liquidity. On the one hand, the new equilibrium level may mean the value defined by fundamentals, on the other hand it may mean the

price belonging to the balance between bids and offers for sale. Due to the difficulties of determining the new equilibrium price, the extent of resiliency is often measured by the price impact indicators. Price impact indicators basically express the extent of the price change caused by a given size of order flow. Prices probably reach their (new) equilibrium level more slowly, if prices change to a greater extent as a result of a transaction of a given size. However, in these price impact indicators the depth of the market is also reflected in addition to resiliency. For the calculation of the price change resulting from order flows, intraday transaction and quotation data are often used. These indicators are more precise equivalents of the parameters of theoretical models which can be found in the relevant literature, but in most markets microstructural data are not available, thus the return-to-volume ratio is used for approximation. In addition, the bid-ask spread relative to the average transaction size ratio is often used in international literature as an indicator of resiliency.

### INTERNATIONAL EXAMPLES FOR THE USE OF FINANCIAL MARKET LIQUIDITY INDICATORS

Amongst the major central banks, both the Bank of England (BoE) and the European Central Bank (ECB) calculate financial market liquidity indicators, which serve as good examples for compiling a Hungarian liquidity index. At the same time, it is important to emphasise that the level of development of individual financial markets significantly determines the range of successfully applicable indicators. Therefore, the international examples presented here only offer a starting point for us, and not solutions that can be copied without any modifications.

The *financial market liquidity indicator* published in the April 2007 Financial Stability Report of the BoE (Bank of England, 2007a) takes into account the aforementioned dimensions of liquidity (tightness, depth and resiliency), as well as liquidity premia in certain market segments. Of the market segments it focuses on those where major banks play a more important role, i.e. the gilt market, major foreign exchange markets, the stock market as well as the market of equity options, corporate bonds and interest rate swaps (Table 1).

<sup>1</sup> Spreads calculated from effective and indicative quotations are also used in the relevant literature for measuring tightness: the effective spread is calculated from the firm quotations, and thus it is usually lower than the spread calculated from market makers' indicative, not firm quotations.

**Table 1****Liquidity measures used by the Bank of England**

Dimensions	Type of measure	Measures
Tightness	Bid-ask spreads	Gilt repo Exchange rates (USD/JPY, USD/EUR, USD/GBP) Average of individual stocks (FTSE-100)
Depth & Resiliency	Return-to-volume ratio	Gilt market Average of individual stocks (FTSE-100) Equity options (S&P 500 options as a proxy)
Liquidity premium	Liquidity premia	Corporate bonds (investment grade and high yield) Libor spread (three-month dollar, euro and sterling)

Source: Bank of England (2007a).

For the measurement of *tightness*, the BoE opted for the difference between the prices at which a financial instrument can be bought and sold (bid-ask spread), in the case of the gilt repo market, major exchange rates (EUR/USD, USD/JPY and USD/GBP) and the market of stocks included in the London FTSE-100 index. As a proxy measure for *depth and resiliency*, the BoE uses the return-to-volume ratio in the case of the gilt market, the FTSE-100 index and the S&P 500 options. This shows the relationship of the absolute return on a financial instrument to its turnover.

In addition to the above features, taking account of *liquidity premia* is justified by the theoretical hypothesis which suggests that markets price a higher liquidity premium for financial instruments that can be characterised by greater market liquidity risk. For corporate bonds, the BoE estimated the liquidity premium using the difference between the premium of investment grade and speculative (high yield) corporate bonds compared to government bonds and an estimated credit spread, and for interest rate swaps the spread of the 3-month (dollar, euro and sterling) Libor over government bond yields.

The BoE concentrated the information content of the aforementioned market liquidity measures in a financial market liquidity indicator with the unweighted mean of the measures, normalised on the period 1999-2004. It then took the exponentially weighted average of historical values of the liquidity indicator. The essence of this method is that an exponentially declining weight belongs to past values.

In June 2007, the ECB prepared and published a *financial market liquidity indicator* similar to the Bank of England's liquidity indicator, although the set of measures taken into account shows a somewhat different picture. Three basic differences can be observed between the two indices, which mainly originate from the differences in significance and importance of individual money market segments of the two economies (Table 2). *On the one hand*, the ECB approximates the changes in bid-ask spreads with the spread of the one- and three-month swap rates instead of gilt repo. *On the other hand*, for corporate bonds the ECB takes into account only high-yield bonds. *Finally*, it estimates the liquidity premium with the euro area spreads between interbank deposit and repo interest rates, instead of Libor spreads.

**Table 2****Liquidity indicators used by the European Central Bank**

Dimensions	Type of measure	Measures
Tightness	Bid-ask spreads	EONIA one month and 3-month swap rates Exchange rates (EUR/USD, EUR/JPY, EUR/GBP) Average of individual stocks (Dow Jones EURO STOXX 50 index)
Depth & Resiliency	Return-to-volume ratio	Euro bond markets Average of individual stocks (Dow Jones EURO STOXX 50 index) Equity options market
Liquidity premium	Liquidity premia	Euro area corporate bonds (high-yield) Euro area spreads between interbank deposit and repo interest rates

Source: European Central Bank (2007a).

Based on the *market liquidity indicator of the BoE*, financial markets have been characterised by expressly high liquidity since mid-2003, which can partly be explained by structural factors, such as the appearance of new investors with a greater risk tolerance, the increasing role of hedge funds and the emergence of innovative financial products. At the same time, market liquidity fell sharply in market stress periods, and this is what also happened as a result of the sub-prime crisis in 2007. In the past, especially from June 2003 onwards, the liquidity indicator of the ECB moved closely together with the liquidity index of the BoE. This indicates that in the past years global factors have played a decisive role in the trends in the liquidity of financial markets important for both euro area and UK banks.<sup>2</sup>

### CALCULATION OF THE INDEX MEASURING THE LIQUIDITY OF HUNGARIAN FINANCIAL MARKETS

The index measuring the liquidity of the Hungarian financial markets is based on quantitative and price data from the four most important domestic financial markets. In compiling the liquidity index we concentrated on those market segments that, due to their size, carry substantial risk to the domestic banking sector, i.e. on the ones where a decline in liquidity would have a negative effect on domestic banks as players using the markets. Based on these criteria, the liquidity index calculated by the MNB concerns four domestic financial markets: the EUR/HUF foreign exchange market, the USD/HUF FX swap market, the secondary market of Hungarian government bonds and the interbank unsecured money market. As the operation, function and importance of these markets are described in detail by Csávás, Kóczán and Varga (2006), these issues are not discussed here.

In respect of EUR/HUF foreign exchange market transactions, we took account of the most important spot transactions of the highest volumes; consequently, the liquidity indices do not contain data for foreign exchange forward transactions and other derivative foreign exchange transactions. Market participants conclude deals with various maturities in the USD/HUF FX swap market and the interbank money market, thus the maturities of key importance in terms of the markets' function and operation had to be selected. Although in both markets transactions with a maturity of one day play the role of the most important maturity, in the interbank unsecured money

market the majority of transactions are *overnight* ones (starting on the day the deal is done and expiring on the next working day), while in the USD/HUF FX swap market most of the transactions are more likely to be carried out at a *tomnext* maturity (starting on the working day following the day the deal is done and expiring on the next working day after the starting working day). Of the secondary market transactions carried out with government bonds, the liquidity indicator covers the *outright* spot transactions.

Considering that market liquidity is a complex concept consisting of several dimensions, in the liquidity index we intended to take into account as many regularly calculable liquidity indicators as possible. However, as opposed to the practice of the BoE and the ECB, we wished to capture all dimensions of liquidity in the case of all the selected markets and, moreover, with similar indicators for each market. Therefore, of the indicators used by Fleming (2003), we selected the ones that can be computed for all the four markets and cover all the three dimensions of liquidity presented above (tightness, depth and resiliency).

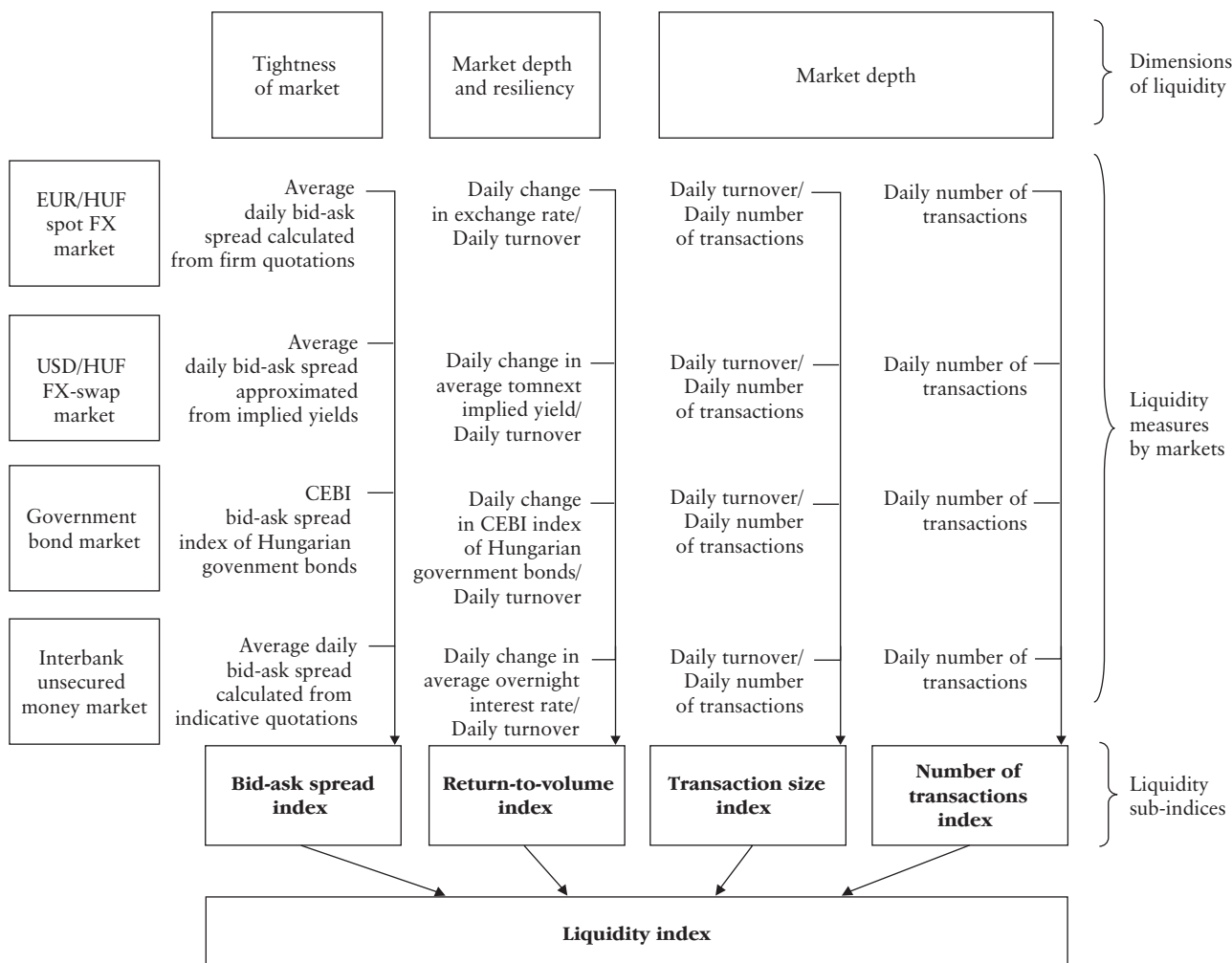
As we have seen, the liquidity indices of the ECB and of the BoE are based on two major indicators: the bid-ask spread, which quantifies tightness, and the return-to-volume ratio, which captures both depth and resiliency.<sup>3</sup> These indicators are also included in the liquidity index we have constructed. However, if only these two kinds of indicators were taken into account, that would, *on the one hand*, carry the risk that the liquidity index overweighs the effect of volatility, as volatility strongly affects both aforementioned indicators. Higher volatility, in turn, does not necessarily reflect lower liquidity (see Csávás and Erhart, 2005). *On the other hand*, depth can be considered as one of the most important liquidity dimensions; therefore, we felt it necessary in any case to have an indicator individually quantifying depth in the aggregate liquidity index. However, one of the often used indicators of depth, the quoted volume (the total volume belonging to the best or to all bids in the order book), is not regularly available in the domestic markets. Moreover, depth – contrary to tightness – can be less precisely covered with one indicator. Consequently, it is worth taking into account more indicators concerning this liquidity dimension. In line with this consideration – also using the approximation recommended in the relevant literature – the average transaction size and the number of transactions were also included in the aggregate liquidity index (Chart 1).

<sup>2</sup> For recent developments in the indices see Bank of England (2007b) and European Central Bank (2007b).

<sup>3</sup> We refrained from taking account of the third indicator, which reflects the liquidity premium, used by the BoE and the ECB, as it is only meaningful in the bond market, and thus it does not meet our criteria of computing indicators with the same contents for each market.

Chart 1

Structure of the liquidity index compiled by the MNB



With regard to the EUR/HUF spot foreign exchange market, in the Reuters electronic dealing system (*Reuters D3000*) bid-ask spreads originating from actually firm quotations, from which daily averages can be calculated, are available. In the government bond market, the bid-ask spread, originating indirectly from government bond market brokers, calculated from the CEBI bid-ask spread index<sup>4</sup> for Hungarian government bonds is available to us. However, in respect of the FX swap market and the interbank unsecured money market there are no such spreads originating from actual firm quotations. In the case of the FX swaps, a daily average bid-ask spread can be estimated from the implied yields of actual transactions, as a difference between the quotations of loan and deposit side transactions made by domestic banks with non-residents. With regard to the interbank unsecured money market, a bid-ask spread can be calculated from indicative quotations from Reuters.

Return-to-volume indicators, as we have seen, try to quantify the magnitude of price change caused by a transaction of a given size. Determining it exactly would require transaction data of such depth that are not available for most of the above markets. Consequently, for all the four markets we also applied the approach widespread in the relevant literature: the absolute value of the daily change in an indicator expressing the price developments in the given market is compared to the daily turnover of the market. In the case of the foreign exchange market, price developments in the market are captured through the change in the average daily EUR/HUF exchange rate weighted by the transactions. Price developments in the FX swap market are captured with the daily change in the average implied tomnext forint yield weighted by the transactions, whereas price developments are grasped with the daily change in the value of the CEBI index for Hungarian government bonds in the case of the

<sup>4</sup>The CEBI (Central European Bond Indices) indices containing government bonds denominated in Central European (Czech, Hungarian, Polish and Slovakian) domestic currencies and traded in local markets are calculated and published by Dresdner Kleinwort Wasserstein (DrKW), a London based investment bank.

government bond market, and with the change in the average daily overnight rate weighted by the transactions in the case of the interbank unsecured money market.

For all markets, the total value of the individual markets' daily turnover and the number of transactions are estimated on the basis of the same source by the MNB. In the case of the EUR/HUF spot foreign exchange market and the USD/HUF tomnext FX swap market, domestic credit institutions report all their transactions to the MNB on a daily basis, and adequate aggregation of these data allows for daily turnover and the number of transactions to be determined. Accordingly, the data estimated this way contain all transactions in which at least one of the participants is a domestic credit institution. However, transactions between non-residents (concluded for example in London) are not included. The number of transactions and the daily turnover of the overnight interbank unsecured money market are also estimated on the basis of data reported by the domestic credit institutions. However, these contain only those transactions that were concluded by two domestic credit institutions.<sup>5</sup> The number and turnover of transactions concluded in the secondary market of government bonds are estimated on the basis of securities account transfer data from the Central Clearing House and Depository Ltd. (KELER). They contain all transactions between market players that have a securities account with KELER or, if they do not have one, between market participants which have different custodians. Accordingly, they also contain the turnover between non-residents with different custodians.

Each of the four indicators concerning the four most important domestic financial markets that can be seen on Chart 1 was calculated in a way that an increase in the value of the indicator reflects an increase in liquidity (for example, the value of the bid-ask spread indicator increases if the bid-ask spread declines, i.e. the given market becomes more liquid and tighter). In order to be able to add up the calculated 16 time series somehow, they have to be reduced to a common denominator. Because of the different units of measurement and magnitudes, the simplest way is to normalise each time series, i.e. to calculate the difference of the values for individual days of the given time series from the average of the whole time series, then divide it with the standard deviation of the whole time series. The time series normalised this way have no unit of measurement, and are first aggregated

according to liquidity dimensions, and not according to markets, by the unweighted averaging of the individual time series.<sup>6</sup> Finally, the liquidity index is the result of aggregating these four major sub-indices, also by way of unweighted averaging (Chart 1). The advantage of this method is that using the aggregate indicator we can present the general trend of the liquidity of domestic financial markets clearly and in an easily understandable manner. The comparison of sub-indices reveals the relationship between the shifts in liquidity taking place in certain periods and the change in individual liquidity dimensions, while the 16 initial time series of liquidity measures also allow us to observe the different trends shown in the development of liquidity of the various market segments as well.

Accordingly, the liquidity index is a result of unweighted averaging of normalised time series. Consequently, the long-term average of the index is zero. An increase in the value of the index marks a rise in the liquidity of financial markets, and if its value is higher than zero, we can say that financial markets at that moment are more liquid than the average liquidity of the whole period under review.

## TRENDS IN THE LIQUIDITY OF HUNGARIAN FINANCIAL MARKETS

*Until mid-2006, the liquidity of domestic financial markets increased steadily, but later the trend-like growth in liquidity ceased.* From mid-2005 to 2006 Q2, the liquidity index reflected an unmistakably upward trend (Chart 2). During this period, the increase in the liquidity of domestic financial markets was ensured by the globally observable high risk tolerance and abundant liquidity, and the related increasing activity of foreign investors and hedge funds on the one hand, and also by the steady increase in the assets managed by domestic institutional investors as well as Hungarian credit institutions' and corporations' enhanced financial market activity, on the other hand. This increased liquidity was mainly reflected in narrowing bid-ask spreads and a rise in average transaction size, i.e. markets became both tighter and deeper. Starting from 2006 Q2, the liquidity index usually fluctuated above its long-term average, although during turbulent market periods (and during year-end periods when liquidity is seasonally low) it often reflected sudden and significant falls in market liquidity.

<sup>5</sup> This does not result in any significant distortion, since, according to our estimates, the share of non-residents is negligible in this market.

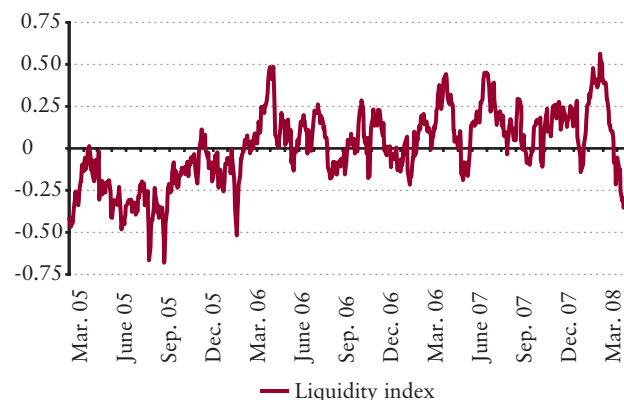
<sup>6</sup> Normalisation and unweighted averaging are in conformity with the practice of the BoE and the ECB. Similarly to these two major central banks, we also opted for the method of unweighted averaging because there is no viable quantifiable indicator that could express the importance of the selected markets relative to one another from the aspect of market liquidity. We cannot say, for example, that the market with the highest turnover is surely the most significant one in terms of the liquidity of domestic financial markets. The liquidity indicator weighted with the banking sector's exposure regarding the given market may be suitable for a special analysis of market liquidity, which emphasises credit institutions' stability, but due to the weights which change as time goes by, even in this case it would be difficult to interpret precisely the shifts of the index (it would be hard to separate the effects of exposures and the changes in market liquidity). Accordingly, while out of the liquidity dimensions depth was deliberately taken into account with a greater weight, we made no distinction between the selected four financial markets according to their importance.



Chart 2

## Liquidity index

(exponentially weighted moving average)



Note: Rise in the liquidity index denotes an increase in the liquidity of financial markets.

Sources: MNB, KELEK, Reuters, DrKW.

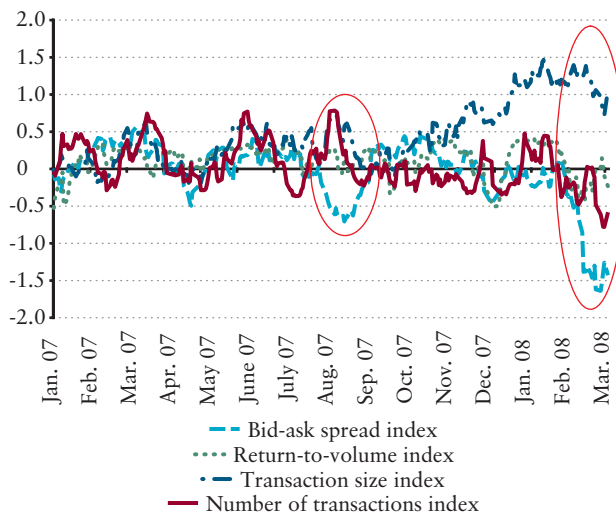
The liquidity of domestic financial markets fell below its long-term average both at the time of the outbreak of the US sub-prime crisis in August-September 2007, and in the period of domestic and international government bond market liquidity problems in early March 2008 (Chart 2). However, in connection with the decline in liquidity related to the sub-prime crisis it is worth underlining that its magnitude was far below the fall in market liquidity observed in more developed financial markets. The liquidity indices of both the BoE and the ECB show a fall of unprecedented degree and speed in the period of August-September 2007, while the drop in the MNB's liquidity index in the same period was not outstanding compared to its earlier fluctuations.<sup>7</sup> In early March 2008, in turn, the value of the liquidity index declined significantly within a short time. Nevertheless, market liquidity did not drop to the level of the historical minimum observed in mid-2005; the underlying reason for this is that right before the occurrence of the government bond market liquidity problems the liquidity of domestic financial markets was at an all-time high.

One common feature of the turbulent periods of the recent period of more than one-half year is that the fall in the liquidity of the Hungarian financial markets was primarily reflected in a decrease in tightness, i.e. in the rise in the costs of trading, while the depth of the market, i.e. the market turnover, did not change significantly. The time series of liquidity sub-indices reveal that a shared characteristic of the fall in liquidity in August-September 2007 and in early March 2008 was that in both cases the bid-ask spread index reached

Chart 3

## Liquidity sub-indices

(exponentially weighted moving average)



Note: Similarly to the liquidity index, increase in liquidity sub-indices suggests an increase in the given dimension of liquidity.

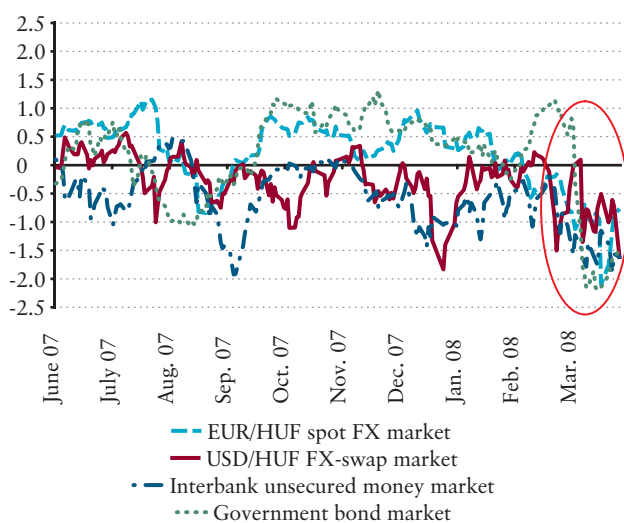
Sources: MNB, KELEK, Reuters, DrKW.

historically low levels (Chart 3). This indicates a considerable widening of the bid-ask spreads in the Hungarian financial markets, i.e. a significant easing in the tightness of the market. However, in August-September 2007 the easing of tightness was still partly offset by the deepening of the market, because during this period both average transaction size and the number of transactions rose. In early March 2008, in addition to tightness, there was an unfavourable tendency in the number of transactions as well, i.e. market turbulence affected several dimensions of liquidity. An exception was the average size of transactions, which did not decline notably even then from its historically high level reached in the previous months. Overall, the turnover of domestic financial markets did not fall considerably in early March 2008 either.

At the time of the government bond market liquidity problems in early March 2008<sup>8</sup> market tightness worsened by an unprecedented extent, and the significant fall in liquidity was no longer limited to the government bond market either. After November 2007, (apart from its typical seasonal fall at the end of December) the liquidity index started to follow a clearly upward trend again. Based on the liquidity sub-indices, the underlying reason for this is undoubtedly the dynamic increase in the average transaction size observed in domestic financial markets (Chart 3). The rise in the liquidity

<sup>7</sup> For the developments in the liquidity indices of the BoE and the ECB see Bank of England (2007b) and European Central Bank (2007b).

<sup>8</sup> The domestic and international government bond market liquidity problems in early March 2008 are discussed in detail in the April 2008 issue of the Report on Financial Stability.

**Chart 4****Bid-ask spread indices of the major domestic financial markets***(exponentially weighted moving averages)*

Note: A rise in the indices shown reflects a narrowing of the bid-ask spreads, i.e. an increase in the tightness and liquidity of the market.

Source: MNB, KELER, Reuters, DrKW.

index came to a halt in early March 2008, when the effect of the government bond market liquidity problems appeared mainly in the unprecedented widening of the bid-ask spreads. Although to a lesser extent, due to the general market sentiment as well as the expectations and complex positions of market participants, this development emerged not only in the government bond market but also on the other major domestic financial markets (Chart 4).

**CONCLUSIONS**

The concept of market liquidity includes several features of a given market, including the tightness, depth and resiliency of the market. A liquidity index should contain indicators that are able to quantify all these factors. Based on a review of international central bank practices and taking into account the peculiarities of domestic financial markets, the liquidity index of the Hungarian financial markets concentrates on four major markets: the EUR/HUF spot foreign exchange market, the USD/HUF overnight FX swap market, the overnight interbank unsecured money market and the secondary market of Hungarian government bonds. After adequate normalisation, the time series of the indicators which capture the various dimensions of liquidity (bid-ask spread, return-to-volume ratio, average transaction size, number of transactions) can be condensed into one single liquidity index, but an independent analysis of the specific time series or sub-indices related to individual liquidity

dimensions may also provide useful information when different trends can be observed across market segments, or the various dimensions of liquidity change in opposing directions. The current time series of the liquidity index and the analysis of the factors underlying the changes in market liquidity will be regularly presented in the future in the market liquidity chapter of the MNB's Report on Financial Stability.

Overall, based on the indices, the liquidity of domestic financial markets followed an increasing trend in the past years, but in the turbulent periods (especially at the time of domestic and international government bond market liquidity problems in early March 2008) rapid and considerable declines in markets' liquidity could be observed. Most of these market turbulences mainly entailed a fall in the tightness of domestic financial markets, i.e. an increase in the costs of trading, while the depth and turnover of markets did not decrease significantly.

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