MNB BULLETIN
June 2012

MAGYAR NEMZETI BANK

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The aim of the Magyar Nemzeti Bank with this publication is to inform professionals and the wider public in an easy-to-understand form about basic processes taking place in the Hungarian economy and the effect of these developments on economic players and households. This publication is recommended to members of the business community, university lecturers and students, analysts and, last but not least, to the staff of other central banks and international institutions.

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Summary

DEAR READER,

The Magyar Nemzeti Bank attaches great importance to making central bank analyses on various current economic and financial trends of general interest available to the wider public. The June 2012 issue of the MNB Bulletin contains six topical articles, in which the authors present the electronic issuance of cafeteria vouchers; the use of unconventional central bank instruments in Hungary; international experiences with the use of unconventional instruments; the design and implementation of the MNB's euro sale programme related to early repayments; the assessment of the cyclical position of the economy using confidence indicators; and the Single Euro Payments Area (SEPA).

In her article, Éva Divéki provides an overview of the Government's recent initiatives to create a framework permitting the electronic issuance of vouchers. Some of those initiatives have already reached the phase of implementation. At the social level, the implementation of such a framework which is efficient from technical as well as 'business' points of view, the most important principle related to the domestic voucher infrastructure is that it should operate electronically. Vouchers need to be accepted in the already operating bank card infrastructure (and/or with its expansion) in such a manner that the system should allow the participation of private service providers (issuers, acquirers) which compete against one another. The motive of writing this article was that the voucher market underwent a significant modification this year, due to changes in the relevant tax allowances. The modification process points in the direction of electronisation, but considerable advantages could be achieved by further electronisation in the case of the still paper-based, state-supported voucher market segment as well.

The article by Gergely Fábián and Róbert Mátrai discusses the set of instruments introduced recently by the MNB. The financial crisis revealed that, due to the reliance of the Hungarian banking sector on external funding, the deterioration in the liquidity position can be a significant obstacle to lending despite the ample forint liquidity at the system level. The Magyar Nemzeti Bank introduced several unconventional instruments in order to ease the liquidity and financial tensions, to ensure the forint and foreign exchange liquidity of the banking system and to overcome money market turmoil in the crucial FX swap market. Due to banks' deteriorating lending capacity, the MNB continued to expand these instruments in early 2012. The set of instruments may reduce liquidity constraints on lending and provides a safety net against unfavourable liquidity shocks.

In his article, Kristóf Lehmann provides an overview of international experiences with the use of unconventional central bank instruments. The use of unconventional instruments may be justified by the existence of financial market friction, turmoil, failure or constraint, when instruments that change the size and/or composition of central bank balance sheets may be more efficient in achieving monetary policy objectives than traditional interest rate policy.

György Pulai and Zoltán Reppa show that as a result of the early repayment programme launched in the autumn of 2011, buying demand for several billions of euros arose on the side of domestic banks. The purchase of such amounts in the foreign exchange market would have alone contributed to a substantial weakening of the forint; moreover, it could have led to a speculative attack, further aggravating the depreciation of the currency. The objective of the MNB's euro sale programme was to use the Bank's foreign exchange reserves in a prudent manner, under clearly defined terms, to prevent depreciation of the national currency without increasing the country's vulnerability. Both the situation of domestic banks and the development of the instrument were made difficult to a great extent by the fact that the volume of loans to be repaid and hence the quantity of foreign currency necessary for hedging were uncertain. The Bank therefore needed to define the parameters of the instrument so as to enable credit institutions to continuously buy foreign currency from the Bank, but without encouraging overhedging and to ensure that the price of the instrument is not cheaper than the market rate, but not so high as to discourage banks from using it. The MNB held a total of 22 tenders; it paid out

approximately EUR 2.6 billion of the foreign currency sold at the tenders, equalling 60 per cent of the total volume of early repaid loans.

In his article, Olivér Rácz argues that in an inflation targeting regime, the best possible knowledge of demand-side inflationary pressure is of priority importance for monetary policy. In applied macroeconomic models, this is traditionally represented by the actual position of the cyclical component of GDP (the output gap). The author defines a new output gap indicator, which, as opposed to the traditionally employed methods, also relies on direct information concerning the actual utilisation of economic resources. Exploiting such information substantially improves the real-time stability of the output gap estimate. The output gap indicator generated by his method (resource utilisation gap) has convincing predictive power and therefore gives a valid indication of demand-side inflationary pressure in the real economy. Taking the above into account, the method described in the article will become a useful additional tool to support decision-making in monetary policy in Hungary.

Anikó Turján and Judit Brosch show that in 2001 intra-Community cross-border credit transfers were time-consuming and costly, while the overwhelming majority of credit transfers within Member States were executed within one day, typically costing euro cents or at most a few euros. Considering the creation of the single internal market and the introduction of the euro, this situation was unsustainable, and therefore, in order to change this situation the vision of the single euro payments area (SEPA) was born. The objective was to execute payments in euro as efficiently and cheap as possible, providing the same rights, obligations and basic terms irrespective of borders and assuring that a single payment account in any Member State is sufficient to make euro payments within the EU. The first article on SEPA was published in the MNB Bulletin in September 2008. In the four years since then, significant progress has been made particularly in the field of two major products: credit transfers and direct debits denominated in euro. After the initial, fundamentally market-driven process and self-regulation, in 2012 the Regulation of the European Parliament and of the Council eventually established uniform rules and requirements for credit transfers and direct debits denominated in euro as well as the end-date by which migration from the previous, diverse national legacy products to such credit transfers and direct debits must be completed. By default, the migration must be completed by 1 February 2014 in the euro area and by 31 October 2016 in non-euro area countries.

The Editorial Board

Éva Divéki: Card or print? How to issue cafeteria vouchers electronically?

Recently, there have been several government initiatives pointing to the electronisation of the voucher market, some of which have already reached the phase of implementation. In the interests of implementation at the society level which is efficient from technical as well as 'business' points of view, the most important principle related to the domestic voucher infrastructure is that it should operate electronically. Vouchers need to be accepted in the already operating bank card infrastructure (and/or with its expansion) in such a manner that the system should allow the participation of private service providers (issuers, acquirers) which compete against one another. The motive of writing this article was that the voucher market underwent a significant modification this year, due to changes in the relevant tax allowances. The modification process points in the direction of electronisation, but considerable advantages could be achieved by further electronisation in the case of the still paper-based, state-supported voucher market segment as well.

THE SIZE AND IMPORTANCE OF THE VOUCHER MARKET IN HUNGARY

Recently, various Hungarian local government and government circles have placed an increasing emphasis on ideas for the (central or local) planning of the voucher market and the social card scheme (which may even be considered as an element of this market). Some of these initiatives have already reached the phase of implementation and operation. The growth of the voucher market is an international phenomenon, which is reflected by the obvious attention paid to this market segment by leading card companies and the banks cooperating with them.[1]

In 2012, the Hungarian voucher market changed considerably due to the modification of the extent of tax allowances that motivate the issuance of vouchers. The voucher market segments that achieved a high turnover were able to attain their market size due to the tax allowances granted by the government to employers in relation to fringe benefits. If we take into consideration that a social card scheme (presumably also appearing in the form a voucher) may also attain a significant market size due to government regulation, we may come to the conclusion that the main 'sponsor' of the voucher market in Hungary is the Hungarian state, through the tax allowances granted or the regulation created by it.

Government ideas regarding the changing of vouchers were revealed during 2011. Last year, there were several government initiatives for the electronisation of the market of paper-based vouchers. One of the examples already implemented is the Széchenyi Recreation Card (SZÉP Card)[2], an electronic voucher card initially created to replace the paper-based travel voucher. At present, the Erzsébet voucher is paper-based, but Decree No. 39/2011. KIM of the Minister of Public Administration and Justice on the Issuance of the Erzsébet Voucher allows the issuance of the voucher in electronic format as well. The idea of transferring the amounts of social benefits to a social card instead of cash payment has also arisen (e.g. it is in the implementation phase in the 1st District in Budapest); there are several international examples for this approach as well (e.g. Slovakia, USA).

Electronic vouchers have become the most widespread in the case of health care cards. The common feature of these solutions is that these cards are accepted by merchants on the existing POS terminal[3] infrastructure for bank cards. The SZÉP Card works in a similar manner, with banks in the background.

[1] In the terminology of international card companies and card issuing banks, the market segment of vouchers is classified in the category of so-called 'pre-paid' cards, i.e. these types of cards are offered as products for the voucher type solutions.

[2] For the structure of the SZÉP Card, see the chapter entitled 'Evaluation of the current system of the SZÉP Card in light of the above fundamental principles'.

[3] POS (point of sale terminal): electronically operating bank card accepting terminal.

Precise data on the size of the domestic voucher market are not available for us; the size of the market (based on the annual turnover, excluding secondary market transactions) is estimated to have been between HUF 100 and 300 billion. In the past, food vouchers and travel vouchers constituted the segment with the highest turnover; both were paper-based.

This article outlines the fundamental principles that are important to consider for implementation of the issuance of vouchers at the society level, which is efficient from technical as well as 'business' point of view.

The article does not intend to discuss the social policy issues as to whether there should be state-supported forms of consumption and relevant types of vouchers. However, if the economic policy decision is that they should exist, it is important that the social efficiency of their use be as high as possible.

The most important aspect related to the domestic voucher infrastructure is that it should be operated electronically, allowing the acceptance of vouchers on the already operating bank card infrastructure (or with its expansion) in such a manner that the system allows the participation of private service providers (issuers, acquirers) which compete against one another.

CONSIDERABLE EFFICIENCY IMPROVEMENT LIES IN THE ELECTRONISATION OF VOUCHERS

Paper-based vouchers have many disadvantages, most of which can be significantly reduced by the use of electronic vouchers. There is considerable potential to boost efficiency via the electronisation of the voucher market.

The disadvantages and long-term costs of paper vouchers are significant:

- Their processing cost is high; similarly to cash, vouchers need to be produced, transported, sorted, counted, stored and destroyed.

- Upon shopping, voucher holders face the problem of denominations due to the fixed denomination structure and the lack/prohibition of giving back any change. Therefore, during payment transactions cash needs to be added to the vouchers in most cases. This denomination problem increases the length of the payment process as well, and may even result in the failure of the transaction due to lack of the necessary cash. A similar problem is that in the case of small denominations it may take a long time to count the amount of vouchers required for the payment.

- The secondary market of paper vouchers (which does not comply with the primary objective in the case of cafeteria vouchers) cannot be controlled, and may grow to considerable size. For example, according to anecdotal information, in many cases a part of the voucher turnover accepted by smaller merchants appeared in hypermarkets, i.e. retailers that had accepted the vouchers bought goods in exchange for them in store chains.

- Selling paper-based vouchers at a discounted value or exchanging them for cash may also considerable. Consequently, the social objective intended to be achieved also becomes affected. They are not used to buy what they were intended for.

- The social aspect is also affected if the voucher is used for purchasing something that does not correspond to the objective; for example, food vouchers are used for buying a vacuum cleaner in a shop that sells food as well as consumer durables. In the case of paper vouchers it is much more difficult (almost impossible) to check and monitor this.

- The purchase and redemption fees of paper vouchers may also be high.

- It is much easier to commit the crimes of counterfeiting and fraud with paper vouchers.

Electronisation of the voucher market would entail a number of positive effects and would result in a major improvement in efficiency:

- Processing costs decline considerably; performing many of the activities listed above in connection with the paper-based vouchers becomes unnecessary.

- There are no denomination problems. Everybody pays as much as needed using electronic vouchers, i.e. the amount due for the given product/service. There is no need to add cash to the amount to be paid; the transaction does not fail because of this. As a result, the payment process may be faster.

- There is no secondary market, as transactions may clearly be traced back in the electronic system; it is not possible to sell the electronic voucher for cash at a discounted rate, and only the beneficiary can use it.

- It is easier to ensure that the voucher is used for the actual purpose.

- The traceability of electronic transactions contributes to the whitening of the turnover in the sectors concerned and makes the turnover transparent for the state.

- Electronisation may increase the safety of voucher issuance; by this – depending on the purpose – it is possible to terminate the limited expiry or the expiry date may be extended considerably.

PRINCIPLES IN THE ELECTRONISATION OF VOUCHERS

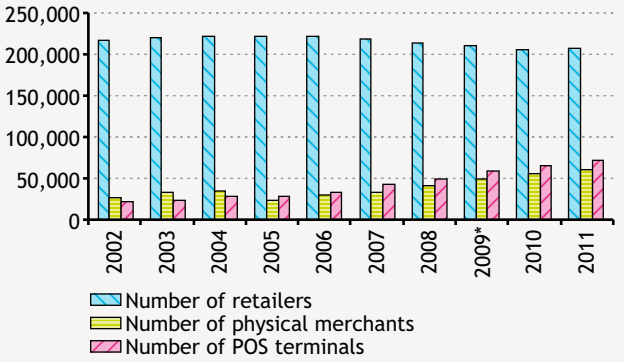
To be able to exploit the aforementioned advantages in the electronisation of vouchers, it is expedient to take into account certain principles when carrying out this task. Although making the vouchers electronic may result in a significant improvement in efficiency, much depends on how the electronisation is implemented in practice. Therefore, the next part describes the principles that need to be taken into account in order to achieve the greatest possible improvement in terms of social efficiency.

It is practical to use the existing bank card infrastructure and standards

For the acceptance of electronic vouchers it is expedient to use the already existing POS infrastructure that is also used for bank cards, and it is expedient to implement the electronisation by expanding this infrastructure. All of this does not mean that the electronisation of vouchers has to take place in line with the business interests of credit institutions. It only means that it is expedient to apply the same standards and devices for the acceptance of electronic vouchers that are used for bank cards, because without this the synergies stemming from the development of the two kinds of markets would be lost.

Similarly to health care cards, the spread of electronic vouchers could facilitate an increase in the number of payments by bank cards as well, because electronisation may contribute to the accelerated installation of the POS network which also accepts bank cards, i.e. POS terminals could also be installed at places where there have not been yet before. Accordingly, a voucher solution using the existing POS infrastructure of banks is the most efficient choice, as it does not require the creation and installation of a new, parallel POS terminal and central clearing infrastructure.

Chart 1
Changes in the numbers of retailers and physical merchant outlets that accept bank cards and POS terminals, 2002–2011



** Data for 2009 are partly based on estimation as 2009 data are not available on the website of the CSO.*
Sources: CSO, MNB statistics.

Chart 1 shows the changes in the number of retailers on the basis of CSO data as well as the changes in the numbers of merchant outlets accepting cards and POS terminals based on data of the MNB. It is distinctly visible in the chart that the number of merchant outlets is increasing steadily, and their number exceeded 60,000 in the second half of 2011, in spite of the decline in the number of retailers for a considerable part of the period.

The acceptance of vouchers installed on bank cards would require additional investment only of those part of retailers that currently do not have a POS terminal. All of this may also result in a major expansion of the bank card acquiring network. It is important to note that as it would be the same infrastructure that serves payments by bank card and electronic vouchers, the dynamics of the two markets may add up from the aspect of the expansion of the network.

The bank card infrastructure does not limit the scope of potential issuers, acquirers and participants to banks, as it has been accessible for any payment service provider (other financial institutions, the post, payment institutions and even the Hungarian State Treasury) since the implementation of the EU Payment Services Directive in Hungary.

In addition, through the reduction of the social costs of payments[4] the widespread use of electronic payments may be considered as a step in the direction of social welfare. Considerable savings could be reached at the level of the society as well with a complete change-over to electronic payments. Moreover, thanks to the traceability of transactions and the reduction of the use of cash, the

[4] Turján et al. (2011).

spread of electronic payments could greatly contribute to the whitening of the economy.

Fees as well as contract terms and conditions controlled by the state

The reason for issuing vouchers supported with tax allowances is to achieve some social policy objective. Accordingly, vouchers may also be considered as 'earmarked money', which is utilised best if it is used efficiently and appropriately.

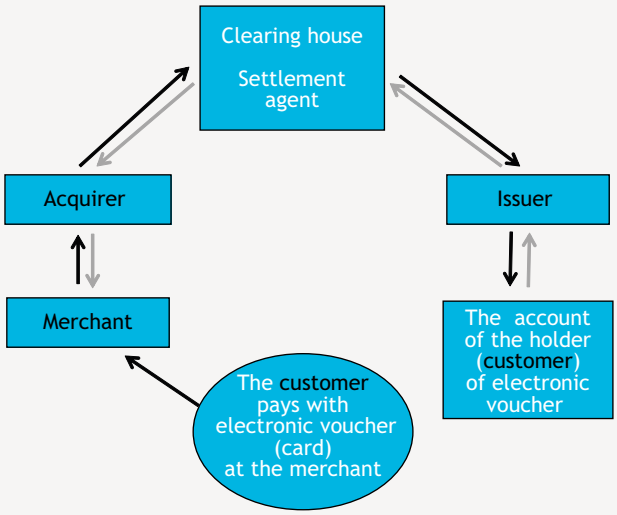
In order to achieve the intended social policy objectives, it would also be necessary to implement strong state control over the pricing and contract terms and conditions of the market services related to the voucher in the case of vouchers issued or supported by the state. It is necessary to avoid the situation when the state assigns one given service provider (e.g. a single bank) to organise the issuance and acceptance of the electronic vouchers, thus creating a monopolistic position for the service provider and allowing it to establish the fees charged for the services as well as the contract terms and conditions at its own discretion. Both issuance and acceptance should be organised by several service providers, which compete with one another.

The relevant contract terms and conditions as well as the pricing circumstances related to the voucher should be determined by the state in a competition-neutral manner, and the state should insist on compliance. It is important to emphasise that state control of all the fees charged in the system is necessary, or at least the state should establish the maximum extent of the fees.

A four-point system must be developed

The voucher acquiring system must be an open, four-point system. A 'four-point system' means that the system of acceptance (i.e. the acquirer) is independent of the issuer in the sense that the institution (issuer) that is in contact with the holder of the electronic voucher card (customer) does not have to be the same institution as the one that connects the customer into the system and is in contact with the merchant that accepts the voucher. (Chart 2 shows the four points of the system: customer, merchant, issuer and acquirer.) Of course, there are other participants as well in the case of electronic vouchers: employers that buy the electronic vouchers for their employees, issuers' contracted

Chart 2
Simplified chart of the four-point system



partners (not shown in Chart 2) as well as clearing and settlement institutions (which are presented in the chart).

Acquirers and issuers are linked by the pre-determined and common rules of the system. Openness means that any institution meeting the criteria determined by the system (fees, access criteria, minimum service level, etc.) can be an acquirer or issuer.

It is an important aspect that acquiring merchants should not be forced to enter into contracts with each issuer separately regarding the acceptance of the electronic voucher cards. The owner of the system itself should be the state, i.e. the system 'should not be sold' to a profit-oriented service provider. This means that all decisions regarding the rules of and fees for the use of the system as well as the access can only be taken by the state in a competition-neutral manner. However, it does not mean that technical services cannot be outsourced. However, with the outsourcing of the technical types of services the market must not fall into the hands of a monopolistic service provider. This four-point model allows efficiency increasing competition among service providers both on the acquirers' and issuers' sides.

At present (as of 2011), there are 27 issuing and 10 acquiring institutions in Hungary in the bank card network, which means the networks of the two international card companies (VISA and MasterCard).[5]

[5] The networks of the international card companies mean that they control the rules of operation of their respective networks and the fees to be paid by the payment service provider (e.g. interchange fee, card membership fees), but the physical infrastructure is not owned by them, but rather by the payment service providers joined to them. These payment service providers typically use the same own infrastructure for the processing of the transactions cleared in both the VISA and the MasterCard networks. The use of this physical infrastructure for a third or fourth purpose is not controlled by the international card companies, and they cannot prevent it.

The interchange fee must be very low

It is not necessary to charge any interchange fee for the electronic vouchers, or a very low fee should be set. The interchange fee is the fee paid by the acquirer's bank to the issuer's bank upon the acceptance of the card. (It is not the same as the merchant fee, which latter is paid by the merchant to his own bank, the acquiring bank upon the acceptance of the card.) Basically, the interchange fee distorts competition on both sides. The objective would be that both the issuer side and the acquirer side should pay for the services used by each of them in a clear, transparent manner. In two-sided markets like this one, while the more intensive development of one side or the other can be influenced with pricing that is independent of the distribution of the costs of the two sides, it does not necessarily result in a cost-effective utilisation of resources.

Experiences of international card companies can be used

In the electronisation of vouchers, the experiences of international card companies gained in the designing and clearing of card systems may be needed, and it is expedient to use the same standards that are used in the case of bank cards. However, it does not necessarily mean that an international card company should be the owner of the system or that any of these companies should really involved in the elaboration of the rules of the voucher systems.

Fees and rules must be published in a transparent manner

The fees regarding the electronic vouchers should be transparent and publicly available in the case of the acquirers as well as the issuers. Therefore, similarly to the provisions in the regulations on payment services, the issuer should inform its partners about the changing of its terms and conditions 60 days before entry into force. By this, its partners must be given the opportunity to become aware of the amendment in due time, allowing them in the case of any unfavourable modification to terminate their respective contracts and enter into agreement with another service provider if necessary. The notification to contracted partners should be in written form (e.g. letter or e-mail), whereas non-contracted partners should be informed in national or regional journals and electronically, through the Internet.

An on-line registration and authorisation system is more favourable in the long term

An electronic voucher system implemented on the basis of the bank card acquiring infrastructure may follow two basic models in terms of the authorisation of payment transactions and the registration of vouchers.

It can be based on on-line authorisation, similarly to debit cards, when the value of the voucher is stored in the central database (account management system) of the issuer, and in each case the payment transaction is authorised on the basis of communication with this system (if there is any available balance, updating of the balance, guaranteeing the crediting of the given amount of voucher to the merchant's account).

There are also international examples of voucher systems based on an off-line solution. In this case, there is no central authorisation or approval; the voucher balance is stored in the card itself. This does not require communication with the issuer; therefore, the payment transaction may be faster and implementation of the solution is also simpler. However, serious disadvantages of the off-line solution are the higher exposure to misuse and fraud[6] as well as the fact that if the card holder who owns the vouchers loses the card, he loses the vouchers as well, because cancellation is not possible in this system.

Overall, although initial implementation is more costly, over the longer term it is worth choosing on-line solutions, because the system is much more convenient and easier to control from the aspects of the issuer, the regulator and the holder of the voucher alike. In terms of costs, the difference between the two forms of implementation is diminishing with the steady decline in telecommunications and IT costs.[7]

EVALUATION OF THE CURRENT SYSTEM OF THE SZÉP CARD IN LIGHT OF THE ABOVE PRINCIPLES

The SZÉP Card was introduced in the market of cafeteria vouchers as a result of government measures. The undisguised intention of the government is to make the SZÉP Card the market-leading voucher system. The system, which originally aimed at replacing the travel voucher, is suitable for serving any other cafeteria elements electronically.

[6] Just think of the phone card counterfeiting in the early 1990s.

[7] With an objective to serve voucher markets, international card companies and even mobile phone companies offer so-called 'pre-paid' solutions. It is worth to know of them that although earlier the name 'pre-paid' was used for the off-line e-wallets (classical e-money model), the solutions of card companies and mobile phone companies already postulate an on-line solution with central authorisation in this segment as well. Typically, these solutions are different from the classical debit card systems only in the loading and redemption procedures.

The SZÉP Card structure

The SZÉP Card is an electronic voucher card that can be issued by banks that meet the relevant criteria; it can be used through traditional POS terminals, and authorisation/acceptance is also possible through telephone or the Internet. Pursuant to the government decree that regulates the SZÉP Card[8] (hereinafter: Government Decree), the Card can be issued by several banks that meet the criteria. The Government Decree also stipulates several criteria for becoming an issuer, but in the current domestic market these criteria may actually be met by some medium-sized or large banks only: at least 100,000 previously issued bank cards are required, a branch in each town or village with more than 35,000 inhabitants, at least two years of experience in the issuance of electronic vouchers and more than 25,000 voucher cards issued. As we were informed, OTP, K&H and MKB registered as issuers.

The conceptual importance of the SZÉP Card is that the paper-based travel voucher is replaced by an electronic scheme that functions with much lower costs on both the merchant's and the employer's side, in such a manner that the existing physical bank card terminals (and the bank infrastructure behind them) can be used to operate the system.

The scope of use of the voucher card is determined by the Government Decree in an itemised manner on the basis of the NACE: this scope covers accommodation services and cultural entertainment (museum, theatre, zoo), sports activities, health care or other recreational activities in a relatively wide sense; meals are included if they are served in a restaurant or are related to accommodation services directly. In practice, it should be imagined as various 'pockets', i.e. subaccounts, belonging to the SZÉP Card, which allows the separate use of each of them. The maximum amount of grant that can be transferred to the catering 'pocket' is HUF 150,000, whereas HUF 75,000 and HUF 225,000 can be transferred to the recreation and accommodation services parts, respectively.

Pursuant to the Government Decree, the fees of the SZÉP Card are much lower than the fees typical of the existing paper vouchers. Namely, the issuer of the SZÉP Card can charge a fee only on one side, i.e. the merchant's side, and not more than 1.5 per cent. The employer and the employee do not pay anything at all directly. This fee is significantly lower compared to paper vouchers, where a fee of 3–5 per cent may exist on both sides (the employer that buys the voucher for its employees and the merchant that accepts the voucher); consequently the total fee burden may reach as much as 10 per cent.

In light of the principles presented in the above section, in the following we present an analysis of how efficiently the current system of the SZÉP Card is able to achieve the set targets:

- It can be considered a positive solution that the SZÉP Card also uses the bank infrastructure, because this allows for cost reduction, efficiency increase and a minimisation of investment requirements. Accordingly, the opportunities stemming from the synergies of the two markets (the bank card and the electronic voucher markets) can be used.

- It is also advantageous that the system was designed using state control. Pricing conditions were determined in a government decree, defining a maximum percentage for the prices.

- In legal terms, there are three players in the current system of the SZÉP Card. This means that independent issuer and acquirer sides are not clearly established; the Decree mainly mentions the issuer. By this it suggests that the SZÉP Card may only be acceptable in the given issuer's network (on its acquiring devices). On the acquirer side only one sentence of the Government Decree points to the fact that the acceptance is also open. 'The institution (...) shall design the voucher acquiring system in a way that it should be accessible through its own terminal as well as electronic terminals operated by other business entities.'[9] The legal effect of the sentence quoted above is a matter of interpretation, and the exact situation is also uncertain because there is a direct contract between the issuer and the acquiring merchant in any case, which, in turn, legally does not point to a classical four-point model but rather to a three-point one (where the issuer is the acquirer at the same time). Practice also showed that there were occasional problems upon the acceptance of the electronic voucher card when the voucher card holder wanted to use his card in a network and acquiring devices other than those of the issuer. According to the information we have, this disadvantage is significantly reduced by the fact that individual issuers accept or will

[8] Government Decree No. 55/2011 (IV.12.) on the Rules of Issuance and Use of the Széchenyi Recreation Card.
[9] Article 7(1) of Government Decree No. 55/2011 (IV.12.) on the Rules of Issuance and Use of the Széchenyi Recreation Card.

accept one another's cards on a reciprocal basis. However, accepting one another's cards merely 'as a favour' is not a 'mandatory' solution. Therefore, it would be more transparent and reassuring if already at the level of the Decree we could speak about a legally enforced four-point system, in which the acceptance of the SZÉP Card of another issuer does not take place as a favour, on a 'gentlemen's agreement' basis. At the same time it would also clarify that the acquiring merchant has to have a contractual relationship only with his own acquiring service provider, and there is no need for direct contracts with the issuers.

- The fee left with the acquirer may be agreed upon in the contract between the acquirer and the issuer, but may not be more than 0.3 per cent. (Therefore, it corresponds to a reversed interchange fee: it is paid by the issuer to the acquirer for acceptance.) It can be considered as an advanced solution that the fee was determined in a provision of law, establishing a maximum extent.

- On-line authorisation and registration are applied in the case of the SZÉP Card. In any case, from a safety aspect this created the conditions of a better and more efficient solution over the longer term compared to off-line or paper-based systems.

Overall, examining the principles presented in the above section, the SZÉP Card receives a positive evaluation in several respects, although a further increase in the number of merchant outlets would be necessary, and it would be a better solution if we could speak about a four-point system at the level of the Decree as well. This would make it clear that acquiring merchants need to have a contractual relationship only with their acquiring bank, without having to enter into contracts with the issuers.

ELECTRONISATION OF THE ERZSÉBET VOUCHER MAY ALLOW FURTHER CONSIDERABLE IMPROVEMENT IN EFFICIENCY

At present, the Erzsébet voucher is issued on paper. Its popularity is attributable to the fact that in terms of tax allowances it is one of the most advantageous cafeteria items. As for its function, it primarily serves social purposes, contrary to the SZÉP Card, which aims at economic development. There was news in the press that the notion of paying certain allowances and social benefits in Erzsébet vouchers had also been brought up.

The decree of the Minister of Public Administration and Justice on the issuance of the Erzsébet voucher allows its appearance in electronic format. Based on the arguments listed in this article this would result in a considerable improvement in efficiency in any case, whereas taking account of the principles discussed here may facilitate the successful implementation of electronisation from social, technical and business aspects alike.

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Gergely Fábián and Róbert Mátrai: Unconventional central bank instruments in Hungary

The financial crisis revealed that – due to the reliance of the Hungarian banking sector on external funding – the deterioration in the liquidity position can be a significant obstacle to lending in spite of the ample forint liquidity at the system level. The Magyar Nemzeti Bank introduced several unconventional instruments in order to ease the liquidity and financial tensions, to ensure the forint and foreign exchange liquidity of the banking system and to overcome money market turmoil in the crucial FX swap market. Due to banks' deteriorating lending capacity, the MNB continued to expand these instruments in early 2012. The set of instruments may reduce liquidity constraints, which restrain lending, and provides a safety net against unfavourable liquidity shocks.

INTRODUCTION

The escalation of the financial crisis in the autumn of 2008 caused major tensions in money markets and resulted in a deep recession in the world economy. Compared to peacetime monetary policy, central banks of the world gave unprecedented, unconventional responses in order to stop the negative spiral between the financial system and the real economy. The most widespread instruments were related to the expansion of the liquidity in the banking system. In addition, mainly in developed countries, following the zero lower bound of short-term interest rates, direct credit market interventions (asset purchases, direct lending) took place, and high volumes of government securities were purchased to reduce longer-term, risk-free yields.

The spill-over of the crisis seriously affected the indebted Hungary, as risks in the Hungarian banking sector – namely the foreign currency and maturity mismatches in bank balance sheets – became visible. Although at system level forint funds are abundant and the liquidity shock absorbing capacity of the banking sector is strong, significant asymmetry is seen at the individual bank level.

In addition, the main problem is the high FX swap market exposure, which plays an important role in covering the on-balance-sheet open FX position. In the case of an exchange rate shock, the additional forint liquidity need arising during the roll-over of swaps and due to the margin call reduces the forint liquidity of credit institutions with swap market positions. Swap market turbulences impair the efficiency of the monetary transmission mechanism and may jeopardise the stability of the banking sector as well. These risks may significantly increase in the case of strains due to the sovereign debt crisis and in the case of an excessive outflow of foreign funds due to stronger deleveraging by the euro-area banking sector.

The article below describes the unconventional instruments applied by the Magyar Nemzeti Bank and the background of their introduction. During the crisis, the Magyar Nemzeti Bank introduced several such instruments to ensure the forint and foreign exchange liquidity of the banking sector and to overcome turmoil in the key FX swap market. In order to offset rising risks on account of the escalating sovereign debt crisis, the MNB widened the safety net in 2012 by announcing a two-year collateralised loan and further liquidity providing instruments. Looking ahead, the universal mortgage bond issuance and the supporting central bank mortgage bond programme (in the case of amendment of the mortgage bond issue model) may provide a significant further boost to the increase of liquidity reserves and improvement of the maturity match. The set of instruments that is taking shape may reduce liquidity constraints which restrain lending and provides a safety net against unfavourable liquidity shocks.

THE APPLICABILITY OF UNCONVENTIONAL CENTRAL BANK INSTRUMENTS IS LIMITED IN HUNGARY

In recent years, as a result of the financial crisis, several central banks (mostly in the more developed countries) introduced instruments that had not been applied earlier or used certain elements of its traditional instruments in a substantially more intensive manner than previously. In Hungary, these so-called *unconventional* instruments were introduced mainly in order to ensure the liquidity of the banking system and to overcome turmoil in key money markets. At the same time, other instruments deployed in developed countries, such as quantitative easing or direct credit market interventions (asset purchases, direct lending), are missing from the arsenal.

This is not country-specific aspect, though, as emerging countries very rarely use these types of instruments (Ishi et al., 2009). The main underlying reason is that in Hungary – similarly to many emerging countries – there is no direct danger of deflation, and the zero lower bound of the nominal interest rate is not relevant either, i.e. there would be room for using traditional monetary instruments as well, but a general easing of monetary conditions that disregards the inflation target is not consistent with the targets of the MNB. Moreover, a specific problem in Hungary is the significant foreign-exchange rate exposure of the private sector, as a result of which the depreciation of the forint entailed by monetary easing poses risks to financial stability. Furthermore, it is important to emphasise that these instruments may eventually entail fiscal costs, and the use of such quasi-fiscal instruments may pose a much higher risk for Hungary than for a more credible, developed country. Finally, securities markets (corporate securities and securities issued by banks) in Hungary are undeveloped for such interventions to be successful.

Overall, quantitative easing other than liquidity providing instruments or direct credit market interventions entail numerous dangers especially in catching-up, open and at the same time indebted countries such as Hungary, and thus the application of these types of instruments may also trigger negative market effects, contrary to the original objective (Krekó et al., 2012).

THE FX SWAP INSTRUMENTS OF THE MNB EFFICIENTLY CONTRIBUTE TO THE MAINTENANCE OF THE STABILITY OF THE BANKING SYSTEM IN A MORE TURBULENT MONEY MARKET ENVIRONMENT AS WELL

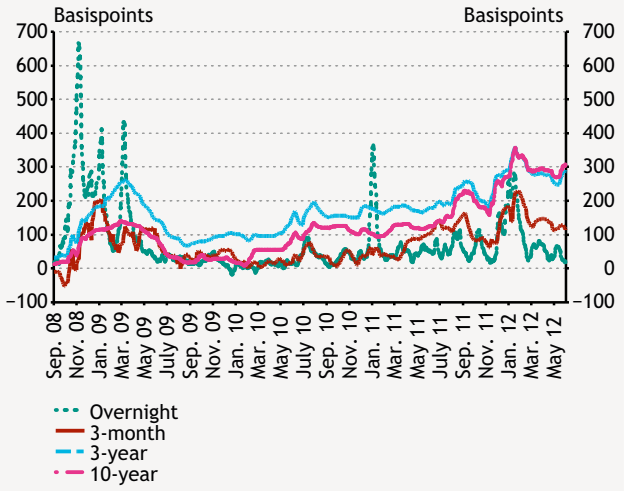
Following the Lehman Brothers bankruptcy on 15 September 2008, unfavourable market developments first appeared in the money markets in Hungary, which is considered to be particularly vulnerable due to its high external debt and low potential growth. In October 2008, higher global risk aversion, led to plummeting liquidity in domestic money markets coupled with a surge in asset sales by non-residents (MNB, 2009).

The reliance of domestic credit institutions on the FX swap market increased considerably in the past decade, due to foreign currency lending, which started to expand in 2004 and was mainly financed from forint funds. Starting from the autumn of 2008, non-residents' declining forint demand, coupled with a deterioration in the risk perception of the country, resulted in a depreciation of the forint and a surge in FX swap market spreads, which was accompanied by a deterioration in the liquidity of foreign-exchange markets. As a result, foreign exchange funds became much more expensive and harder to access for domestic banks, which impaired the efficiency of the transmission mechanism and jeopardised the stability of the banking system as well.

With the occurrence of FX swap market tensions in early October 2008, the MNB – appearing in the market as an intermediary – first introduced a two-way overnight FX swap facility and then, following the repurchase agreement concluded with the European Central Bank (ECB), launched an overnight FX liquidity providing EUR/HUF standing facility. The two overnight facilities allowed banks to continuously finance their FX liquidity needs even amidst the money market tensions that had evolved and facilitated a gradual return of overnight spreads to a level of around zero, which had been typical prior to the crisis.

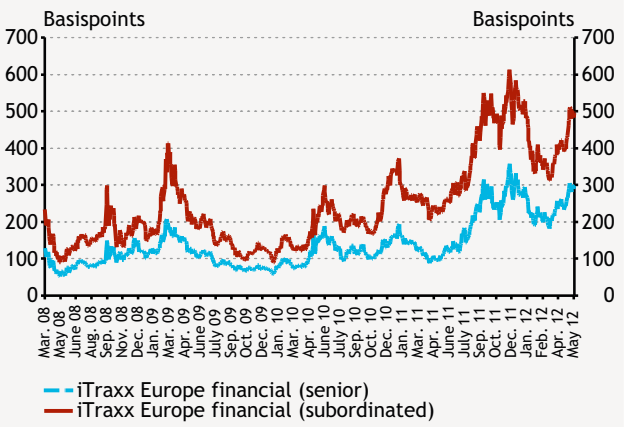
In 2009, the MNB introduced swap facilities with maturities longer than overnight. First, it launched Swiss franc providing one-week CHF/EUR swaps in February, before

Chart 1
FX swap spreads against the euro
(exponential moving averages)



Sources: Reuters, Bloomberg and MNB.

Chart 2
5-year CDS spreads of European banks



Source: Bloomberg.

introducing 3-month and 6-month EUR/HUF swap facilities in March. With the special conditions of participation in the 6-month swap tenders the MNB strived to control the fall in corporate lending. The swap facilities of the MNB efficiently reduced FX swap market spreads (Csávás and Szabó, 2010), although they were unable to stop the decline in lending. Although the spreads on swaps over one year also declined after March 2009, apart from short, temporary periods they did not return to their pre-crisis, close-to-zero level (Chart 1).

The recovery from the crisis and the consolidation on financial markets proved to be a short, as the crisis entered its second phase. In the second half of 2010, the European sovereign debt crisis erupted as a result of concerns emerging over the sustainability of government debt, surging as a result of unprecedented government interventions. With higher global risk aversion, FX swap spreads started to increase again from mid-2010 on. The increase in swap spreads accelerated at end-2011, when concerns related to the sustainability of debt surged. They reached their peak in January 2012, following the downgrading of Hungary. Thereafter, spreads were mainly influenced by changes in global investor sentiment and news related to the EU–IMF talks. Starting from end-January 2012 spreads declined, but at longer maturities they continue to exceed their 2008–2009 peak.

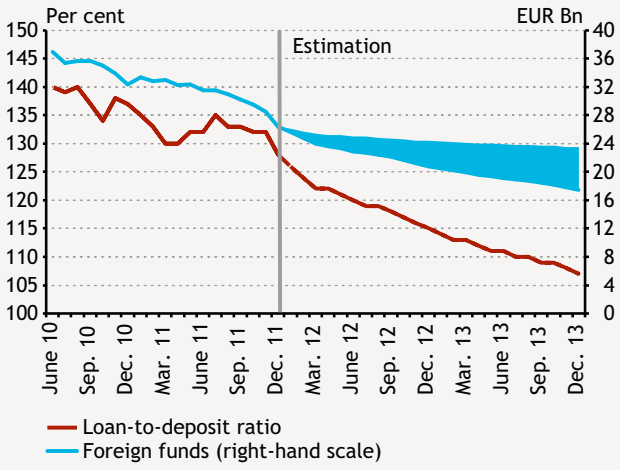
In the second half of 2011, a confidence crisis occurred, as a result of the deteriorating growth prospects due to the sovereign debt crisis, the sovereign exposure of European banks and fiscal consolidation, with these aspects all exacerbating one another. The extraordinary measures of the ECB, including the 3-year loan tenders, were only able to temporarily ease the persistent tensions on the financial markets. The perception of the capital position of European banks and their access to funds deteriorated considerably. In fact, European banks are considered riskier than during the 2008 crisis (Chart 2). As a result of the high reliance of the euro-area banking sector on wholesale funding, the mounting difficulties faced in raising capital on the markets and the limited capital injections from the state, the lending capacity of parent banks has been deteriorating, possibly compelling them to deleverage.[1] Therefore, in addition to the risk premium channel, the financial crisis may also be highly contagious through financial integration with parent banks.

The deleveraging of the euro-area banking sector poses serious external risks to Hungary, due to its high reliance on external funding with short maturities and its high degree of integration in finance and trading. Two negative risk scenarios may be distinguished: in the first case, banks in Western Europe may be compelled to strongly restrain lending due to the recurring increase in risks in the euro area, whereas in the second case deleveraging by these banks remains subdued, but the adjustment takes place asymmetrically, affecting Hungary to a greater extent. The risk of the latter may be significant, because of the weak profitability of the Hungarian banking sector in the past two years. As a result, the regional position of the country may weaken in the competition for foreign capital and funds.

These risks may basically lead to excessive outflow of funds, and parent banks may be less willing to inject capital; therefore, taking everything into account, affiliate

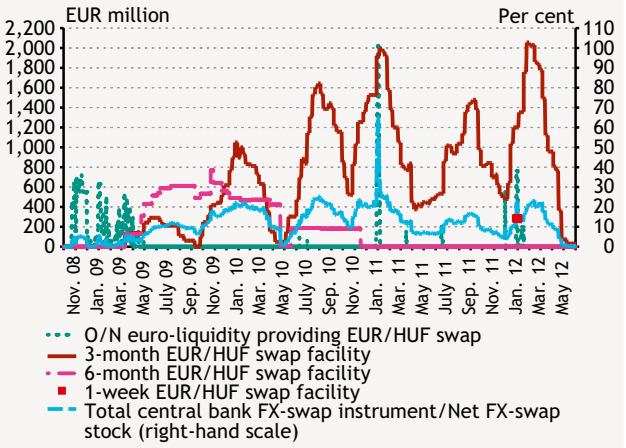
[1] For more details on the balance sheet adjustment of the euro area, see: BIS (2011), BIS (2012) and IMF (2012).

Chart 3
Loan-to-deposit ratio and foreign funds of the Hungarian banking sector in the baseline scenario



Note: In the case of the upper edge of the band, foreign liabilities are repaid only to an extent equalling the maturing FX assets and the inflowing foreign exchange deposits (FX swap holdings remain unchanged), whereas in the case of the lower edge, repayment includes forint liquidity becoming available from maturing forint loans or increasing from inflowing forint deposits (swap holdings increase).
Source: MNB, 2012.

Chart 4
Central bank euro liquidity providing swap facilities



Source: MNB.

banks will be compelled to deleverage on asset side. In spite of the significant balance sheet adjustment and outflow of foreign funds since the crisis, reliance on foreign funds remains high in Hungary, while short-terms funds represent a considerable proportion within foreign funds. As a result, roll-over risks may arise in the case of an escalating confidence crisis.

The main risk is that the withdrawal of foreign funds occurs with higher reliance on the swap market, as was observed recently. The swap exposure of the banking sector may grow by more than 50 per cent already in the baseline scenario, i.e. in line with the current forecast for loans outstanding and total deposits, if the banking sector is compelled to repay external liabilities from forint assets as well, in addition to maturing foreign exchange assets (Chart 3). The risks mentioned in connection with the euro-area banking sector may lead to an outflow of foreign funds exceeding even the baseline scenario, which – in parallel with more restrained lending – may result in an even higher reliance on the swap market than the forecast. All of this may take place in a permanently turbulent money market environment, as a result of which the FX liquidity safety net of the MNB remains extremely important.

Of the swap facilities, the MNB is maintaining the overnight standing facility and the 3-month swap. Accordingly, in the event of escalating market turbulences similar to those at end-2011 or a fall in the liquidity of the swap market, the MNB is able to provide the necessary foreign exchange liquidity for credit institutions in order to preserve the stability of the banking system. This was needed recently, as reliance on central bank instruments also increased considerably by end-2011 amidst growing money market tensions. As a result, swap exposure to the Central Bank amounted to some one fifth of the total FX swap holdings in January 2012. Thereafter, as a result of an improvement in investor sentiment, central bank swap holdings also declined gradually from February 2012 on (Chart 4). In order to provide the temporary foreign exchange liquidity required for the closing of positions at the end of the year,

Table 1
FX swap facilities of the MNB

Instrument	First tender	Last tender
Two-way overnight EUR/HUF FX-swap tender	13 Oct. 2008	15 May 2009
EUR/HUF overnight FX-swap standing facility	16 Oct. 2008	Daily announcement
1-week CHF/EUR FX-swap tender	2 Feb. 2009	25 Jan. 2010
6-month EUR/HUF FX-swap tender	2 Mar. 2009	28 June 2010
3-month EUR/HUF FX-swap tender	9 Mar. 2009	Weekly announcement
1-week EUR/HUF FX-swap tender	27 Dec. 2011	27 Dec. 2011

Source: MNB.

the MNB announced a one-off, one-week EUR/HUF swap extending over the end of the year with 28 December 2011 as the value date. Banks used the new facility in a value of EUR 290 million, and market quotations showed that the swap facility extending over the end of the year efficiently contributed to the decline in short-term swap spreads.

THE FORINT LIQUIDITY INCREASING MEASURES OF THE MNB CONTRIBUTE TO THE MITIGATION OF THE REAL ECONOMY EFFECTS OF THE CRISIS BY IMPROVING LENDING CAPACITY

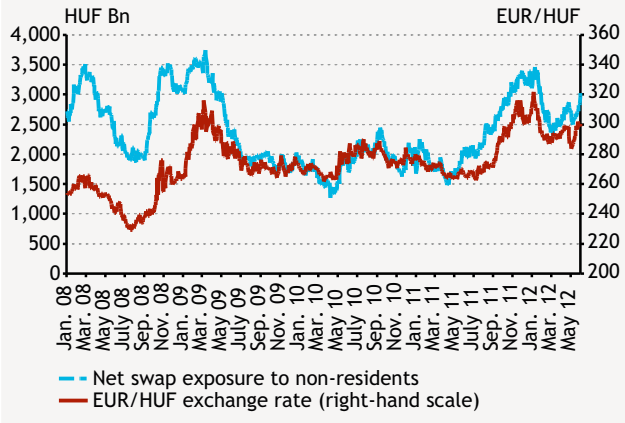
By 2008, the amount of FX swap holdings built up by the banking sector due to the surge in foreign currency lending (volume effect) reached the critical level when the change in the conditions of the swap market already significantly influences the forint liquidity management of credit institutions. As a result of the increase in the dependency on the FX swap market as well as due to the weakening of the forint (exchange rate effect)[2] and the resulting margin call effect,[3] in forints, the banking sector's net swap exposure to non-residents started to increase sharply in the autumn of 2008. From its level of HUF 2,000 billion in early September 2008 it increased to HUF 3,000 billion by mid-October and to HUF 3,500 billion by mid-November (Chart 5).

The additional forint liquidity requirement arising as a result of the increasing swap holdings reduces the free forint liquidity of credit institutions with swap positions. As a result, in more turbulent periods the liquidity positions of individual credit institutions may drastically change in a relatively short time, whereas with the use of the swap facilities of the MNB structural forint liquidity may also decline.

With efficiently functioning interbank markets, forints may flow without difficulties from credit institutions with a liquidity surplus to credit institutions facing a liquidity shortage. However, in the autumn of 2008 the increase in risk aversion resulted in a narrowing of limits vis-à-vis one another in the interbank forint markets and an immediate accumulation of liquidity reserves due to growing and increasingly uncertain liquidity needs. As a result, starting from October 2008 domestic credit institutions limited their lending in the interbank market and increased their central bank overnight deposits. All of these factors led to a fall in the liquidity of interbank forint markets, hampering the efficient redistribution of free forint liquidity among banks.

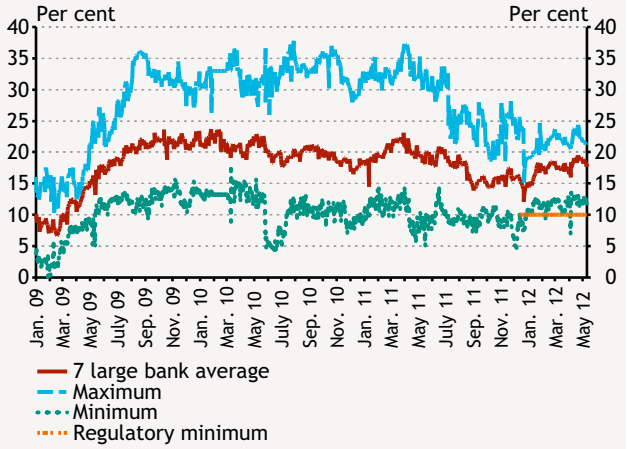
Although at a system level forint funds are abundant and the liquidity shock absorbing capacity of the banking sector is strong, significant asymmetry is seen at the individual bank level: some banks can just comply with the regulation

Chart 5
Net swap exposure of the Hungarian banking sector to non-residents and developments in the EUR/HUF exchange rate



Note: Net swap holdings show the difference between the long/short FX spot legs of domestic credit institutions.

Chart 6
Liquidity buffer of the seven large banks as a proportion of the balance sheet total



Source: MNB.

[2] In addition to the volume and exchange rate effects, the change in the currency composition of the asset and liability sides may also add to the dependency on the swap market (composition effect).

[3] The margin calls arising in the case of a weakening of the forint typically have to be satisfied in foreign exchange by banks; therefore, through its swap position the weakening of the exchange rate automatically increases the foreign exchange demand of the domestic banking system. Most of the arising demand for foreign exchange is diverted to the FX swap markets, also reducing the forint liquidity of some domestic banks.

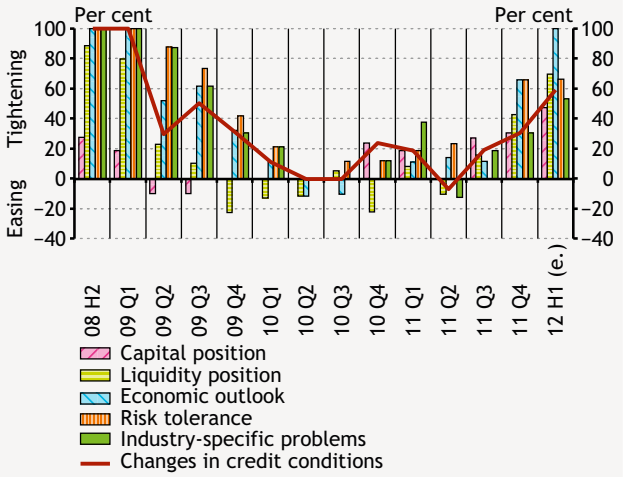
related to the balance sheet indicator introduced this year, which requires an at least 10 per cent liquidity surplus as a proportion of the balance sheet total,[4] while there is one bank where it even exceeds 20 per cent (Chart 6). As a result, in the case of a major liquidity shock it may happen to some credit institutions that the available free forint liquidity becomes limited for the stimulation of lending. Deteriorating lending capacity owing to the worsening liquidity position and the deteriorating willingness to lend due to banks' increasing risk aversion together resulted in a restraining of credit supply, which impaired the growth prospects for the real economy as well.

In response, the MNB contributed to the stability of the financial system and restoring banks' lending capacity by increasing the liquidity surplus and the liquidity reserves of credit institutions, thus providing a safety net against a possible unfavourable liquidity shock. Starting from October 2008 the MNB extended the scope of eligible collateral for central bank operations in several steps. First it increased the amount of eligible collateral with mortgage bonds issued by affiliated enterprises, then by reducing the rating criterion of corporate bonds to 'BBB–', and finally by the acceptance of local government bonds. As a result of the measures, the amount of eligible collateral increased by a total nearly HUF 800 billion (by more than one quarter) at the system level. With the increase of the size of potential borrowings from the central bank, the liquidity reserves of credit institutions also rose considerably (Table 2).

Starting from 21 October 2008, the MNB mitigated the liquidity shortage of some credit institutions arising in spite of the liquidity surplus at the system level by the introduction of two collateralised loan instruments with a maturity of more than one day. Recourse to the two-week and six-month loans peaked in November 2008, when loans outstanding were close to HUF 500 billion. In order to further increase available free liquidity, starting from December 2008 the MNB reduced the minimum reserve ratio from 5 per cent to 2 per cent, resulting in a HUF 450 billion decline in the reserve requirement of credit institutions.[5] Following the borrowing from the EU and the IMF, a further marked increase in the excess liquidity of the banking sector took place.

Despite the easing of money market tensions and the slow but steady recovery starting from the second half of 2009, banks remained risk averse. Consequently, credit supply constraints did not ease, mainly attributable to the decline

Chart 7
Changes in credit conditions and factors contributing to the changes in the corporate segment in Hungary



Source: MNB lending survey.

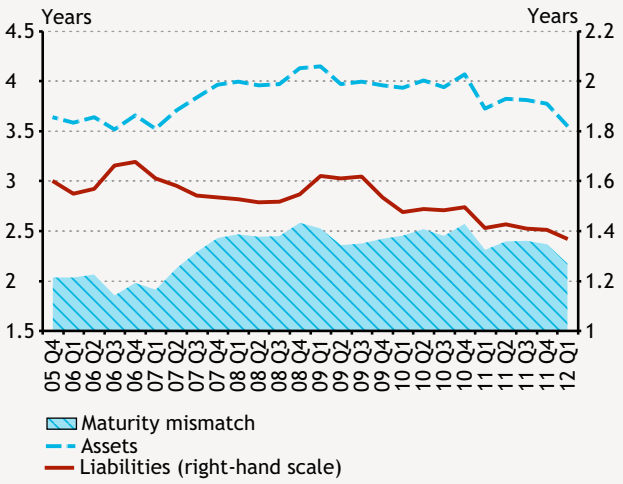
in the willingness to lend. At the same time, during the escalation of the crisis in the second half of 2011 the lending capacity of the Hungarian banking system also weakened considerably (Chart 7). As it was shown by the MNB's lending survey, the deterioration in lending capacity substantially contributed to further tightening of credit supply constraints. One reason was the decline in capital buffer caused by the early repayment scheme of foreign currency denominated mortgage loans and the deteriorating portfolio quality, while the other reason was the FX liquidity tensions. Furthermore, in spite of the considerable balance sheet adjustment since the outset of the crisis, no improvement took place in the maturity mismatch between the asset and liability sides, while the financial tensions that were expected to be temporary proved to be persistent (apart from some milder periods), which is reflected in expensive long-term loans and much more cautious bank behaviour.

In the current situation, the MNB can contribute to the strengthening of lending activity by using new instruments to support the liquidity of credit institutions. With monthly frequency, starting from April 2012, the MNB announced a variable-rate collateralised loan with a maturity of two years; its interest cost equals the central bank base rate prevailing during the maturity and can be prepaid by the debtors after one year (Table 3). For participation in the tenders, the MNB stipulates specific conditions that prevent a decline in corporate lending.

[4] In addition to the balance sheet coverage indicator, the deposit coverage indicator was also introduced. Banks have to comply with at least only one of the two indicators; therefore, some banks may not meet the criterion of one of the two indicators.

[5] Starting from November 2010, in order to facilitate the liquidity management of the banking sector, the MNB made the minimum reserve ratio optional in a band between 2 and 5 per cent (for more details see: Varga, 2010).

Chart 8
Maturity mismatches in the balance sheet of the Hungarian banking sector



Note: Weighted average of maturities calculated on a cash-flow basis.
Source: MNB.

The objective of the central bank in using this facility is to offset the shortening of the liability side of banks' balance sheets with this long-term loan without a term premium granted to credit institutions (Chart 8). Owing to the improvement in the maturity match which can thus be achieved, banks' balance sheets may strengthen, which may counteract the decline in lending capacity. In addition, this facility may ensure a smoother adjustment of the banking system with gradually decreasing reliance on external funding and increasing role of domestic funds.

The rising fluctuation of the forint exchange rate and the country risk premium increasingly force credit institutions to accumulate larger and larger amounts of forint liquidity reserves, which they can exchange for foreign exchange through swaps if necessary. The accumulated swap exposure may grow considerably as a result of the aforementioned outflow of foreign funds, increasing the sensitivity of the banking sector to exchange rate weakening coupled with risk premium shocks. Therefore, in 2012 the MNB continued the extension of the scope of eligible collateral that had started in 2008. Since April 2012, in its credit operations the central bank has accepted as collateral the FX government bonds issued by the Hungarian State and the MNB as well as FX corporate bonds that meet certain criteria. In addition, the scope of eligible markets was also extended, and credit rating criteria concerning corporate bonds also continued to ease.

Accordingly, with its measures in 2008–2009 and 2012 the MNB significantly extended the liquidity buffer of credit institutions, thus reducing the liquidity constraints that restrain lending and providing a safety net against a possible unfavourable liquidity shock.

Table 2
The process of extending the scope of eligible collateral in the MNB's credit operations

Measure	First tender	Estimated immediate effect
Acceptance of mortgage bonds issued by companies with which counterparty has close links	28 Oct. 2008	HUF 500 billion
Easing the credit rating criteria of corporate bonds to "BBB–"	18 Nov. 2008	No immediate collateral expansion, effects after country downgrading
Eligibility of bonds issued by local governments	20 Feb. 2009	HUF 300 billion
Eligibility of foreign currency-denominated government bonds and corporate bonds, broadening the range of acceptable markets, easing credit rating criteria	16 Apr. 2012	HUF 170 billion

Note: The exact description of the eligible collateral in the MNB's credit operations is contained in MNB (2012a).
Source: MNB.

Table 3
The MNB's forint liquidity providing facilities longer than one day

Type of loan tender	First tender	Frequency
Fixed rate tender of the 2-week collateralised loan	21 Oct. 2008	weekly
Variable rate tender of the 6-month collateralised loan	21 Oct. 2008	weekly
Tender of the 2-year base rate-indexed collateralised loan	3 Apr. 2012	monthly

Source: MNB.

SECURITIES MARKET INTERVENTIONS SUPPORT THE FINANCIAL SYSTEM BY INCREASING LIQUIDITY AND DISMANTLING BARRIERS TO LENDING

During the crisis, the MNB used unconventional instruments in the securities markets to ease strains in the government securities market as well as to stimulate the mortgage bond market.

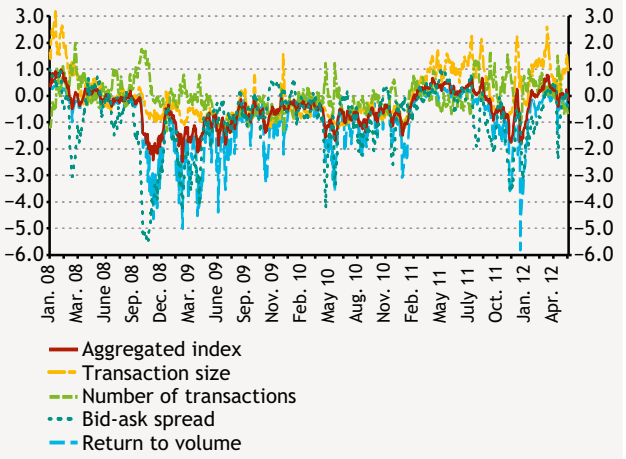
In October 2008, the sharp increase in concerns about the government securities market was reflected in the drying-up of the market and a surge in yields. In mid-October 2008, the MNB started to purchase government bonds in the secondary market in order to improve the liquidity of the market and to support the market making activity of market makers. Until end-2008, the MNB purchased government bonds with a total value of HUF 250 billion within the programme.

Banks supported the initiative aiming at offsetting the temporary pressure from foreign sellers, and strengthening this initiative they increased their government securities holdings to an extent exceeding the MNB's purchases. However, material improvement in the liquidity position could only take place as of November 2008, following the agreement with the EU and the IMF. Nevertheless, until early 2011 the value of the aggregate government bond market liquidity index[6] calculated by the MNB remained at a level below the long-term, pre-crisis average, and apart from some temporary upturns and downturns the state of the market only consolidated very slowly (Chart 9).

In addition to the effect of the EU–IMF agreement, the liquidity supporting measures of the Government Debt Management Agency as well as the rearrangement of the scope of foreign investors, the appearance of investors showing a higher willingness to take risks contributed to the improvement in the liquidity of the government securities market. In addition to all of these factors, the trust of investors in the commitment of fiscal policy and the credibility of the 2011 structural reforms was also necessary for the consolidation of the market.

In a forward-looking manner, the MNB announced a mortgage bond purchase programme with a framework amount of HUF 100 billion in February 2010 already, in order to stimulate forint lending and support the development of the mortgage bond market. The intention of the MNB was to increase the liquidity of the market through secondary market purchases and direct purchases in the case of primary issuances conforming to conditions that ensure more favourable liquidity. Until the closure of the programme at end-2010 the central bank purchased mortgage bonds with a total value of HUF 35 billion. As a result, mortgage bond market spreads somewhat declined in early 2010, but no major or permanent improvement was achieved.

Chart 9
Liquidity indices of the Hungarian government bond market



Source: MNB.

Due to the inactivity of mortgage banks (only one series was issued in that period) and the absence of the expected upswing in forint lending, the MNB did not announce the programme again in 2011. The programme revealed that the central bank is able to efficiently support banks in obtaining funds related to mortgage lending by market purchases only in the case of adequate willingness to issue. In this respect, the proposal of the central bank to amend the relevant provision of law to allow universal mortgage bond issue can be considered as a milestone. Based on the announcement of the MNB in February 2012, the universal mortgage bond purchase programme of the central bank can be launched after the adoption of the provision of law, which may significantly contribute to the stimulation of lending to households as well.

According to our calculations, even after the early repayment scheme, mortgage bonds could be issued for total mortgage loans amounting to some HUF 2,000 billion. However, the prevailing law does not allow credit institutions other than mortgage banks to issue mortgage bonds. In the event that the legal conditions of universal mortgage bond issue supported by the MNB are implemented, and banks issued mortgage bonds on the total potential loans outstanding, the current outstanding amount of mortgage bonds

[6] For more details on the liquidity indices of the MNB, see: Páles and Varga, 2008.

Table 4
Magnitude of potential mortgage bond issue based on 2012 Q1 data

	Banks and foreign branches (excl. Home Savings and Loan Associations)	End of 2012 Q1 (billion HUF)
1	Total mortgage loans outstanding	5,809
2	Mortgage loans complyingwith the 70 per cent LTV limit*	5,200
3	Outstanding amount of mortgage bonds	1,487
4	Total potential additional issuance (2–3)	3,713
5	Mortgage loans complying with proper legal documentation (estimation)	2,150
	– without mortgage banks	1,566

** Loans exceeding 70 per cent LTV (loan-to-value ratio), the outstanding amount up to the 70 per cent were taken into account. Pursuant to Act XXX of 1997, the loan may be taken into account as ordinary security up to 70 per cent of the loan security value. A considerable share of the potential loans is denominated in foreign currency, but a pick-up in forint lending may increase the role of the forint. Non-performing loans further reduce these holdings by approximately 10 per cent, although no exact information about this is available according to LTV distribution.*
Source: Author's calculations based on MNB data.

amounting to some HUF 1,500 billion could more than double, but even an issue volume based on one quarter or one fifth would result in an increase of several hundred billion forints (Table 4).

Mortgage bond issues that may be boosted by the amendment in legislation allowing universal mortgage bond issue may contribute to the stimulation of lending as well as to the strengthening of the stability of the banking system. Firstly, long-term liabilities provided by mortgage bonds are safer as they reduce roll-over risks. Secondly, the issue of mortgage bonds that are eligible collateral for the MNB increases the amount of potential borrowings from the central bank. Increasing the size of the eligible collateral by as much as up to HUF 2,000 billion, reinforcing effect of the roughly HUF 1,000 billion issued so far.

Following the amendments, the MNB may support universal mortgage bond issues by market purchases as well. The potential liquidity surplus may provide an efficient safety net against liquidity shocks to credit institutions and may facilitate the dismantling of the barriers to lending by the banking sector. In addition, the possibility of mortgage bond issue in itself may provide a sense of security for credit institutions and thus may also have a positive effect on the perceived liquidity position of banks.

SUMMARY

Central bank responses to the crisis are considered unprecedented. At the same time, the use of so-called unconventional instruments is considered as sailing on dangerous waters for monetary policy, especially in catching-up, open and at the same time indebted countries such as Hungary. Under these circumstances, the MNB strived to ensure the forint and foreign exchange liquidity of the banking system and to overcome the turmoil in the crucial FX swap market.

High reliance on the FX swap market makes the banking system vulnerable and may also considerably impair forint liquidity at individual level in spite of the ample forint liquidity at the system level. As a response, starting from October 2008 the MNB introduced several new FX swap facilities, which contributed to the easing of tensions. In addition, the MNB contributed to the stability of the financial system by increasing the forint liquidity surplus and widening the liquidity buffer of credit institutions. In the case of persistently turbulent money markets due to the escalating sovereign debt crisis and excessive outflow of foreign funds, the banking sector's reliance on the swap market may continue to increase, and thus there may be a continued need for the safety net of the MNB.

Due to rising liquidity risks in early 2012, in addition to the extension of the scope of eligible collateral, the MNB introduced a two-year collateralised loan facility, which may strengthen banks' balance sheets through an improvement in the maturity match, offsetting the decline in lending capacity.

The central bank's proposal to amend the relevant legislation in order to allow universal mortgage bond issue and thus the possible pick-up in mortgage bond issues may be considered as a milestone in liquidity provision and in the improvement of the maturity match. As a result, roll-over risks may decline markedly, and the liquidity buffer may also increase significantly due to the considerable expansion of collateral. The central bank would support the success of all these by an asset purchase programme as well.

The set of instruments that is taking shape reduces liquidity constraints, which restrain lending, and provides a safety net against unfavourable liquidity shocks.

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Kristóf Lehmann: International experiences with unconventional central bank instruments[1]

This article provides an overview of international experiences with the use of unconventional central bank instruments. The application of unconventional instruments may be justified by the existence of financial market friction, turmoil, failure or constraint, when instruments that change the size and/or composition of central bank balance sheets may be more efficient in achieving monetary policy objectives than traditional interest rate policy.

INTRODUCTION

Similarly to the original objective of central banks, the ultimate goal of the unconventional monetary policy instruments applied during the financial crisis is to achieve or maintain price stability (in several cases the avoidance of deflation) as well as to prevent the collapse of the financial intermediary system and in doing so to reduce the extent of economic contraction. Accordingly, unconventional instruments can be interpreted as ones that support the main objectives of monetary policy. Their application may be justified by the existence of financial market friction, turmoil, failure or constraint, when instruments that change the size and/or composition of central bank balance sheets may be more effective than traditional monetary or fiscal instruments.

Two situations can be distinguished when the application of these instruments may be justified. Firstly, during the crisis some of the developed countries reduced their respective policy rates close to zero ('zero lower bound'); therefore, further monetary easing was only possible with alternative means. In this case, unconventional instruments practically **replace, substitute** conventional instruments that lose their efficiency.

Secondly, unconventional instruments attempt to ease the strains of a financial market that plays an important role in monetary transmission; these strains are reflected in low liquidity and unjustified spreads. In this case, unconventional instruments **complement** monetary policy by restoring the transmission; accordingly, their application may be justified even when the interest rate is higher than zero.

TYPES OF UNCONVENTIONAL INSTRUMENTS

According to their purposes and effects on yields, unconventional instruments can be classified into two groups (Chart 1).

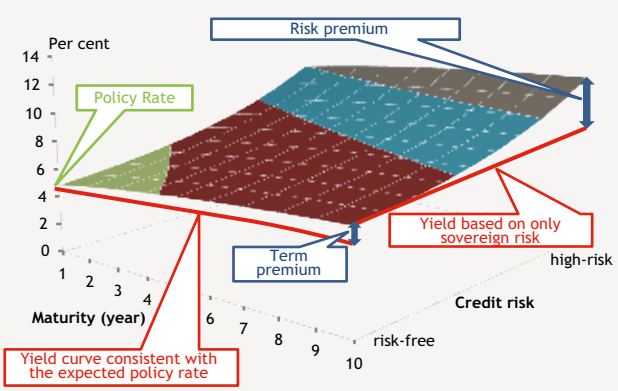
The objective of one of the groups of instruments is the **reduction** or flattening **of the risk free yield curve.** This group includes central bank liquidity providing measures in which the central bank extends fixed-rate collateralised loans to the participants of the financial sector. Through interest rate expectations the purpose of flattening the yield curve is also served by the commitment of the central bank to maintain a lower policy rate for a longer period of time, i.e. the reduction of interest rate increase expectations.[2] In addition to the expected interest, the long-term risk free yield may contain a term premium, which can be reduced by the purchase of long-term government bonds. The longer end of the yield curve was intended to be influenced expressly by the central banks of those countries for which only the reduction of the long-term yields could mean any significant monetary impulse due to the close-to-zero short-term interest rate level (e.g. the Bank of England, the Bank of Japan and the Fed[3]).

[1] Krekó J., Balogh Cs., Lehmann K., Mátrai R., Pulai Gy. and Vonnák B. (2012), 'Nemkonvencionális jegybanki eszközök alkalmazásának nemzetközi tapasztalatai és hazai lehetőségei', [International experiences and domestic opportunities of applying unconventional central bank instruments], *MNB-tanulmányok,* 100.

[2] For example the Fed, the English, the Japanese, the Canadian and the Swedish central banks promised to maintain an extremely low interest rate level for a protracted period of time.

[3] Instead of their full names, the most often mentioned developed market central banks are referred to by their accepted abbreviations: Fed (Federal Reserve System or Federal Reserve Bank of New York, the central bank of the USA), ECB (Eurosystem or European Central Bank).

Chart 1
Stylised chart of the maturity and risk structure of interest rate transmission



The objective of the other group of measures is **the reduction of a credit risk premium** (risk premium) appearing in the credit market. This group comprises corporate bond purchases that reduce corporate credit risk, liquidity providing measures with an intention to reduce interbank market yields which increased sharply due to lack of confidence and also the purchasing of government bonds, if its objective is the reduction of a higher-than-justified sovereign risk premium (e.g. in the case of the ECB).

According to the method of intervention, the instruments applied can be classified into three groups.

Facilities providing liquidity to banks and **refinancing** transactions may primarily be effective in the easing of liquidity tensions, the improving of lending capacity and the reduction of the cost of funds, in cases when banks are struggling with difficulties in obtaining funds, when the funding costs of banks are too high compared to the policy rate of the central bank or too many assets have become illiquid in banks' balance sheets. However, this set of instruments is ineffective when bank lending is mainly limited by poor capital positions, or when credit supply becomes narrower for other reasons, such as a longer-term intention of deleveraging or a significant increase in banks' risk aversion. At the time of the market panic following the bankruptcy of the Lehman Brothers, when the interbank markets dried up, many developed and emerging market central banks applied instruments that ease liquidity tensions. The most frequently applied instruments of this group are the easing of regulations concerning eligible collateral, modification of reserve rules, credit facilities granted in domestic currency or foreign exchange and longer-term collateralised credit facilities. Bank liquidity providing measures are less risky[4] for the central bank, and at the same time they are effective measures in the case of the most limited problem, i.e. shortage of liquidity. The general risks are: moral hazard,[5] squeezing out of the market and uncertain closing of the intervention (exit strategy).

In the case of **direct credit market interventions** (corporate bond and mortgage-backed securities purchases, direct lending), the central bank establishes direct contact with the private sector, takes over the latter's credit risk, and thus is able to have a direct effect on the risk premium. Direct interventions may be more effective than indirect ones if non-bank instruments (e.g. corporate bonds) play an important role in the funding of the private sector or if the structural problems of the financial intermediary system that cannot be eased by monetary policy instruments justify the bypassing of the banking system. Direct credit market interventions expose the central bank to major risks. Firstly, the credit risk that becomes included in the balance sheet of the central bank may result in a loss for the central bank, and thus, ultimately, in a fiscal cost. This additional risk may justify a preliminary agreement on sharing the loss between the government and the central bank – in order to preserve central bank credibility.

Table 1
Proportion of loans to the private sector and market capitalisation as a percentage of GDP

	Domestic credit provided by the banking sector (per cent of GDP)	Market capitalization (per cent of GDP)
	2008	2008
Austria	130.7	17.4
Germany	126.3	30.5
Hungary	80.3	12.0
Australia	143.7	65.0
United Kingdom	211.7	69.7
Canada	178.1	66.9
USA	220.8	82.1
Japan	299.6	66.0
Korea	109.4	53.1
Israel	90.1	66.5

Source: World Bank.

[4] Usually, the instruments that belong here mean collateralised loans; therefore, they result in losses for the central bank if the partner also goes bankrupt, and the collateral also loses its value.

[5] The essence of moral hazard is that market participants expect a sharing of losses and external help; therefore, their decisions are less cautious or risk avoiding.

Secondly, the interventions may result in unintended sectoral distortion or distortion according to company size, and thus in an inefficient allocation of funds. This group of instruments was practically applied only by the central banks of some developed countries. Firstly, this is explained by the fact that only few countries have a developed securities market (Table 1), through which the lending conditions of the private sector can be influenced efficiently and effectively. Secondly, due to the credit risk taken and possible fiscal costs borne by the central bank, these instruments are typically used by highly credible central banks.

Finally, the third group of instruments contains large-scale government bond purchases. Typically, highly creditworthy central banks that have reached the zero lower bound used **government bond purchase** programmes to stimulate aggregate demand and moderate the risk of deflation by reducing longer-term risk-free yields and increasing the amount of money in the economy. By contrast, the government bond purchases of the ECB were motivated by the drastic increase in and overshooting of the yield spreads of some riskier euro-area countries. In this case the objective was to ease liquidity tensions on the government bond market, to restore monetary transmission and to avoid the self-fulfilling sovereign crisis.

Purchasing large volumes of government bonds is a risky instrument. Within unconventional instruments, it is particularly government bond purchases that raise the problem of compatibility with inflation targeting or, in general, with the independent central bank role that considers price stability as the primary objective. The dividing line between serving liquidity or transmission purposes and monetary financing is not clear either. In order to avoid its being considered by the market as debt financing, central banks basically intervene in the secondary market. However, if a central bank continuously purchases large volumes of government bonds, the dividing line between transmission purposes and monetary financing may become blurred in the case of secondary market interventions as well.

Government bond purchases may – through the reduction of the financing costs of the general government – delay fiscal adjustment that might be necessary. In an unfavourable case, this may also undermine the confidence in fiscal authorities and in the independence of monetary policy. When purchases are applied with a macroeconomic stabilisation objective or in times of government bond market turbulences, credible monetary and fiscal policies as well as low country risk are fundamental conditions for successful application. When there is lack of credibility, if fear of monetary financing becomes dominant in investors' expectations, government bond purchases may eventually result in an excessive increase in inflation expectations and thus also in an upturn in government bond yields, which is contrary to the intentions.

THEORETICAL MODELS

The theoretical models of unconventional instruments focus on financial frictions. In the model of Gertler and Karádi (2011), central bank intervention results in welfare gain because, unlike financial intermediaries, the state is able to obtain unlimited amounts of cheaper funds by issuing risk-free government bonds. Central bank lending means an efficiency loss compared to the financial intermediary system. However, during a crisis the latter faces especially strong fund-raising constraints, which increases the net profit on central bank intervention considerably. Therefore, it is worth deploying unconventional instruments only in the case of a crisis, because net gains disappear following the recovery of the financial intermediary system and economic activity. In this model, intervention – as it is justified by financial turmoil – makes sense not only when the base rate is zero, but the expected gain on the intervention is higher with a zero base rate. An important element of the model is that welfare gain can only be realised if the country risk is low.

In the new-Keynesian model of Curdia and Woodford (2010a, 2010b) complemented with the financial intermediary system, the source of financial frictions is the asymmetrical information between banks and borrowers, which makes lending costly, and the spreads between deposit and lending rates increase. Similar to the model of Gertler and Karádi (2011), unconventional intervention results in welfare gain only in the case of turmoil of the financial intermediary system, i.e. in times of financial crises, when the costs of financial intermediation grow drastically.

INTERNATIONAL EXPERIENCES

Large central banks in the world put several unconventional instruments into action at the time of the crisis in 2008 in order to ease financial turmoil and maintain price stability. In the evaluation of instruments it is a methodological problem that the market effects of asset purchases cannot clearly be separated from the effects of other liquidity increasing or other monetary instruments or of market developments and that there is no well-definable alternative scenario to which the success of unconventional instruments

could be compared. Nevertheless, numerous studies and research analyses have attempted to quantify the effects of programmes or groups of programmes.[6]

Developed countries

The majority of the empirical analyses examined the effects on financial markets, and within that especially the impact on the yields of the instruments concerned (on the maturity premium and risk premium) or on quantitative elements (market turnover, credit supply). Most of the studies emphasise the success of the programmes in easing monetary and financial conditions and in improving the liquidity situation in the case of all the three types of unconventional instruments.

According to Klyuev et al. (2009), market panic typically declined in the market segment where the intervention took place. In line with that, financial stress indicators fell close to the level that was typical prior to the Lehman bankruptcy, and risk premium also declined. Much fewer estimates regarding the effect on lending and aggregate demand were prepared. However, they revealed a significant, positive macroeconomic effect: without the instruments the fall in lending and GDP would have been greater, although the instruments were unable to put lending and the economy on a growth path (Klyuev et al., 2009). Central banks have a limited role in contributing to the capital needs of commercial banks. In spite of the fact that several banks increased their capital during the crisis, thus managing to stabilise the banking system, a sufficient amount of capital was not available even after the increases to launch satisfactory lending and economic recovery. Accordingly, the real economy outcome can rather be shown in the sense of how much greater the downturn would have been without applying the programmes. The Japanese example, which is the only programme that can be considered entirely completed so far, shows that in the case of structural problems of the financial intermediary system,[7] unconventional instruments may be able to achieve only limited results.

Lenza et al. (2010) and Fahr et al. (2010) evaluated the liquidity providing instruments of the ECB in a way that using various assumptions they set up an alternative scenario without unconventional instruments. Lenza et al. (2010) found that the instruments of the ECB played a significant role in the stabilisation of the economy in the period after the Lehman bankruptcy. According to the estimate of Fahr et al. (2010), without the instruments the euro area would have had a more than one percentage point lower GDP growth and deflation until the first half of 2010. Based on the research conducted by Beirne et al. (2011), the covered bond purchase programme of the ECB can be considered successful. The yield spread of covered bonds declined, money market yields fell, and there was an upturn in bond markets at all maturity horizons. An important experience is that in euro-area countries struggling with the sustainability of government debt the programme was not able to improve yields in the covered bond market either; it was completely ineffective.

Joyce et al. (2011) examined the effects of the programmes of the Bank of England on the basis of several market indicators. They tried to point out a correlation between the news value of announcements and the market effect using a regression model, with the help of the programme size expected according to the Reuters analyst survey. Their analysis found that the total 200 billion programme caused a yield decline of 125 basis points. In this period, a lesser decline in similar yields was observed in other countries, which confirms that it is a country-specific phenomenon. With their multiple time series model, Kapetanios et al. (2011) came to the conclusion that government bond yields would have been 100 basis points higher without the quantitative easing programme, whereas GDP and the consumer price index would have been 1.5 and 1.25 per cent lower, respectively.

The evaluation of the quantitative easing in Japan between 2001 and 2006 divides experts. In spite of the fact that Bernanke et al. (2004) and Shirakawa (2009, 2012) emphasised certain successes of the programme (the yield curve was pushed downwards successfully), it must be noted that the most important objective, i.e. the stimulation of the economy and breaking out of deflation, was not achieved.[8] The failure of the programme was mentioned by Bini Smaghi (2009). In his opinion, although the reserve objectives were achieved, the multiplier effect weakened, because banks had not increased their lending to corporations due to their bad capital structures. The Japanese banking sector did not reduce its bad loans until the 1990s; therefore, bank lending slowed down, resulting in permanent stagnation. The Japanese example shows that deleveraging cannot be significantly decelerated by monetary easing. According to Berkmen's (2012) analysis, in

[6] The applied instruments included regressions, econometric models (VAR, GARCH-M, error correction model, distributed lag model), DSGE models and case studies.

[7] If the loan portfolio of banks is bad, their response is the reduction of balance sheets, which may result in a decline in corporate lending over the long term.

[8] Klyuev et al. (2009).

terms of the growth effect the Japanese programme applied since 2008 is somewhat more successful than the quantitative easing of 2001–2006, which is mainly attributable to the fact that, as a result of the sounder balance sheets of the past decade, neither the banking sector nor the corporate sector are forced to undertake protracted balance sheet adjustments.

In connection with the comprehensive evaluation of the programmes of the Fed, Gagnon et al. (2010) emphasised their successes in the reduction of the maturity premium and long-term interest rates. The study considered mortgage market crisis management as most effective, as here the targeted instruments were able to prevent the complete collapse of the market. In addition, the analysis points out that the harmonised programmes triggered a perceptible positive effect in the market of government bonds and corporate bonds as well. It can be concluded in general that the asset purchase programmes of the Fed added to market liquidity, reduced spreads and increased bond issues. Numerous studies attempted to give quantitative estimates of the effects of large-scale asset purchase programmes. Overall, based on the findings of the studies, the programmes had a significant positive effect on financial markets. Based on the evaluation of the programmes, strong consensus evolved in the literature about the first phase of the large-scale asset purchase programme of the Fed, which reduced the yields of the 10-year treasury bills and corporate bonds with a good credit rating by some 50 basis points.[9]

In terms of the macroeconomic effects, the conclusions of the studies are very diverse. At the same time, they point out that without the programmes the fall in GDP would have been much more significant. Baumeister and Benati (2010) estimate a 4 percentage point lower real GDP growth both in the USA and in the United Kingdom in the first quarter of 2009 as a result of the asset purchase programmes. Analysing the programmes of the Fed, Chung et al. (2011) came to the conclusion that term premiums declined by an average 50 basis points and by a further 20 basis points as a result of the first and second quantitative easing programmes, respectively. Economic growth until 2012 would have been 2 percentage points lower without the first programme, and GDP would have declined by a further 1 percentage point without the second programme.

Emerging countries

Following the Lehman bankruptcy, central banks of emerging countries widely – although to a lesser extent than the central banks of developed countries – used liquidity tension reducing instruments, mainly foreign exchange liquidity instruments. However, large-scale, systematic liquidity increasing instruments, direct credit market interventions and government bond purchases were used only sporadically and only in emerging countries that can rather be considered – in several respects – as developed countries (Ishi et al., 2009; Stone et al., 2011; Moreno, 2011). In 2009, corporate bonds and government bonds were purchased by the Korean and the Israeli central banks, respectively. Both countries have low base rates, much more favourable credit ratings and risk indicators than what is typical of emerging countries, better inflation performance and developed capital markets.

There may be two basic reasons why emerging countries applied unconventional central bank instruments less frequently. Firstly, macroeconomic pressure was typically lower, as the central banks concerned were much more rarely close to the zero lower bound. Following the eruption of the crisis, first the interest rate was increased in many emerging countries. As a result, the average base rate was above 5 per cent in 2009 as well. In many cases the extent of the real economy shock to the economy and the financial market turbulence was smaller, and generally there was no danger of deflation that would have made further monetary easing necessary in the developed countries. However, due to their vulnerability, in many emerging countries, for example in the Central East European region, there is much less room for manoeuvre to apply unconventional instruments than in developed countries. Due to the average lower credit rating, higher country risk premiums, high external debt and foreign exchange exposure, extensive and systematic liquidity expansion carries risks, as it may result in capital withdrawal and unintended exchange rate depreciation instead of an upturn in real economy demand (Ishi et al., 2009). This is particularly true if the credibility of monetary policy is low, and the market tends to consider the actions as delegating fiscal tasks to the central bank, hiding of fiscal burdens or monetary financing. Exchange rate depreciation is a key risk in countries where the exchange rate exposure of the banking sector or domestic players is high, for example in Hungary.

Evaluated within the framework of the model of Gertler and Karádi (2011), limited fiscal policy leeway means that the state – contrary to the assumptions of the model – is unable to obtain unlimited amounts of funds without additional costs from the market. It can do so only with a further increase in the risk premium, which impairs the sustainability of government debt. Accordingly, with an increase in the extremely high sovereign risk premium, which is sensitive to

[9] Gagnon et al. (2010), Joyce et al. (2011).

further growth in expenditures, the liability side advantage of the state is much smaller than in the Gertler–Karádi model, which emphasises the balance sheet constraints of the private sector, thus questioning the effectiveness of the intervention.

These risks are confirmed by the analysis of Jacome et al. (2011), in which the authors reviewed the financial crises of 16 Latin-American countries between 1995 and 2007 and examined the effect of the central bank liquidity provided during the crises on financial and macroeconomic developments. They found that central bank schemes that intended to improve the liquidity position of the banking sector typically tended to add to instability. Against the background of limited economic policy credibility, monetary policy was unable to restore confidence in the financial markets. The funds provided to the financial system were withdrawn from weaker banks and landed at stronger banks or abroad as a withdrawal of capital, thus weakening the foreign-exchange rate and the position of problematic banks. Yields continued to rise as depreciation and inflation expectations strengthened, resulting in a further increase in stability tensions. Overall, active monetary policy in many cases was not only unable to prevent the unfolding of exchange rate and bank crises, but also contributed to it with the excessive amount of liquidity provided for the financial system. Due to high foreign exchange debt, the 'monetisation' of bank crises usually had a negative impact on economic growth as well. According to the study, the significant liquidity provision by the central bank also damaged the independence of the central bank in many cases. With bankruptcies of banks and loss in value of collateral, the programmes sometimes resulted in significant costs. In many cases, the government was unwilling to make up for the loss and increase the capital of the central bank, thus jeopardising the efficient functioning of the central bank and the achievement of its objectives.

CONCLUSIONS

This article provided an overview of international experiences with the application of unconventional central bank instruments. According to the conclusions of theoretical models, the application of unconventional central bank instruments may result in a welfare gain if the financial intermediary system faces strong fund-raising constraints, and the state – with low country risk – is able to obtain unlimited amounts of cheaper funds by issuing risk-free government bonds. Empirical analyses found the unconventional instruments applied in developed countries successful in easing market tensions, increasing market liquidity and reducing yields. Although they proved to be unsuccessful in giving a start to economic growth, they were able to mitigate the fall in lending and output. In vulnerable emerging countries with a lower credit rating and high external debt, there is much less room for manoeuvre to apply non-conventional instruments. During a crisis, liquidity providing instruments, which are otherwise considered the least risky, may result in exchange rate depreciation and withdrawal of capital, and the interventions that involve assumption of risks by the state may add to market concerns regarding fiscal sustainability.

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György Pulai and Zoltán Reppa: The design and implementation of the MNB's euro sale programme introduced in relation to early repayments

As a result of the early repayment programme launched in the autumn of 2011, buying demand for several billions of euros arose on the side of domestic banks. The purchase of such amounts in the foreign exchange market would have alone contributed to a substantial weakening of the forint; moreover, it could have led to a speculative attack, further aggravating the depreciation of the currency. The objective of the MNB's euro sale programme was to use the Bank's foreign exchange reserves in a prudent manner, under clearly defined terms, to prevent depreciation of the national currency without increasing the country's vulnerability. Both the situation of domestic banks and the development of the instrument were made difficult to a great extent by the fact that the volume of loans to be repaid and hence the quantity of foreign currency necessary for hedging were uncertain. The Bank therefore needed to define the parameters of the instrument so as to enable credit institutions to continuously buy foreign currency from the Bank, but without encouraging overhedging and to ensure that the price of the instrument is not cheaper than the market rate, but not so high as to discourage banks from using it. The MNB held a total of 22 tenders; it paid out approximately EUR 2.6 billion of the foreign currency sold at the tenders, equalling 60 per cent of the total volume of the early repaid loans.

INTRODUCTION

In connection with the early repayment of foreign currency loans (allowed by Act CXXX of 2011) a substantial, albeit uncertain demand for foreign currency arose on the side of banks. Satisfying such demand in the interbank foreign exchange market could have contributed to a significant rise in the EUR/HUF exchange rate and an increase in its volatility. As these trends would have adversely affected both the outlook for inflation and financial stability, the Monetary Council decided that the Bank should satisfy the euro demand arising as a result of early repayments using its foreign exchange reserves, as a means of preventing an excessive depreciation of the forint. To this end, on 3 October 2011 the MNB introduced a new instrument. Under the facility, the Bank sold euros in exchange for forints to its counterparty credit institutions. In the following, we describe the structure of the euro sale programme, the motivation behind its introduction, the considerations relating to the determination of particular parameters and the use of the instrument. With respect to the effects of the instrument, we only discuss the anticipated effects, i.e. those that were foreseeable at the time the instrument was designed. We have not undertaken a subsequent analysis of the actual effects, as these are difficult to distinguish from the impact of other events.

CONSEQUENCES OF THE EARLY REPAYMENT PROGRAMME: WHY WAS THE CENTRAL BANK INSTRUMENT NECESSARY?

Repayment of a foreign currency loan requires foreign currency. This also holds true in relation to foreign currency-denominated loans, although in this case, the foreign currency is necessary for the closing of the lending bank's hedging transaction and not for the repayment of the loan.[1] In the case of the latter, the loan is disbursed – and repaid by the customer – in forints, but the bank records the foreign currency amount determined on the date of disbursement as a receivable from the customer on its balance sheet, irrespective of subsequent changes in the

[1] Páles, Judit, Zsolt Kuti and Csaba Csávás (2010), 'Role of currency swaps in the domestic banking system and analysis of the swap market during the crisis', *MNB Occasional Papers*, 90.

exchange rate. Thus, the bank is owed foreign currency by its customer. However, the bank does not have a foreign currency liability at this point, which results in a foreign currency exposure (a unit shift in the CHF/HUF exchange rate results in an exchange rate gain or loss for the bank). Banks typically try to cover their market risks resulting from traditional business with hedging transactions (with the exception of intentional open positions taken for speculation purposes). To this end, they need to create a foreign currency liability concurrently with the disbursement of the loan. The bank may do so in two ways, depending on its ability to acquire foreign currency funds: 1) it (mainly) borrows foreign currency through FX-swap transactions, which leads to a forward foreign exchange liability,[2] 2) it obtains foreign currency funds (e.g. from its foreign parent bank), and in both cases, it sells the foreign currency received in the foreign exchange market. Upon the repayment of the loan by the customer, as is the case with early repayments, however, the reverse occurs: the credit institution needs to buy foreign currency either for the closing of the FX-swap transaction or the repayment of foreign currency funds.

Following the enactment of Bill No. T/4144 on the amendment of certain acts relating to home protection,[3] i.e. the fixing of the exchange rates for early repayments, a special situation evolved, where the foreign currency position of credit institutions basically opened up before the launch of the early repayment scheme. This resulted in an unintentional exchange rate exposure, albeit its degree was uncertain in terms of volume. On the asset side of the banks' balance sheet, the forint value of loan receivables to be repaid was fixed by the bill,[4] but there was no change on the liabilities side of their balance sheet or in their off-balance sheet items (i.e. including the aforementioned hedging transactions). Thus, they needed to buy foreign currency to eliminate their exposure. Its amount, however, could not yet be estimated at the time, as it depended on the volume of the actual loan stock of customers effecting early repayment, which only became known later.

The foreign currency exposure of the portion of household foreign currency loans participating in the early repayment programme could be eliminated if it was taken over by other economic agents, depending on where the banks obtained foreign currency for hedging from:

1. In relation to the portion for which the banks purchased foreign exchange from the MNB under the instrument, the MNB, and indirectly the state assumed the foreign currency position, as the foreign exchange reserves of the MNB fell by the same amount (the forint exposure of non-residents did not change);

2. In relation to the portion for which the banks purchased foreign exchange on the interbank market, the foreign currency position of the affected households was assumed by the sectors below:

   a) foreign currency purchased from non-resident market participants in exchange for forints increased the forint exposure of non-residents,

   b) foreign currency purchased from the domestic corporate sector in exchange for forints changed the position of the corporate sector,[5]

   c) it was assumed by other households within the household sector, which sold foreign exchange in this period.

It should be noted that these sectors are not homogeneous in this regard, and therefore it is difficult to distinguish the effect of early repayments from other factors in relation to changes in their position. As shown under point 2.c), the household sector is not homogeneous either, as some participants – benefiting from a higher EUR/HUF exchange rate – sold foreign currency. Furthermore, some non-resident market participants sold foreign currency to domestic banks, thereby increasing their forint exposure [see point 2.a)], while others – anticipating depreciation of the forint – sold forint, thereby reducing their forint exposure (in retrospect, it seems that the latter group was dominant, as non-residents sold a substantial amount of forint in the foreign exchange market between the summer and end of 2011).

[2] In the FX-swap transaction, the parties exchange foreign exchange for a specific period: one party buys foreign exchange from the other party (in exchange for another currency; in this case, forints), and the parties also agree on the future repurchase, the date and exchange rate of which is determined when the transaction is concluded. Thus, in the swap transaction, the party buying foreign exchange at the initial leg will have a future foreign exchange payment liability (which is commonly recorded as an off-balance sheet item).

[3] Subsequent Act CXXX of 2011 on the amendment to Act CXII of 1996 on Credit Institutions and Financial Enterprises in relation to the expansion of home protection measures.

[4] Fixed at a 180 forints/francs exchange rate for loans denominated in Swiss francs, at a 250 forints/euro exchange rate for loans denominated in the euro, and at a 2 forints/yen exchange rate for loans denominated in the Japanese yen.

[5] Experience suggests that with a higher euro/forint exchange rate (weaker forint), the domestic corporate sector sells a larger volume of foreign exchange (this is how exporting companies try to increase the forint value of their future foreign exchange revenues).

Had credit institutions wanted to purchase the foreign currency necessary for early repayments (against forint) simultaneously and in a large volume in the foreign exchange market (see above point 2), this would have caused immediate depreciation of the forint as a result of the sudden forint supply and foreign currency demand arising in the market. Moreover, market reception of the early repayment programme was less favourable from the outset, as it imposed a significant extra burden on the financial intermediary system, which, according to market expectations, negatively affected its future lending capacity and propensity. Thus, the early repayment programme in itself increased the country risk, in addition to the effect on the above mentioned supply and demand impact in the foreign exchange market, thereby contributing to weakening of the forint.

Moreover, two additional factors could have aggravated the depreciation pressure on the forint:

1. With expectations of forint depreciation, banks would have presumably aimed at buying foreign currency in the necessary quantity as early as possible, to minimise its price, which would have reduced the horizon of high foreign currency demand to an even shorter period;

2. Speculative forint sales of market participants (who were even not involved in early repayments, but only wished to realise an exchange rate gain speculating on forint depreciation) would have presumably strengthened.

Historical data show that the speculative positions of major non-resident participants (banks, investment funds, hedge funds, etc.) taken in favour of a weaker forint usually go hand in hand with a significant weakening of the forint.[6]

ALTERNATIVES AVAILABLE TO THE BANK

A marked depreciation of the forint is unfavourable for several reasons. First, it raises inflation, and, second, it would have led to a further deterioration of the banks' loan portfolio through an increase in instalments of the remaining foreign currency loans (presumably associated with financially troubled debtors, who were unable to effect early repayment), and to an increase in their funding costs through the banks' worsening capital position.

Prior to the introduction of the programme, the MNB needed to consider whether:

1. To remain passive, and possibly face a weakening of the forint at a rate that is clearly harmful in terms of inflation and financial stability;

2. Not to intervene in an organised form, but only attempt to dampen the possible weakening of the forint, if necessary, with ad-hoc exchange rate crisis management instruments; in this case, however, the above mentioned speculative demand for foreign currency would have had to be satisfied from the foreign exchange reserves, in addition to foreign currency related to early repayments;

3. To make available foreign currency necessary for the programme from the reserves in an organised manner, and thereby avoid any forint weakening possibly requiring more foreign currency.

The Bank chose the third option. First, with an organised tool, it ensured that banks would be able obtain foreign currency from the Bank necessary for hedging; therefore they were not forced to obtain it from the foreign exchange market within a short period of time, with concerns about possible weakening of the forint. Second, it helped to disperse expectations geared toward a weakening of the forint, thereby reducing speculation in this direction. In other words, the availability of the instrument alone produced a stabilising effect, even if the quantity of foreign currency purchased under the instrument was not disclosed at the time. Moreover, the Bank not only aimed at preventing the weakening of the forint, but also the rising volatility of the its exchange rate, which is also unfavourable in terms of predictability.

The decrease in the foreign exchange reserves, however, is harmful in terms of the country's external vulnerability.[7] Market participants and analysts take into account numerous indicators to measure a country's foreign exchange reserves. One of these is the so-called Guidotti–Greenspan rule. According to this rule, foreign exchange reserves should provide cover for the given country's short-term debt, i.e. they should provide sufficient liquid assets in the event that the country is unable to renew its maturing external debt for a period of one year. To ensure that the decline in foreign exchange reserves does not significantly hamper

[6] Kiss, M. Norbert and Zoltán Molnár (2012), 'How do FX market participants affect the forint exchange rate?', *MNB Bulletin,* February.
[7] Antal, Judit and Áron Gereben (2011), 'Foreign reserve strategies for emerging economies – before and after the crisis', *MNB Bulletin,* April.

compliance with the indicator, the MNB required participating credit institutions to initially reduce their short-term liabilities (i.e. within one year) if they repay external funds using the received foreign currency. As a result, not only did the foreign exchange reserves decrease, the short-term external debt of the country also declined, which also reduces the need for reserves based on this indicator.

The MNB needed to estimate the amount by which such a programme reduces foreign exchange reserves. The MNB's experts estimated the volume of early repayments (including those funded by taking loans in forint) to be equal to 20 per cent of the foreign currency-denominated mortgage loan stock, as a part of debtors did not have sufficient savings, on the one hand, and banks' propensity to lend is rather low in certain customer segments, on the other; it was also necessary to take into account that the initial instalments on forint loans would not be lower than those on foreign currency-denominated loans. The MNB expected the early repayment of loans to be approximately EUR 3.3 billion out of the total EUR 16.7 billion in foreign currency loans within the banking system. This ratio, however, showed significant variations at the level of individual banks, and it was not clear, either, as to which banks will apply for the instrument of the MNB and in what proportion to their loans. It is important to note that although this is a substantial amount, it did not even reach 10 per cent of total foreign exchange reserves,[8] that is, there was no threat of a significant decline in the level of reserves as an effect of the programme.

We should also explain why the MNB decided to provide euros, when most of the foreign currency loans were denominated in Swiss francs, and, consequently, Swiss francs were required for the closing of the underlying hedging transactions. The Bank decided in favour of euro sales not only because euro reserves were available in a large amount, significantly facilitating the sales, but also because the aim was to prevent forint sales in the market (irrespective of the purchased currency). Thereafter, credit institutions were able to convert the euros purchased from the Bank to Swiss francs in the foreign exchange market, without any resulting effect on the forint exchange rate. Moreover, the EUR/CHF market is sufficiently large and liquid to ensure that this conversion demand of the banks does not move the exchange rate in a negative direction for them.

EXPECTED EFFECTS OF THE INSTRUMENT ON OTHER MARKETS AND THE LIQUIDITY OF THE BANKING SYSTEM

Upon the introduction of the programme, the MNB also needed to consider other factors and effects on other markets.

The MNB programme was expected to reduce surplus central bank liquidity in the banking system. When the Bank sells foreign currency to banks in exchange for forints (forints purchased by the Bank are no longer part of liquidity within the system), it reduces the amount of MNB bonds and overnight central bank deposits on a systemic level, where surplus liquidity appears in the system.[9]

The decline in forint liquidity may be considerably asymmetrical among the banks, depending on whether foreign currency lending in the past was financed with foreign currency or forint funds:

1. Forint liquidity declines and the balance sheet total also decreases at banks where foreign currency loans (or the foreign currency sales for hedging at the start of the loan) were financed with foreign currency funds from abroad. These banks receive foreign currency liquidity from the Bank in exchange for their forint liquidity, which they spend on the repayment of foreign funds. This does not affect the stock of their net outstanding swaps, which thus remains unchanged.

2. The stock of MNB bills, forint liquidity and the balance sheet total do not decrease at banks where foreign currency loans (or the foreign currency sales for hedging at the start of the loan) were financed with forint funds and FX-swaps (i.e. the replacement of forints with foreign currency). The stock of their outstanding swaps, however, declines, as the received foreign currency is used for the closing of swap transactions.

In an extreme case, the different changes in the forint liquidity of banks could have resulted in liquidity shortages for some banks, with the concentration of the dominant share of surplus liquidity at a few banks. The significantly asymmetrical distribution of forint liquidity may limit the forint lending capacity of some banks, potentially affecting the size of early repayments as well.

[8] According to the official statistics, international reserves equalled 37,554 million euro in August 2011.

[9] For details on the liquidity of the banking system and the function of the central bank instruments see the publication of the Magyar Nemzeti Bank (2009) entitled *Monetary policy instruments of the Magyar Nemzeti Bank*.

In relation to the second case, it was also necessary to take into account that non-residents kept the forint that they had acquired (in the form of swap transactions) in forint instruments (e.g. MNB bills, government securities). When reducing the stock of outstanding swaps, however, non-residents have to sell these forint instruments to be able to repay forints (in exchange for foreign currency) to domestic credit institutions. If the domestic bank(ing system) assumes these positions (buys these instruments), this may moderate the negative effects on the government securities market resulting from the sale by non-residents.

As a favourable consequence of the second case above, the foreign currency liquidity requirement of the banking system decreases; and it needs to renew less swaps to maintain foreign currency coverage. Therefore, in such a case, banks' balance sheet would not decline, but the net foreign currency raising swap stock would fall sharply, possibly resulting in a decline in swap market premia (it reflects the difficulty of acquiring foreign currency in the swap market; sometimes also referred to as 'implied basis') and the rise in swap market liquidity (the quantity of foreign currency available on the swap market rises, as domestic banks need to borrow increasingly less foreign currency with swap transactions). This also contributes to the improved effectiveness of the MNB base rate, i.e. the interest rate desired by the MNB more effectively passes through to the economy via the interbank market.[10]

STRUCTURE OF THE PROGRAMME, CONDITIONS FOR ACCESSING FOREIGN CURRENCY

Following the announcement of the sale of euros necessary for early repayments, the MNB informed the credit institutions concerned of the programme details. Coordination was necessary to clarify the method of implementation for the credit institutions. The particular details were then finalised and published.

The Bank announced the tenders regularly, on a weekly basis, between early October 2011 and end-February 2012. Banks could submit bids every Monday. In the tenders, credit institutions could receive foreign currency in an amount that did not exceed the value of their mortgage loans and home equity loans provided to the household sector, outstanding in foreign currency on 31 August 2011. Upon announcement of the tenders, the MNB did not determine the quantity to be allocated. All accepted bids were accepted at the submitted exchange rate (multiple rate tender). Results were announced on tender days at 12 noon; at this time, the MNB published the lowest acceptable EUR/HUF exchange rate.

The credit institutions received the foreign currency allocated to them only after effecting early repayments; until then, the MNB rolled it over in overnight EUR/HUF FX-swaps (spot/next – starting on the second day after the concluded transaction and maturing on the business day thereafter). Thus, although the counterparties purchased the foreign currency in the tenders, every day they technically 'lent' it to the Bank for one day in a swap transaction, until they became entitled to the use of the foreign currency through the effected early repayments. This was also favourable to the extent that the foreign exchange reserves of the MNB did not diminish until the actual use of the amounts. For the purpose of monitoring early repayments, credit institutions were required to provide data relating to the early repayment applications submitted to them and the amount of effected early repayments, which was a condition for participating in the programme. In addition, credit institutions were required to provide data on forint loans provided for the repayment of foreign currency loans, as well as external funds repaid as a result of the effected early repayments. The Bank published the quantity of allocated and actually paid amounts in the middle of the month following the reference month (together with the statistical balance sheet).[11]

Data provision on changes in foreign funds was necessary because credit institutions participating in the tender were also required to first repay their short-term (i.e. less than one year) external funds. The counterparties met this requirement on the basis of provided data. Between the launch of the programme and 23 March 2012, the long-term external funds of the Bank's counterparties – excluding mortgage banks[12] – increased by a total of HUF 635 billion, while short-term external funds decreased by HUF 2,071 billion[13] (these two amounts correspond to approximately EUR 2.1 billion and EUR 6.9 billion, respectively). In both cases, the change was chiefly attributable to foreign currency funds, while the change in forint funds played a much smaller role.

[10] For details on the pass-through of the base rate into economic trends, see the publication of the Magyar Nemzeti Bank (2012) on so-called interest rate transmission entitled *Monetary policy in Hungary*.

[11] The final actual payments, drawing out into March, were published on April 12.

[12] Mortgage banks report the issue and repurchase of mortgage bonds denominated in foreign currency, hence issued abroad, as a change in external funds. This, however, is misleading, as the owner may in fact be the domestic parent bank, therefore we ignored these items.

[13] Funds with maturity that shortens to within one year are not recorded either as items reducing long-term funds, or items increasing short-term funds; the above figures only show changes resulting from maturities and transactions.

Upon termination of the programme on 8 March 2012, the credit institutions were obliged to convert unused foreign currency to forints at the MNB. Amounts were converted at the exchange rate at which they purchased the euros from the MNB to ensure that in the event of overhedging, they do not assume the risk of movements in the EUR/HUF exchange rate until it is reconverted, in relation to the already purchased foreign currency. When determining the exchange rate of the unused and reconverted foreign currency, the MNB applied the FIFO (first in, first out) principle: the foreign currency was used in the order of purchases, thus the Bank determined the reconversion exchange rate on the basis of the exchange rate of the counterparty's last purchases.

FACTORS CONFINING PRICING, DETERMINATION OF PARAMETERS

The foreign exchange offered by the MNB as a product does not fully correspond to foreign exchange purchased by a bank in the market, as other rights and obligations are associated with it (it needs to be kept with the MNB in a specific form, it may only be used for a specific purpose, etc.). Thus, the comparability of the price established in the tenders and the market price is somewhat limited from the outset.

Furthermore, the pricing of the product was made more difficult by the uncertainty of the volume of loans to be repaid. The MNB deemed it important for banks to be able to continuously satisfy their foreign currency demand – significantly varying on a bank-by-bank basis – with the instrument, to the maximum extent possible, adjusted to their received applications, but without encouraging overhedging due to the limitation of the use of reserves to the necessary level. To this end, pricing needed to be determined with respect to the following principles:

1. To not discourage banks from applying for the central bank instrument, i.e. so that it is not too expensive;

2. To charge, however, a cost for expected overhedging, i.e. so that overhedging is not too affordable;

3. So that the exchange rate bids submitted and accepted in the tenders are more easily comparable to the EUR/HUF exchange rate observed in the market, to ensure transparency.

A major difference between purchasing foreign currency in the market and in the framework of the MNB's instrument is that in the case of overhedging, the MNB repurchases unused foreign currency at the original buying rate. The MNB thereby offered to banks a product that was unavailable elsewhere in the market, which provided cover for risks arising from the uncertainty regarding the volume of early repayments. Thus, the 'product' offered by the MNB is essentially a forward foreign exchange position, which automatically becomes void if it is not needed. In this sense, it has properties similar to those of options.

Thus, credit institutions did not assume a risk arising from possible overhedging, although certain risks needed to be taken into account in this regard on a macro level: in case of substantially higher overhedging, analysts could have anticipated a larger decline in reserves, and on the basis of higher demand for the instrument, analysts could have concluded a larger volume of early repayments, and thus higher losses for banks. For this reason, the MNB did not want to encourage banks to purchase much more foreign currency than their expected demand. To this end, the MNB decided that unused amounts should be reconverted at an exchange rate that exactly corresponds to the buying rate. Thus, the counterparty lost the interest rate spread for the period of holding (the forint interest rate was approximately 6 per cent higher than the euro rate, which would have justified reconversion at a higher EUR/HUF exchange rate), resulting in a weaker motivation for overhedging.

The MNB also had the possibility of affecting the appeal of the instrument and the temporal spread of its use with the pricing of the FX-swaps. The amount of loss incurred by a credit institution may also be affected by the interest rate it receives on the euros lent and the interest rate it pays on the forints borrowed, if the foreign currency it buys is in excess of its needs in the early tenders (which it rolls over in swap transactions until used). The MNB eventually decided to price the swap transaction on the basis of the average market interest rate (HUFONIA and EONIA) of overnight lending/deposit transactions for the previous day, that is, it did not move the price of the swap transactions in a direction that was favourable to it.[14] This price, however, was still moderately higher than the market price, particularly on days when access to foreign currency on the FX-swap market became significantly more expensive as a result of higher demand for borrowing in foreign currency. In such periods, banks could have also allocated their euros

[14] For example, had it demanded the base rate for lent forints instead of the HUFONIA rate, this would have been a larger penalty for the counterparty, motivating counterparties to renew smaller amounts.

to other banks at interest rates that were higher than the reference interest rate.

It was necessary to quantify all of these effects to determine the pricing parameters of the instrument, i.e. to evaluate the bids submitted in the tenders and to determine the price of FX-swaps. In this regard, the largest problem was that the final position of banks participating in the programme, i.e. the payout function of the product, depends on the percentage of foreign currency loans repaid by households. This risk factor cannot be hedged in the market (i.e. the market is incomplete), and therefore the 'equilibrium price' cannot be deduced the principle of no arbitrage.

In such cases, it is necessary to make pricing assumptions relating to the preferences of market participants. For the calculations, we assumed that the banks are ready to pay a constant return in exchange for a unit of reduced risk, that is, their preferences are linear in risk-return space. In other words, this assumption means that banks choose between two risky instruments on the basis of the Sharpe ratio.[15] Finally, we also assumed that the market alternative to the MNB's instrument is hedging with forward transactions.[16] Thus, the 'equilibrium tender rate' will be the exchange rate to which banks are indifferent in terms of choosing between the instrument and market forward transactions.

It was necessary to calibrate the parameters to produce specific numbers. The key parameter is the slope of the indifference curve in risk-return space; we used the Sharpe ratio – observed in stock markets – as a basis for determining this, which we modified to the extent that banks presumably have higher risk aversion than stock market investors.

According to results based on simulations and sensitivity tests, in most cases the equilibrium tender rate approximated the actual market rate. Major differences arose if we assumed that banks had already hedged most of the expected early repayment ratio (in earlier tenders or with forward transactions concluded in the market); in this case, banks would have been willing to hedge an additional one per cent in the framework of a tender only at a EUR/HUF exchange rate that was lower than the prevailing market rate, and hence more favourable for them. In other words, only banks with very high risk aversion would have been willing to take up a position at a market rate, which would have very likely resulted in overhedging (see appendix for detailed model calculations).

USE OF THE INSTRUMENT – TENDERS, ALLOCATION, PAYMENTS

The MNB conducted a total of 22 tenders between early October 2011 and end of February 2012. The vast majority of submitted bids approximated the market EUR/HUF exchange rate. In each case, the MNB determined the minimum accepted exchange rate close to the prevailing market EUR/HUF rate (average rate during the 15-minute tender), that is, the Bank did not in any case sell foreign currency at an exchange rate that was more favourable than market rates. The average exchange rate of all allocations equalled EUR/HUF 302.23.

In the course of the tenders, the MNB accepted bids from eight counterparties in the total value of EUR 2,679 million. However, not all of this amount was actually paid out, based on the effected early repayments reported to the MNB (see below). Of the ten banks with a foreign currency loan portfolio of over EUR 100 million, only two counterparties did not participate in the tenders of the MNB, and another bank obtained only one-third of foreign currency related to its early repayments through the MNB's instrument. None of the credit institutions with a portfolio of less than EUR 100 million used the central bank instrument. These credit institutions presumably purchased euros necessary for closing their foreign currency position from the market or their parent banks.

The counterparties of the MNB reported effected early repayments in the total value of EUR 4,353 million. On the basis of the above, a total of EUR 2,586 million was actually paid out of the currency allocated through the tenders, i.e. the MNB's instrument covered approximately 60 per cent of total foreign currency demand. The remaining 40 per cent was purchased by credit institutions from their parent banks or in the foreign exchange market; the related forint sales may have contributed to the considerable weakening of the national currency observed in the autumn of 2011. The average exchange rate of total actual payments was EUR/HUF 302.05.

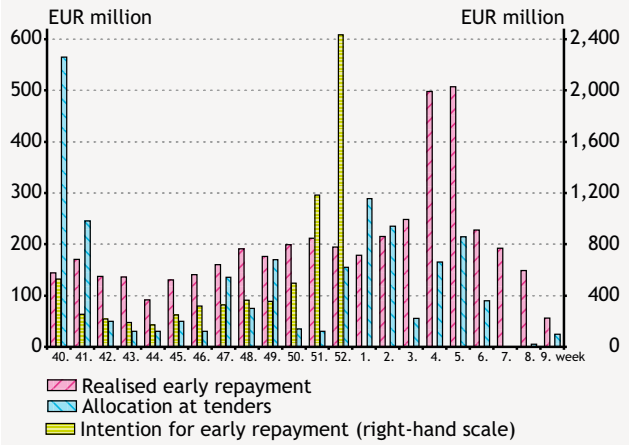
[15] The Sharpe ratio indicates the extra yield on the unit risk (yield fluctuation) of a financial instrument. The higher this ratio, the more attractive the instrument, as the higher the yield realised on it relative to its risk.

[16] A forward transaction is defined as an OTC forward transaction. In the aforementioned transaction, serving as an alternative, the bank buys foreign exchange related to a future value date, but sets the parameters of the transaction (price, quantity) in the present.

Table 1
Lowest market and lowest accepted EUR/HUF exchange rates during the tenders, and amounts allocated through the tenders

Date	Lowest market EURHUF exchange rate (HUF/EUR)	Lowest accepted EURHUF exchange rate (HUF/EUR)	Allocated amount (EUR million)
3 Oct. 11	294.35	294.45	565
10 Oct. 11	293.00	293.30	245
17 Oct. 11	290.85	291.25	50
24 Oct. 11	297.25	297.35	30
2 Nov. 11	306.45	306.85	30
7 Nov. 11	306.70	306.95	50
14 Nov. 11	314.30	314.65	30
21 Nov. 11	305.30	305.50	135
28 Nov. 11	308.10	308.25	75
5 Dec. 11	301.05	301.30	170
12 Dec. 11	303.90	304.20	35
19 Dec. 11	303.52	303.75	30
27 Dec. 11	306.55	306.90	155
2 Jan. 12	314.90	315.20	289
9 Jan. 12	313.60	313.85	235
16 Jan. 12	309.90	310.40	55
23 Jan. 12	302.90	303.30	165
30 Jan. 12	295.51	295.80	215
6 Feb. 12	292.60	293.05	90
13 Feb. 12	292.60	–	0
20 Feb. 12	288.00	288.35	5
27 Feb. 12	291.90	292.30	25

Chart 1
Amount allocated through the tenders and amount of reported and effected early repayments in a weekly breakdown



At the end of the programme, a total allocated amount of EUR 93 million remained with three counterparties, which they were unable to use, as the amount of early repayments by their customers was lower than the amount of foreign currency purchased through the tenders. The MNB repurchased this amount – in accordance with terms announced in advance – at the EUR/HUF exchange rate at which the counterparties had purchased the foreign currency in the last tender(s), in accordance with the FIFO principle.

As regards the direct effects of the programme on the accounting profit, and hence the budget of the MNB (beyond the macroeconomic and vulnerability criteria discussed above), we should make separate mention of the effect that is directly affected by the selection of parameters, and the parameter independent effect that depends on the buying rate of the foreign currency sold:

1. A loss could not be directly incurred as a result of the above described parameters (tender exchange rate, pricing of FX-swaps, reconversion exchange rate, etc.); pricing that was moderately less favourable than in the market – for banks – was to result in a moderate profit for the MNB.

2. A substantial exchange rate gain was realised on the foreign currency sold through the programme, as its buying rate was significantly lower than the selling rate.

Table 2
Amount of bids accepted in the tenders and actually paid amounts in a monthly breakdown

	Amount of accepted bids on the euro selling tender		Amount of actual foreign currency payments related to the realized final repayment	
	EUR millions	HUF billions	EUR millions	HUF billions
October 2011	890	262	235	69
November 2011	320	98	291	86
December 2011	390	119	336	101
January 2012	744	232	707	216
February 2012	335	99	921	279
March 2012	0	0	97	29
Sum	**2,679**	**810**	**2,586**	**781**

Source: Press release on the preliminary statistical balance sheet of the MNB for March.

This, however, is independent of the programme's function, nor did it play a role in the introduction of the programme, and it is not suitable for evaluating its success.

Overall, the programme was favourably received and positively assessed by market participants. In view of the programme's success, in May 2012 the MNB launched a new foreign currency sale programme for the purpose of supplying foreign currency necessary for hedging related to the conversion of foreign currency loans delinquent for more than 90 days. The volume of these loans, and thereby the potential effect of the programme on foreign exchange reserves, is significantly smaller than is the case with the programme related to early repayments, as discussed above.

APPENDIX

In the following, we describe the key elements of model calculations carried out for developing the instrument.

Terms of the MNB transaction (simplified):

- in earlier tenders, the bank hedged d_0 per cent of its total foreign currency loan portfolio with the MNB, at an average S_* exchange rate and with an r_* interest rate spread;
- in $t = 0$, the bank wishes to hedge an additional d per cent at an S exchange rate;
- it immediately swaps this with the MNB, with an r interest rate spread;
- in $t = 1$, X per cent of total foreign currency loans to be fully repaid is received for repayment;
- in $t = 1$ the bank receives the foreign currency from the MNB;
- if this is too much $(d_0+d>X)$, the surplus amount is reconverted with the MNB at the original exchange rate, according to the FIFO principle;
- if it is too little $(d_0+d<X)$, the bank supplements the missing amount on the spot market at the S_1 exchange rate.

Under the terms of the tender, the MNB determines the interest rate differentials, while the banks submit bids in the tenders for pairs of exchange rate prices and quantities. Obviously, the actual transaction is more complex, as tenders may be held at different times and repayments are made on a continuous basis. Nevertheless, the simplified model also effectively expresses the essence of the transaction.

The formula below expresses the cash flow performed in $t = 1$ (bank expenditure is a positive value):

$$\Phi = d_0 S_*(1 + r_*) + dS(1 + r) + \Phi_X,$$

where Φ_x is the portion of the cash flow that depends on X:

$$\Phi_X = \begin{cases} (X - d_0)S_* - dS, \text{ if } X < d_0, \\ (X - d_0 - d)S, \text{ if } d_0 < X < d, \\ (X - d_0 - d)S_1, \text{ if } d_0 + d < X. \end{cases}$$

The first two terms of Φ designate interest expenditure on swaps held with the MNB; this may also be interpreted as the bank concluding a forward transaction with the MNB, but the forward price is determined not by the market rate and interest rate, but by S and r. Explanation of Φ_x:

- In the first case, d_0 would have already resulted in overhedging. In this case, surplus d_0-X and d quantities are reconverted at the S_* and S exchange rates, which arises as revenue for the bank, i.e. the cash flow is $-(d_0-X)\ S_*-dS$.

- In the second case, overall there is overhedging, but the initial d_0 quantity alone would have been insufficient. Then, the surplus quantity is d_0+d-X, which is reconverted at the S exchange rate, based on the FIFO principle, thus the cash flow is $-(d_0+d-X)S$.

- In the last case, the total tied-up quantity is insufficient, and the bank supplements the missing amount on the spot market (expenditure), at the S_1 exchange rate.

Since payment depends on the value of X, and hedging is unavailable for this uncertainty in the market due to incompleteness, the price of the product cannot be deduced on the basis of no arbitrage criteria. In such cases, pricing is only possible if we apply assumptions to the degree of banks' risk aversion, i.e. to their risk-yield preferences. This is easiest to carry out in the following manner:

- We calculate the difference between the standard deviation of the product and the standard deviation of a market alternative;

- We determine the difference in expected returns required by the market to compensate for a unit difference in standard deviations, i.e. the market price of risk;

- We set a parameter of the product such that ratio of the difference of returns and the difference of standard deviations if equal to the market price of risk.

In our case, the alternative possibility is obviously hedging with market forward transactions, the cost function of which differs from the one above for two reasons. First, the forward rate is different, as it depends not on the (S, r) exchange rate and interest rate applied to the MNB transaction, but on the appropriate (S_0, r_0) market values. Second, in the terms depending on X, S_1 must be used instead of S, since now the bank hedged the d quantity in the market and not with the MNB, i.e. closing must also be made at the market exchange rate. If the cash flow of hedging with market forward transactions is Φ_P, then

$$\Phi_P = d_0 S_*(1+r_*) + dS_0(1+r_0) + \Phi_X,$$

and Φ_X is now

$$\Phi_X = \begin{cases} (X-d_0)S_* - dS_1, \text{ if } X < d_0, \\ (X-d_0-d)S_1, \text{ if } d_0 < X < d, \\ (X-d_0-d)S_1, \text{ if } d_0 + d < X. \end{cases}$$

The Sharpe ratio indicates the price of one unit reduced risk expressed in expected value. Since the spread of the MNB product is smaller, the expected value must be greater (as this is cost). If ρ designates the Sharpe ratio, it follows that the equation below must be valid:

$$\rho(D\Phi_P - D\Phi) = E\Phi - E\Phi_P,$$

where D designates the spread, and E marks the expected value. The equilibrium tender exchange rate is the solution of this equation in S.[17]

[17] This is a quadratic equation that has a unique positive solution with not too extreme parameter values.

Olivér Miklós Rácz: Using confidence indicators for the assessment of the cyclical position of the economy

In an inflation targeting regime, the best possible knowledge of demand-side inflationary pressure is of priority importance for monetary policy. In applied macroeconomic models, this is traditionally represented by the actual position of the cyclical component of GDP (the output gap). This study aims at defining a new output gap indicator, which, as opposed to the traditionally employed methods, also relies on direct information concerning the actual utilisation of economic resources.

Exploiting such information substantially improves the real-time stability of the output gap estimate. The output gap indicator generated by my method (resource utilisation gap) has convincing predictive power and therefore gives a valid indication of the demand-side inflationary pressure in the real economy. Taking the above into account, the method described below will become a useful additional tool to support decision-making in monetary policy in Hungary.

MOTIVATION

The primary objective of the Magyar Nemzeti Bank is to achieve and maintain price stability. In Hungary, the rate of inflation is essentially determined by three factors, i.e. the prices of imported goods, inflation expectations and economic demand. Price stability is achieved by the MNB anchoring inflation expectations and influencing the exchange rate of the forint and internal demand in the Hungarian economy through interest rate policy decisions.

In terms of monetary policy decision-making, having as accurate information as possible on the inflationary pressure generated by economic demand is of key importance in order to be able to reduce such pressure. In applied macroeconomic models, the insufficiency or the overheating of the demand environment is expressed by the output gap. When, for example, the output gap is positive, the growth of the economy will exceed the growth rate of potential output and prices will thus be forced up by the overheated demand.

However, the output level achievable on the long run, i.e. the 'potential output' and the output gap are non-observable variables, normally identified through some method of statistical estimation. The new feature of the method described below is that it relies on information concerning the degree of utilisation of economic resources in addition to statistical characteristics.

Since the best possible identification of the inflationary pressures arising from the actual cyclical position is of key importance for making monetary policy decisions, an output gap estimate should obviously have low sensitivity to incoming data. In addition to the above, a cyclical indicator is considered to be valid if both its sign and magnitude give an accurate indication of the demand-side inflationary pressure. In other words, it should be able to predict inflation at least as exactly as a single-variable forecast which is unable to control for real economy impacts.

In contrast to traditional methods, the use of the method described here for the identification of the cyclical position shows high end-point stability, therefore providing a more robust insight into the actual position of the output gap, with a convincing ability to predict inflation.

METHODS AVAILABLE TO ASSESS THE CYCLIC POSITION

A number of methods are available for the assessment of the output gap. According to classic growth theory, the

long-term output level can be determined on the basis of the amount of capital and labour potentially available for production, the potential level of productivity and the production function characterising the whole economy. According to that method, the output gap is the difference between the actually observed output and the potential output. The long-term trend of production factors and productivity is normally identified by univariate statistical filters, the most common of these being the Hodrick–Prescott (HP) filter (Hodrick and Prescott, 1997).

An advantage of such univariate methods lies in the fact that they can be easily generated. However, in terms of identifying the actual cyclical position of the economy, such filtering process has its limitations. The HP filter, similarly to most single-variable filtering methods, is based on the assumption that the observed data cover complete cycles. Looking back on a time series of sufficient length, they can thus separate cyclical and trend components with sufficient reliability, but they are rather vague at the end-points of the time series. That end-point variability may be particularly high in economic positions when the performance of the economy shows a permanent and substantial difference from the potential levels. Consequently, such methods provide a rather inaccurate guidance for the assessment of the actual cyclical position. For more information on the subject, see Orphanides and van Norden (2002).

In addition to the above, there are multivariate statistical filters relying on different theoretical relations. Tóth (2010), for example, employs a filtering method that relies on macroeconomic statistics indicating overheating in order to identify the cycle. Such statistics include the balance of the current account or the deviation of inflation from the target. These variables may provide some help in the assessment of the current cyclical position. Since, however, each variable is broken down to cycle and trend, the method cannot fully eliminate the construction problem arising in the case of univariate filters. In this case, there is no auxiliary variable that could give a reliable indication of the overheated state of the economy or its opposite.

OTHER SOURCES OF CYCLICAL INFORMATION

Therefore, in order to improve the end-point stability of the above methods, auxiliary indicators should be found which substantially improve the identification of the current position. Some indicators may include information relevant to the output gap. These are either indicators based on questionnaire surveys or typically labour market statistical indicators. With regard to the Hungarian economy, such surveys are conducted by the Economic Research Institute (GKI) on behalf of the European Commission. Among other things, the questions typically concern the current order-book levels of various sectors, the actual degree of utilisation of their production capacities or their differences from normal levels. Statistical indicators may include the unemployment rate, the amount of overtime hours in various industries or different indicators of labour market-tightness.[1] The Annex includes the summary of variables used for my estimate.

In terms of the objective pursued, one useful feature of most of the variables referred to above is that they are not revised after the data has been provided. Further advantageous features include that they soon become available compared to the publication of the GDP data and at times they serve as *leading*[2] indicators of the output gap. Finally, another feature favouring the estimation procedure is that nearly all components of the set of variables can be considered stationary, i.e. rather than following a trend, they have a stable mean and standard deviation in time.

Similar indicators are available for most European countries. In her paper written for the central bank of Sweden, Nyman (2010) made ground-breaking observations on the utilisation of the cyclical information of this type of indicators. The present study is based on her method. Aastveit and Trovik (2008) set a similar objective for their study.

An important feature of Nyman's method lies in condensing the information carried by the variables in question into a single indicator, with the smallest possible loss of information. To that end, the principal component generated by a static principal component analysis is used as an auxiliary variable in a multi-variate filtering process in order to decompose GDP into cyclical and trend components. During filtering, the principal component is used for the identification of the cyclical component. The cyclical component so established is termed *resource utilisation indicator* by Nyman.

Since, on the whole, the family of indicators used in her study represent the current utilisation of production resources, the method based on their utilisation is comparable to the production function-based methods referred to above. However, an important difference between the two methods is that while the production function-based method

[1] Tightness indicators are defined as the ratio of the number of registered new jobs and the number of unemployed.

[2] In this case, the 'leading' trait means that the turning points observed in the output gap may be pointed out by some of these indicators in earlier quarters.

focuses on the estimation of potential output, the primary objective of Nyman's strategy is, due to the nature of the indicators used, to define the degree of the deviation of the actual output from the potential level.

IDENTIFYING THE RU INDICATOR AND THE OUTPUT GAP BASED ON CONFIDENCE INDICATORS

Following Nyman's method, the first step is to obtain the common information carried by multiple cyclical indicators. This is done by an analysis of the static principal component, on the assumption that the chronological diversity of the indicators has a common determining factor, known as the first static principal component.

Essentially, a weight vector is identified, which is used to weight all components of the set of variables in order to generate the principal component as a single time series. The weight vector of the first static principal component is determined in a way that the first principal component should cover the biggest part of the common variance of the data, resulting in minimum loss of information. According to Nyman, the first static principal component thus generated is referred to as the resource utilisation indicator (or RU indicator, Chart 1).

GDP is broken down to trend and cyclical components in order to estimate the output gap based on the utilisation of resources. The method is based on the HP filter described above, with the adjustment that the RU indicator is used as the auxiliary variable to identify the cycle. This method therefore does not require an assumption on the current cyclical position as it is marked by the end point of the RU indicator.

Chart 1
The resource utilisation indicator and its uncertainty band
(standard deviation)

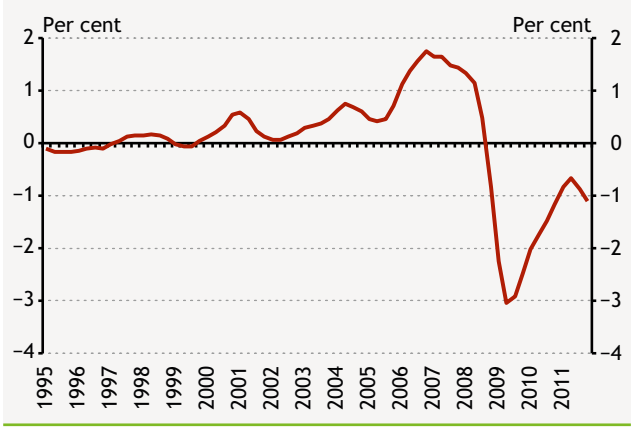
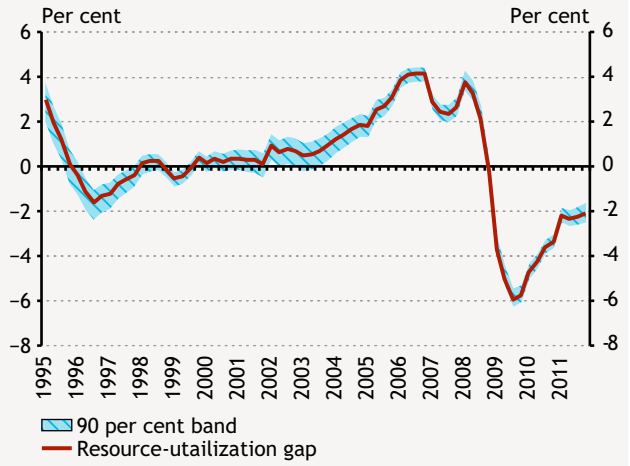


Chart 2
The resource utilisation gap and its uncertainty band
(percentage of trend)



Since output gap indicators are unobserved variables, the estimation methods they are generated with can be interpreted only in a specific uncertainty band. To describe the uncertainty, 1,000 random samples were generated from the existing set of variables and the RU gap was produced for each sample. The RU gap and its uncertainty band are depicted in Chart 2. The figure shows that the estimate varies across a relatively narrow band, thus significantly marking periods of substantial overheating or insufficient demand.

THE VALIDITY AND SENSITIVITY OF THE RESOURCE UTILISATION-BASED OUTPUT GAP

The validity of an output gap indicator, i.e. whether it shows the degree and orientation of demand-side inflationary pressure properly, can be assessed on the basis of its ability to predict inflation. The relationship between the economic cycle and inflation is represented by the so-called *Phillips-curve*, which may be stated as follows:

$$p_t = E(p_{t+1}) + (y_t^{actual} - y_t^{potential}) + \varepsilon_t$$

The left side of the expression has actual inflation, which depends on the expectation concerning inflation in the forthcoming period (the first term of the right-hand side), the current cyclical position of the economy (second member) and the shock not explained by the former two members (ε_t, e.g. oil price shocks).

I produced out-of-sample annual forecasts based on the Phillips curve. In the estimations, the real-time cycle of the RU gap and the HP filter appeared in the place of the

Table 1
Mean square errors of the forecasts

	(1)	(2)	(3)
AR(1)	0.0069	0.0083	0.0071
HP	0.0040	0.0050	0.0052
EK	0.0038	0.0031	0.0037

Left-hand-side variables: (1) quarterly variation of core inflation filtered for taxes, (2) quarterly variation of trend and core inflation filtered for taxes, (3) quarterly variation of the inflation of demand-sensitive items.

output gap. In the forecasts, three potential inflation indicators were employed as left-hand-side variables, including core inflation filtered for taxes, its trend-filtered variant and the inflation of the products sensitive to demand shocks.

The performance of the forecasts is compared in Table 1 on the basis of their root mean squared error. In addition to the two Phillips curve forecasts, the predictive errors of the univariate AR(1) model of the left-hand-side variable in question are also shown as a point of reference. The latter is the equivalent of the *empty model* arrived at by eliminating the second right-hand-side member from the above equation. On the basis of the above, for each of the three inflation variables, the predictive error of the models containing the RU gap was smaller than that of the univariate models. It was also at least equal with or, in two cases, smaller than that of the real-time HP cycle model.

Another important expectation from an indicator of this sort is that its indications of the cyclical position should vary as little as possible when new data are received. To that end, the RU gap and the HP gap are generated on samples starting with Q1 2006 and expanded in each[3] quarter. The end-point stability of indicators can be illustrated by comparing the end points of the indicators estimated on varying samples (real-time estimate) and full-sample estimates. With the arrival of new data, from 2006, above-the-average utilisation of economic resources was indicated by the indicator even in real time. Similarly, overheating was indicated by the RU gap indicator (Chart 3).

The end-point variability of the RU indicator is considered stable, since real-time and full-sample estimates show small differences from 2006 on. On the other hand, the real-time and full-sample estimates of the HP gap show significant differences, particularly between 2006 and 2008. Consequently, of the methods available, the performance of the RU gap indicator indicating the real-time cyclical position best suits the requirements of monetary policy decision-making (Chart 4).

Chart 3
Real-time performance of the RU indicator
(percentage of trend)

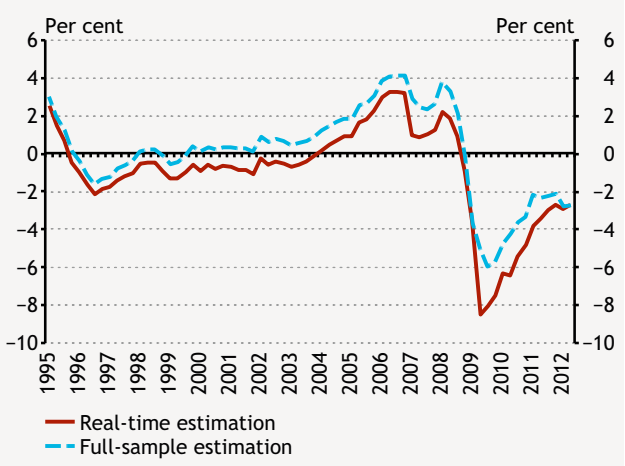
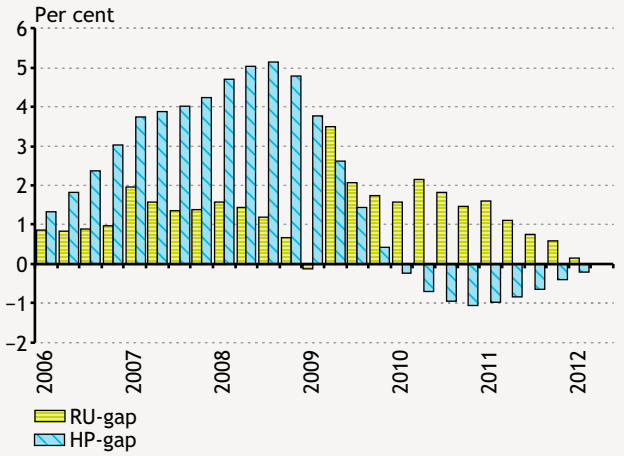


Chart 4
Difference of the real-time and full-sample estimates of the RU gap and the HP filter over the sample period
(percentage-points)



[3] The method is used in order to imitate the real-time arrival of GDP data.

CONCLUSIONS

This study contains the description of the estimate of an output gap indicator based on the utilisation of resources, which improves the assessment of the current cyclical position of the Hungarian economy by exploiting the information of a broad set of variables. Through the method described in the study, an output gap indicator was generated whose predictive ability rivals that of the predictive models used as a point of reference and is therefore able to provide a valid indication of the inflationary pressure from real economy demand. Moreover, it is capable of the above despite the fact that the indicator is based on a set of variables independent from inflation data. On the other hand, compared to traditional filtering methods, it gives a significantly more robust insight into the current cyclical position of the economy. The resource utilisation gap will therefore become a useful additional tool to support the making of monetary policy decisions.

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ANNEX

List of variables

Name / content of variable	Sector	Source
Factor primarily restricting production: none	services	GKI: ESI survey
Factor primarily restricting production: demand	services	GKI: ESI survey
Factor primarily restricting production: labour	services	GKI: ESI survey
Factor primarily restricting production: equipment	services	GKI: ESI survey
Factor primarily restricting production: other	services	GKI: ESI survey
Current level of stocks compared to normal level	commerce	GKI: ESI survey
Current level of orders compared to normal level	industry	GKI: ESI survey
Current level of export orders compared to normal level	industry	GKI: ESI survey
Current level of stocks compared to normal level	industry	GKI: ESI survey
Factor primarily restricting production: demand	construction industry	GKI: ESI survey
Factor primarily restricting production: labour	construction industry	GKI: ESI survey
Factor primarily restricting production: material	construction industry	GKI: ESI survey
Factor primarily restricting production: other	construction industry	GKI: ESI survey
Current intention of households to purchase	–	GKI: ESI survey
Current intention of households to save	–	GKI: ESI survey
Current financial position of households	–	GKI: ESI survey
Capacity utilisation	industry	GKI: ESI survey
Factor primarily restricting production: none	industry	GKI: ESI survey
Factor primarily restricting production: demand	industry	GKI: ESI survey
Factor primarily restricting production: labour	industry	GKI: ESI survey
Factor primarily restricting production: equipment	industry	GKI: ESI survey
Factor primarily restricting production: other	industry	GKI: ESI survey

List of variables (cont'd)

Name / content of variable	Sector	Source
Number of over-hours per month	services	HCSO: institutional statistics
Number of over-hours per month	competitive sector	HCSO: institutional statistics
Number of over-hours per month	processing industry	HCSO: institutional statistics
Employment rate	whole economy	HCSO: labour survey
Unemployment rate	whole economy	HCSO: labour survey
Number of vacancies	services	HCSO: vacancies statistics
Number of vacancies	commerce	HCSO: vacancies statistics
Number of vacancies	transportation	HCSO: vacancies statistics
Number of vacancies	hospitality	HCSO: vacancies statistics
Number of vacancies	financial services	HCSO: vacancies statistics
Number of vacancies	real estate services	HCSO: vacancies statistics
Number of vacancies	competitive sector	HCSO: vacancies statistics
Number of vacancies	processing industry	HCSO: vacancies statistics
Number of vacancies	construction industry	HCSO: vacancies statistics
Tightness indicator	competitive sector	HCSO: vacancies statistics
Unemployment and outflow	whole economy	National Employment Service
Tightness indicator (including non-subsidised vacancies)	whole economy	National Employment Service
Tightness indicator (including all vacancies)	whole economy	National Employment Service
Number of non-subsidised vacancies	whole economy	National Employment Service

Dr. Anikó Turján and Judit Brosch: Single Euro Payments Area (SEPA): Full speed ahead!

In 2001, a study was conducted for the European Commission looking at the intra-Community cross-border credit transfers of 40 private individuals. The equivalent of EUR 100 was transferred in each transaction. The 1473 credit transfers examined took 3 business days on average to reach the payee. On one occasion, the funds took 43 days to arrive while 2 credit transfers remained 'in transit' for months. The cost of the credit transfers was so high as to bring into question the expediency of the transactions. The total average cost of credit transfers executed successfully exceeded 23 euro while the most expensive transaction cost almost 61 euro.[1] *In contrast, the overwhelming majority of credit transfers within Member States were executed within 1 day, typically costing euro cents or at most a few euro. Considering the creation of the single internal market and the introduction of the euro, this situation was unsustainable, and therefore, in order to change this situation the vision of the single euro payments area (SEPA) was born. The objective was to execute payments in euro as efficiently and cheap as possible, providing the same rights, obligations and basic terms irrespective of borders and assuring that a single payment account in any Member State is sufficient to make euro payments within the EU.*

The first article on SEPA was published in the MNB Bulletin in September 2008. In the four years since then, significant progress has been made particularly in the field of two major products: credit transfers and direct debits denominated in euro. After the initial, fundamentally market-driven process and self-regulation, in 2012 the Regulation of the European Parliament and of the Council[2] *eventually established uniform rules and requirements for credit transfers and direct debits denominated in euro as well as the end-date by which migration from the previous, diverse national legacy products to such credit transfers and direct debits must be completed. By default, the migration must be completed by 1 February 2014 in the euro area and by 31 October 2016 in non-euro area countries.*

Now there is no more finger-pointing and waiting for others to act: everyone can go full speed ahead. Under the compulsion of the EU Regulation, even more payment service providers (banks, savings cooperatives and other institutions participating in payment services) will offer SEPA products, further information campaigns will stimulate demand from customers, intensifying competition may improve the terms of payment services, and national migration plans will push for the changeover, thus there is every hope that the share of euro credit transfers based on SEPA standards will increase even faster from the 27.3 per cent level seen in April 2012 in the euro area. In Hungary, 1 July 2012 is already a special date in this process as the intraday HUF credit transfer system launched in Hungary on that date is based on SEPA standards.

INTRODUCTION

Following the proposal of the European Commission in December 2010, the Hungarian EU Presidency, through the general approach adopted at the Council stage, made a substantial contribution to finalisation of the EU Regulation in the first half of 2011, and thus we would also like to share first-hand information on this subject with the readers of the literature. Our article will also discuss the effects of the EU Regulation on Hungary.

The introduction of the euro has made it possible on the one hand and necessary on the other hand to integrate the retail payment systems that have evolved in a fragmented manner at the national level. The appearance of euro cash made it particularly visible that different country-by-country standards, data content and execution times are applied to non-cash retail payments. Despite the single internal market, charges for cross-border credit transfers were higher, and the execution times for cross-border credit transfers were longer, than in the case of national

[1] European Commission (2001), Retail Banking Research (2001).
[2] European Parliament and Council (2012).

Table 1
Summary of the abbreviations used in the article

Abbreviation	Concept	Additional explanation
BIC	Business Identifier Code	Code used for identification of payment service providers.
EPC	European Payments Council	A body emerging as a result of self-organisation of European banks to support and promote SEPA. Currently it consists of 74 members.
HCT	Hungarian credit transfer (denominated in forints and based on SEPA standards)	Standard used in the Hungarian intraday clearing system launched on 1 July 2012.
IBAN	International payment account number identifier	It can be used anywhere.
MIF	Multilateral interchange fee	Income distribution used in certain Member States in case of direct debit transactions, from the payment service provider of payee to the payment service provider of payer.
PSD	Payment service directive	Directive transposed within the European Economic Area.
SCT	SEPA credit transfer	Payments scheme developed by the EPC and based on the use of IBAN, BIC and unified message (UNIFI ISO 20022 XML) standard.
SDD	SEPA direct debit	Payments scheme developed by the EPC and based on the use of IBAN, BIC and unified message (UNIFI ISO 20022 XML) standard and creditor mandate flow.

Source: MNB.

payment transactions. The full benefits of the single currency and of the real common market can be enjoyed only if a single euro payments area (SEPA) also emerges within which economic actors, using a single payment account, can make and receive euro payments anywhere in the same way as in their home countries.

The representatives of the European banking community outlined this specific vision as a target in 2002. Subsequently, in order to dismantle existing technical barriers and to elaborate uniform pan-European payment schemes, they established the European Payments Council (EPC). The European Commission (Commission) has focused on regulatory work to dismantle legal barriers and the relevant legal acts were adopted by the European Parliament and the Council in cooperation with the Commission. The European Central Bank (ECB), in addition to providing a legal opinion on the relevant draft legislation, also participated actively as a catalyst in the entire SEPA process. Payment service providers and infrastructures (clearing houses) participated in the elaboration of the payment schemes and the framework rules applicable to clearing houses and translated them into practice, embarking on investment projects as required. Customers started using the resulting payment schemes.

In terms of geographical coverage, SEPA at present encompasses the 27 EU Member States, Iceland, Liechtenstein, Norway, Switzerland and Monaco. The SEPA process covers the entire payment traffic denominated in euro; in this article, however, we focus exclusively on the two payment instruments relevant for our selected subject: credit transfers and direct debits.

ANTECEDENTS

The major milestones of the SEPA process, in respect of credit transfers and direct debits, are shown in Chart 1. The most important actions of public entities are shown above the time axis, the key actions of market actors below the axis, up to the end of 2011.

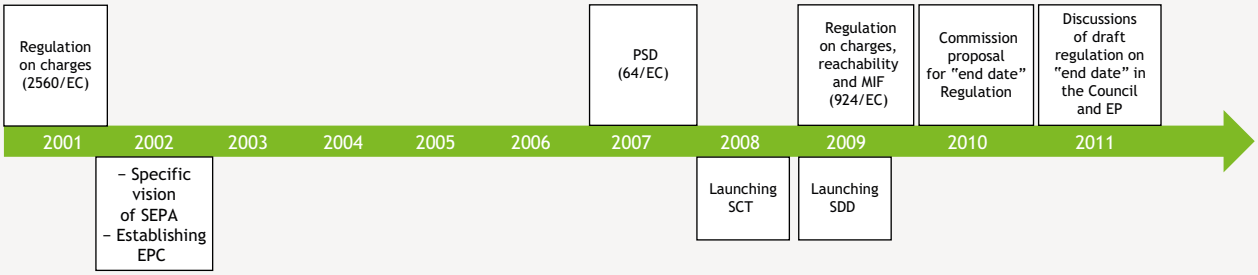
- Regulation (EC) No. 2560/2001 of the European Parliament and of the Council can be regarded as the forerunner of the SEPA process by providing that charges for cross-border electronic payments and credit transfers under a specified value limit denominated in euro[3] shall not be higher than charges payable for similar national payment transactions.

- In 2002 the specific vision of SEPA was born at the initiative of the market, and the EPC was set up to facilitate its development and implementation.

- In 2007 Directive 2007/64/EC of the European Parliament and of the Council on payment services in the internal market (PSD) was adopted, setting a uniform framework in the whole of the European Economic Area for payment services provided in euro or in the currency of a non-euro area Member State. The Directive removed a number of obstacles that had hindered the standardisation of retail payments, and also regulated the execution times.

[3] Initially EUR 12,500, then from 1 January 2006 EUR 50,000.

Chart 1
Key milestones of the SEPA process



Source: MNB.

– On 28 January 2008, SEPA credit transfers (SCT) were launched, meaning euro credit transfers with the mandatory use of the international payment account number identifier (IBAN), the business identifier code of payment service providers (BIC) and the unified international message (UNIFI ISO 20022 XML) standard. The data standards laid the ground for straight-through-processing within the entire SEPA. The payment scheme was developed by the EPC through self-regulation and taking into account extensive public consultation, and in compliance with the provisions of the PSD; payment service providers voluntarily joined (and may continue to join) the payment scheme by signing an adherence agreement committing themselves to abide by its terms. The rulebooks and implementation guidelines underlying the scheme may be updated year by year.

– In 2009 Regulation (EC) No 924/2009 of the European Parliament and of the Council was adopted. This Regulation, preserving the principle of equal charges for national and cross-border payment transactions denominated in euro, imposed reachability requirement and deadline on the payment service provider of the payer (if the payer is consumer) in respect of direct debits denominated in euro. The latter means that if a payment service provider offers direct debit services on the national market, that is, if it makes possible direct debit in favour of a domestic payee, it must also make the same service available to foreign payees. The Regulation also stated that payment service providers could continue to charge multilateral interchange fees (MIF) up to 1 November 2012.

– On 2 November 2009 SEPA direct debits (SDD) were launched, which are based on the creditor mandate flow used in some Member States and followed the directions set by the SCT in terms of standards (IBAN, BIC and the message standard) and the process of development. The core version of the payment scheme is to be used for direct debit if the payer is a consumer (i.e., it is similar in nature to the Hungarian core direct debit), while its other version is for business-to-business direct debit transactions (i.e. it can be compared to the direct debit based on a letter of authorisation in Hungary).

The Commission published its proposal for the 'end-date' regulation in December 2010, which was discussed in the subsequent year both in the European Parliament and in the Council. By the end of 2011 political agreement had been reached on the Regulation, and the communication of the approved final migration date also started at that time. The Regulation was promulgated in March 2012.

SWITCH FROM THE FUNDAMENTALLY MARKET DRIVEN PROCESS TO REGULATION BY LEGISLATION

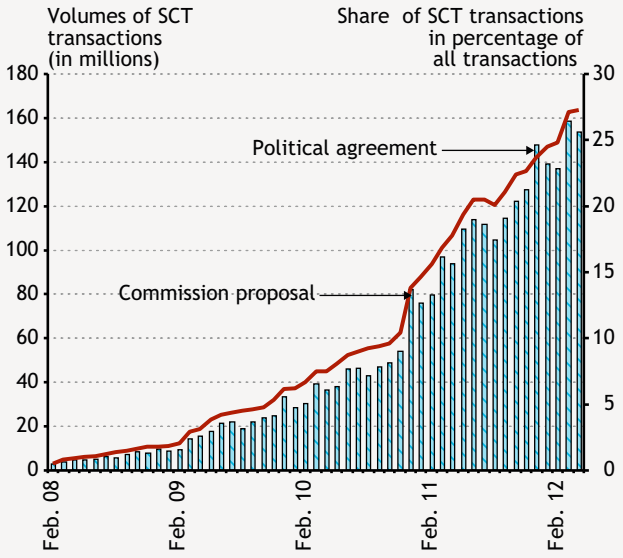
The SCT and the SDD were introduced upon the initiative of the market, as a result of self-organisation; nevertheless, legal regulation was adopted. In the following, we discuss the causes of this change.

The migration to the use of the SCT, and particularly of the SDD, proceeded at an extremely slow pace. In the euro area the so-called SCT indicator (the share of SEPA transactions compared to the total number of euro credit transfers) passed the 10 per cent level first in November 2010, then 20 per cent in June 2011. Chart 2 reveals that migration to the SCT was accelerated by the communication following the proposal of the Commission for the 'end-date' regulation and then the political agreement.

The SDD indicator (the share of SEPA transactions compared to the total number of euro direct debits) in the euro area is still below 1 per cent. Chart 3 reveals that even communication failed to substantively change the pace of SDD migration.

Chart 2
Number and share of transactions processed in SCT format in the euro area

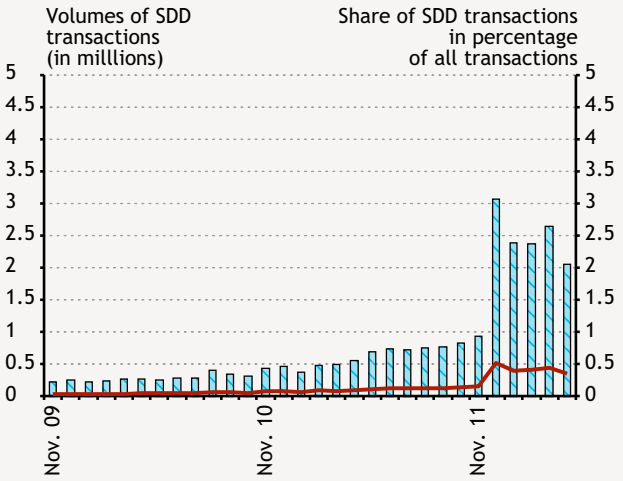
(between February 2008 and April 2012)



Source: MNB using ECB data.

Chart 3
Number and share of transactions processed in the SDD format in the euro area

(between November 2009 and April 2012)



Source: MNB using ECB data.

Authorities (ECB,[4] Commission[5]) attributed the slow pace of migration to the use of SEPA transactions to the following key factors.

- There was uncertainty concerning the timing of the completion of the SEPA process and of the withdrawal of legacy products as well as the longer-term applicability of interchange fees in direct debit transactions. Only some countries set specific target dates for migration to SEPA products, while the EPC could only achieve such an agreement within the banking community that critical mass should be reached by the end of 2010. There was even increased uncertainty in respect of the applicability of the interchange fee, because in some Member States (Belgium, France, Italy, Portugal, Spain and Sweden) the payment service provider of the payee pays an interchange fee to the payment service provider of the payer. In March 2009, however, the Commission and the ECB issued a joint statement that made it clear that on the one hand they both considered the transparent pricing of payment services to be a tool to facilitate efficiency and on the other hand the Commission – as competent authority regarding legal issues of competition – no longer considers it justified and to be in compliance with the EU competition rules to maintain the interchange fee after 2012.

- Both payment service providers and businesses postponed investments relating to SEPA products due to the uncertainty of the end-date for migration.

- Incentives for SEPA product development were missing on the side of payment service providers as they continued to offer their legacy products.

- On the demand side there was little awareness of SEPA. In the context of consumers, the SDD must be mentioned specifically; even though it was modelled on successful national direct debit schemes, it became a completely new payment scheme even in the countries where the payees used to handle mandates prior to 2009 as well. It would have been imperative to assure consumer protection and security relating to the new payment scheme, and even more important to create that sensation.

- It became evident that for migration en mass it is not sufficient that payment service providers join the SEPA payment schemes or that Regulation 924/2009/EC imposed a reachability requirement on them in respect of direct debits with high transaction numbers (so-called core direct debit, which corresponds to the Hungarian core direct debit apart from the currency).

[4] Source: ECB (2010).
[5] Source: Commission (2010b).

– Gridlock emerged: as long as the legacy products are available and payment service providers engage in no active SEPA communication, users also postpone making use of SEPA products. Thus the supply and demand sides were mostly waiting for each other to take the initiative.

The Commission quantified the effects of migration from legacy products to SEPA products in a six-year period under slow and fast migration scenarios. Slow migration was based on the assumption of no change in regulation and communication while for fast migration, the effect of the legal regulation on the end-date of migration was estimated. The Commission calculated, for the economy of the EU, a loss of EUR 42 billion if migration is slow and a gain of EUR 123 billion in case of fast migration. For more details, see Dávid (2008).

THE KEY ISSUES OF REGULATION AND THEIR SOLUTION

In our analysis we rely on publicly available information but indirectly, when discussing certain topics, we also shed light on the background of political compromises reached during the Hungarian presidency. In the context of each key issue it was important to keep in mind the fundamental objective of the EU Regulation: to enforce the use of uniform payment instruments universally and uncontroversially, by a specific date (the 'end-date'), which will dispel any doubt market actors may have concerning the reality of migration.

– **How to define the target: pan-European credit transfers and direct debits denominated in euro? Can (should) the SCT and SDD be specified?**

While the EU Regulation is geared towards migration to SEPA, the word 'SEPA' occurs only in the preamble to the Regulation. The legislators specified the target state of pan-European euro credit transfers and direct debits through technical and business requirements (e.g. use of IBAN, ISO 20022 XML message standard) that fit the SCT and SDD, but compliance is not restricted to the exclusive use of the SCT, SDD or their present versions. Thus there is room for competition, innovation and development. Another argument against specifying SCT and SDD is the fact that these payment schemes are owned and managed by the EPC, and thus due to the regular review and the concomitant minor or major amendments of the SCT and SDD rulebooks, legislators would have found that the product and standard underlying the EU Regulation change during the legislative process or in the course of implementation. This would have invested the EPC with de facto legislative powers, which the EU legislators understandably wished to avoid.

Nevertheless, in order to promote SEPA migration, the EU Regulation sets interoperability requirements for the payment schemes to be used by payment service providers for credit transfer and direct debit transactions that pertain to the number (share) of participants in the payment schemes. By default, this requirement means that the majority of payment service providers operating in the majority of Member States and, simultaneously, the majority of payment service providers operating in the whole of the EU must join the payment scheme. Obviously, at present the SCT and the SDD are the only payment schemes to satisfy that requirement as the number of participants is between 3,500 and 4,500. Nevertheless, legislators have not ruled out the possibility of the emergence of a new payment scheme and provide for the possibility of a temporary exemption as long as payment service providers from at least 8 Member States have joined the new payment scheme.

Still, the widespread use of the SCT and SDD would improve economies of scale and increase efficiency, and thus legislators, while maintaining the possibility of innovation, competition and development, specified technical and business requirements to fit the SCT and SDD.

To maintain flexibility, legislators opted for an arrangement in which the substantive part of the EU Regulation only includes payment account identifier and message format while the specific identifier and message format are indicated in the Annex. (The same method applies to the definition of the data elements of payment transaction related messages.) In a delegated act, the Annex can be amended by the Commission following an adequate consultation procedure, which makes it faster and easier to take account of technical progress and market developments.

Thus, the EU Regulation specifies the target state of pan-European euro credit transfers and direct debits through technical and business requirements (e.g., use of IBAN, ISO 20022 XML message standard) that fit the SCT and SDD, but compliance is not restricted to the SCT or SDD. The payment schemes to be applied are subject to the participation requirements defined as a percentage of the number of payment service providers. (Articles 4 and 5 of the EU Regulation as well as its Annex.)

– **What should be the end-date? Should there be a single end-date or multiple ones? How to determine the end-date(s)?**

For the selection of the end-date, the main consideration was to have it be as soon as possible, while allowing

sufficient time for preparation. The objective was namely on the one hand to avoid the high cost of the parallel use of legacy and SEPA products and on the other hand to achieve the benefits resulting from the use of SEPA products as soon as possible. In other words, to be able to use a single standard in the entire area as soon as possible and to avoid penalising those who have already migrated to SEPA, but are also forced to maintain procedures for handling legacy products due to others dragging their feet.

Within euro-area payment transactions, which constitute the overwhelming majority of payment traffic, the legislators differentiated between core products and relatively smaller-volume niche products (special types of transactions on some local markets with a small number of transactions) as well as other special direct debit transactions meeting local needs and generated using a payment card. Within all credit transfer and direct debit transactions denominated in euro, transactions within and outside the euro area are treated separately. The objective was to set the earliest possible end-date for the euro-area core products, which represent a major part of the payment traffic.

It was also important, though, that the end-date specified could be communicated as early and as clearly as possible to dispel the uncertainty that had caused the slow pace of migration. Thus, the end-date of migration is defined as a specific calendar day. The communication of that date started as early as December 2011, before the formal adoption of the EU Regulation. For the sake of simplicity, the end-date is the same for the migration of credit transfers and direct debits to SEPA, while it is slightly delayed as compared to the euro-area core products on the one hand for niche products and direct debit transactions generated using a payment card and on the other hand for transactions in countries outside the euro area.

By default, migration must be completed by 1 February 2014 in the euro area and by 31 October 2016 in non-euro area countries. The detailed end-dates are set out in Articles 6 and 16 of the EU Regulation; these as well as other deadlines are summarised in Table 2 and Chart 4.

– **How can the uniform nature of the EU internal market be increased further?**

The requirements concerning the reachability of payment service providers and full user mobility all serve to assure that within the EU no discrimination shall be possible based on nationality or place of residence in respect of credit transfer and direct debit services. This is because a number of payment service providers had refused to open payment accounts for foreign citizens or businesses, and thus the freedom of choice of the users to choose payment service provider was narrowed, and they were unable to exploit the theoretical benefits of the internal market (Articles 3 and 9 of the EU Regulation).

The rules governing the interoperability of payment schemes cannot be different for national and cross-border transactions, which is also conducive to the increasingly uniform nature of the internal market (Article 4 of the EU Regulation).

– **Is it necessary to regulate the interchange fee charged for direct debit transactions, and if so, how?**

The interchange fee is a fee established jointly (multilaterally), paid by the payment service providers of the payees to the payment service providers of the payers (consumers) in respect of direct debit transactions. The payment of such fees is not a general practice: within the EU it is in force – in addition to Sweden – only in 5 euro area Member States, but in those countries concerned it is charged on each direct debit transaction. The legislators considered the interchange fee as a restriction of competition particularly due to the way it is charged: it is set by the banks jointly, without any competition in its level. The payment service provider of the payee pays the interchange fee to the payment service provider of the payer, but in reality it is passed on to the user, that is, the payee. The payee, in turn, incorporates it into the price of the utility or other services underlying the direct debit transactions – thus eventually the consumer pays the fee without even seeing and knowing its size. Consumers, in contrast, can use this payment instrument without paying any direct fee or for a modest fee because their payment service provider receives the interchange fee, thus there is no need to charge any (cost proportionate) fee directly to the consumer.

As the direct debit works efficiently in all the other Member States without any interchange fee, furthermore, on the whole banking fees are not lower in the countries using the interchange fee, payees may employ a transparent fee policy and use discounts or other methods to directly encourage their customers to choose direct debit as the payment instrument.

Following a transitional period, the EU Regulation expressly prohibits the use of interchange fees for both national (after 1 February 2017) and cross-border (after 1 November 2012) transactions (see also Table 2 and Chart 4). By contrast, in the event of non-executed

direct debit transactions, the so-called 'R-transactions' an interchange fee may be applied strictly on cost basis, allocating the costs to the party that has caused the R-transaction. The level of the costs must be adjusted to the direct costs of the most efficient payment service provider that is a representative participant of the multilateral agreement in terms of the number of transactions and the nature of services (Article 8 of the EU Regulation).

– **How to increase consumer confidence in direct debits?**

The SDD, and thus also the EU Regulation, relies on the payee (or a third party on its behalf) to keep and store the mandates for direct debit. By contrast, in a number of Member States, as in Hungary, the mandate is kept and stored by the payment service provider of the payer (consumer) and not by the payee. Consequently, in such countries consumers must be assisted in adapting to and accepting the change for direct debits denominated in euro.

Therefore, the legislators ensured the right of consumers to limit direct debit collections to a certain amount and/or periodicity, to block direct debits initiated by specified payees or to authorise direct debits initiated exclusively by one or more specified payees. Furthermore, payers have the right to instruct their payment service provider to verify the compliance of the direct debit transaction with the mandate before its execution whenever the payer is not entitled to a refund[6] (Article 5 of the Regulation).

This is an important change because the SDD scheme developed by the EPC does not yet contain all the elements to guarantee the increased security of consumers, and thus the SDD scheme and products will have to be modified after the entry into force of the Regulation to satisfy the legislators' expectations.

– **Which binding legal instrument is the most appropriate to achieve the above objectives?**

Due to the need for the broadest possible technical standardisation, legislators opted for the binding Regulation of the European Parliament and of the Council. The Regulation is an act of general application; it is binding in its entirety and directly applicable in all Member States, and thus it exerts its effects sooner than a Directive, which, after its adoption, must be transposed separately in each Member State into the national law of the Member State by the deadline specified in the Directive. The ECB is also entitled to issue binding regulations relating to clearing and payment systems. Still, the scale was turned towards a Regulation of the European Parliament and of the Council because legislators wished to regulate the entire payment chain as the benefits of fast migration appear mostly on the demand side and this is how requirements can be set in respect of payment service users (customers).

The requirements affect payment service providers and/or users (the latter are affected partly directly and partly through payment service providers). In the longer term, the only obligation on users is the use of the IBAN and specific data elements. The XML message standard is obligatory only for payment service providers and those users which initiate or receive individual credit transfers or direct debits bundled for transmission and are not consumers or microenterprises (Article 5 of the EU Regulation and its Annex).

The EU Regulation contains a number of other important provisions but, due to size constraints, this article focuses only on the most important ones; Table 2 and Chart 4, however, cover a broader scope in respect of deadlines.

It is clear from the chart that migration will mostly be completed by 1 February 2014 for credit transfers and direct debits denominated in euro and completely, at the latest, by 1 February 2017, together with establishing interoperability between payment schemes and systems. The end-date outside the euro area is 31 October 2016. Thus, the basic terms, standards, rights and obligations will be the same within and outside the national borders in the entire EU, irrespective of the place of residence, for the payment services concerned.

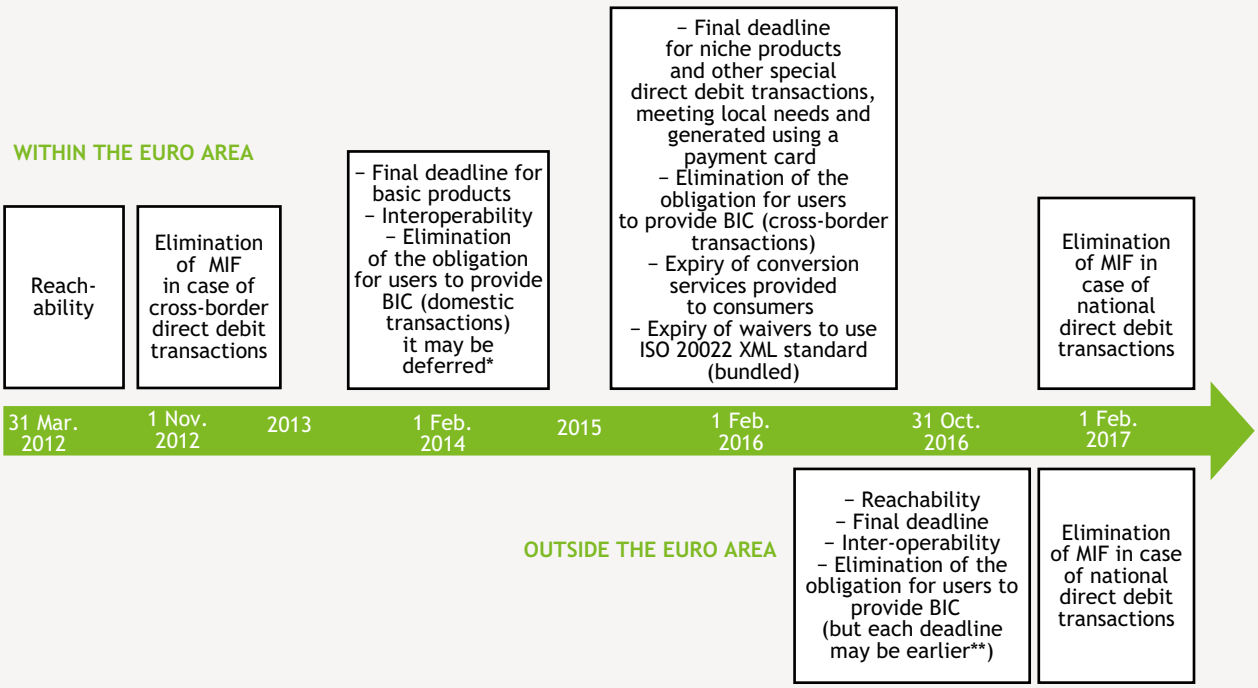
[6] The Regulation also provides for the validity of mandates and right to a refund (Article 7 of the Regulation).

Table 2
Migration deadlines

Topic	Additional information	Deadline
Establishing reachability	Euro area Member States	31 March 2012
	Non-euro area Member States	31 October 2016*
Final deadline for migration	Euro area Member States: basic products	1 February 2014
	Euro area Member States: niche products** + other special direct debit transactions, meeting local needs and generated using a payment card	1 February 2016
	Non-euro area Member States	31 October 2016*
Elimination of MIF in case of direct debit transactions	Cross-border transactions	1 November 2012
	National transactions	1 February 2017
Establishing interoperability	Euro area Member States	1 February 2014
	Non-euro area Member States	31 October 2016*
Elimination of the obligation for users to provide BIC	National transactions (in euro area Member States)	1 February 2014***
	Cross-border transactions (in euro area Member States)	1 February 2016
	Non-euro area Member States	31 October 2016*
Expiry of conversion services (from domestic payment account number to IBAN) provided to consumers	Euro area Member States	1 February 2016
	Non-euro area Member States	31 October 2016*
Expiry of waivers to use ISO 20022 XML standard in case of users to initiate or receive bundled payment transactions (provided they are not consumers and microenterprises)	Euro area Member States	1 February 2016
	Non-euro area Member States	31 October 2016*

** Or within 1 year of the date of the introduction of the euro, if the euro is introduced in the Member State before 31 October 2015. But not earlier, than in the euro area Member States.*
*** At the most 10 per cent of credit transfer or direct debit transaction executed in the Member State.*
*** It may be deferred until 1 February 2016.*
Source: MNB.

Chart 4
Migration deadlines within and outside the euro area



** It may be deferred until 1 February 2016.*
*** Or within 1 year of the date of the introduction of the euro, if the euro is introduced in the Member State before 31 October 2015. But not earlier, than in the euro area Member States.*
Source: MNB.

EFFECTS ON HUNGARY

– What tasks does the EU Regulation impose on Hungarian legislators?

Regulations of the European Parliament and of the Council are binding on Member States and are directly effective in their legal regulation. Where required, the legislators of Member States must assure compliance between national and European legal regulation by amending their national regulations (repealing conflicting rules) if the national legal regulation contains provisions incompatible with an EU Regulation.

The EU Regulation does not amend the PSD,[7] and therefore it is not necessary to amend the Hungarian legal regulation[8] transposing the PSD. The Hungarian core direct debit can be regarded as the core direct debit scheme defined in the EU Regulation but, unlike in the SDD model, in Hungary the mandate is stored by the payment service provider of the payer and not by the payee. Considering that the EU Regulation applies exclusively to direct debit denominated in euro, the provisions of the MNB decree concerning direct debit must be amended only when the euro is introduced.

By contrast, the provision of the EU Regulation requiring Member States to designate a competent authority responsible for assuring compliance with the EU Regulation and to lay down rules on penalties for infringements of the EU Regulation (and to notify thereof the Commission in 2013) does impose legislative responsibilities.

– What tasks does the EU Regulation impose on Hungarian payment service providers?

The EU Regulation has no direct effect on the activity of Hungarian payment service providers in respect of the overwhelming majority of national payment transactions (executed in forint), and this will continue to be the case until the introduction of the euro in Hungary as the EU Regulation applies exclusively to credit transfers and direct debits denominated in euro. Naturally, in respect of credit transfers denominated in euro, be it cross-border or national, Hungarian payment service providers as senders and receivers must assure compliance with the requirements set out in the EU Regulation (before the introduction of the euro in Hungary) by 31 October 2016, that is, by the end-date specified for non-euro area Member States.[9] (The same holds true for cross-border direct debit transactions denominated in euro, the volume of which is negligible at present.)

However, Hungarian payment service providers must take into consideration that by default, euro area Member States must comply with the requirements of the EU Regulation much earlier. Thus the format and data content of most credit transfers denominated in euro coming from euro area Member States will satisfy the requirements set out in the EU Regulation after 1 February 2014. Consequently, Hungarian payment service providers must prepare in time for receiving such euro credit transfers because otherwise after 1 February 2014 they would be unable to participate in cross border euro payments sent in favour of customers in Hungary.

The timely preparation of the Hungarian credit institution sector is promoted by two factors. First, 24 Hungarian credit institutions have already joined the SCT and one also the SDD, and the share of SCT-based credit transfers denominated in euro already exceeded 40 per cent in the second half of 2011. Secondly, following 1 July 2012 the intraday clearing system for retail credit transfers denominated in Hungarian forint was launched in Hungary. The credit transfer is based on the HCT standard, which is very similar to the SCT standard, and its launch is attributable to the regulation of the central bank in addition to the several years of preparatory work in conjunction with a wide range of market participants.

Legal framework of the Hungarian intraday clearing system

Pursuant to the MNB Decree, from 1 July 2012 on, in accordance with the so-called '4-hour rule', the payment service provider of the payer must ensure that forint credit transfers submitted by users electronically within the time period specified for same-day execution (the final submission time) are received by the payment service provider of the payee within 4 hours of their acceptance. (In the case

[7] Nevertheless, in its preamble the EU Regulation notes that the SDD, the only existing pan-European direct debit scheme developed by the EPC, is not in compliance with the relevant provisions of the PSD in respect of the right of refund of the payer. Therefore, to assure high standards of consumer protection, the Commission must address the issue in its report on the effects of the PSD to be completed by 1 November 2012 and propose a review if required.

[8] Act LXXXV of 2009 on Providing Payment Services and Decree No. 18/2009 (VIII. 6.) MNB on execution of payment transactions (MNB Decree).

[9] Assuming that the euro is not introduced in Hungary before 31 October 2015.

of payment service providers only indirectly connected to the national payment system, the maximum of 4 hour time limit for execution is extended by 2 hours.) The payment service provider of the payee must credit the amount to the payment account of the payee 'without delay', however, the time requirement of that step is outside the responsibility of the initiating payment service provider.

The HCT is based on the SCT standard in UNIFI (ISO 20022) XML format modified to reflect the Hungarian peculiarities. The currency is the forint, and fillér[10] values other than zero may not be used, the national part of account numbers is in compliance with the Hungarian regulations. For the time being, the use of the HCT standard is mandatory only in the interbank space, i.e. in communication between payment service providers. For the relationship between users and payment service providers, implementation guidelines have been prepared in respect of UNIFI XML message format for HCT initiation, which can be used by payers depending on the terms published by the payment service providers. Simultaneously with preparation for the broader use of the HCT, the preparation of the HDD, the SEPA-based direct debit standard for forint transactions is under way. The Hungarian intraday credit transfer system launched following 1 July 2012 was the first step in the introduction of the national intraday clearing system; next steps will include increasing the frequency of cycles and extending its scope to direct debit transactions.

All of this will allow Hungarian businesses to use a standard similar to SEPA even though Hungary has not introduced the euro yet and to reap the benefits of straight-through processing.

CONCLUSIONS

With the adoption of the regulation on the end-date and the increasing involvement of the demand side, the implementation of SEPA, which started as a fundamentally market-driven process, will be mostly completed in the field of credit transfers and direct debits by 1 February 2014.

Standards, requirements and rules have been specified for credit transfers and direct debits denominated in euro, which provide the same rights and obligations to all parties in the whole area, within national borders and across borders alike, intensifying competition on the supply side between payment service providers. For the demand side, this means that customers making use of payment services will be able to select the payment service provider most suitable for them in the completed internal market and they will be increasingly capable of selecting one across the borders within the SEPA. In the case of individuals, this may be particularly important for persons living abroad for a length of time because they can enjoy the benefits offered by the single payment account in the form of simplified liquidity management. For other customers (primarily businesses, public bodies, etc.) this is enhanced by the UNIFI message standard underlying the requirements, which further improves consistency between the entire payment traffic and the underlying invoicing (including the management of incoming and outgoing invoices). All this means that based on a state-of-art, user-friendly standard the automation of processes and the centralisation of functions can be expanded not only geographically, but also in terms of internal operations.

More intense competition on the supply side increases economies of scale and efficiency, and as the Regulation does not preclude the evolution of new payment schemes, there is every hope that innovation will continue. Through economies of scale, more intense competition may place users in a better position in terms of charges relating to payment transactions.

The fact that the Hungarian intraday clearing system is based on the SEPA standard improves the chances of credit institutions and businesses operating in Hungary to win international payment or workout assignments and to become a regional payment hub within their company group.

The SEPA process will not be over with the implementation of credit transfers and direct debits in accordance with the pan-European requirements because harmonisation needs to be expanded to other payment products (such as payment cards) as well.

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[10] One forint is divided into 100 fillér.

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Publications of the Magyar Nemzeti Bank

All publications of the Magyar Nemzeti Bank on the economy and finance are available on its website at http://english.mnb.hu/Kiadvanyok. From 2009, the publications have been published only in electronic format.

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http://english.mnb.hu/Kiadvanyok/mnben_mnbfuzetek
Only in English; published irregularly.
The series presents the results of analytical and research work carried out in the Bank. The papers published in the series may be of interest mainly to researchers in academic institutions, central banks and other research centres. Their aim is to encourage readers to make comments which the authors can use in their further research work.

Regular publications

Quarterly report on inflation / Jelentés az infláció alakulásáról
In Hungarian and English; published 4 times a year.

Report on financial stability / Jelentés a pénzügyi stabilitásról
In Hungarian and English; published twice a year.

Annual report: Business report and financial statements of the Magyar Nemzeti Bank / Éves jelentés: A Magyar Nemzeti Bank adott évről szóló üzleti jelentése és beszámolója
In Hungarian and English; published once a year.

Féléves jelentés: Beszámoló az MNB adott félévi tevékenységéről (Semi-annual report: Report on the MNB's operations in a given half-year)
Only in Hungarian; published once a year.

Időközi jelentés: Beszámoló az MNB adott negyedévi tevékenységéről (Interim report: Report on the MNB's operations in a given quarter)
Only in Hungarian; published twice a year.

Analysis of the convergence process / Elemzés a konvergenciafolyamatokról
In Hungarian and English; published yearly or biennially.

Senior loan officer opinion survey on bank lending practices / Felmérés a hitelezési vezetők körében a bankok hitelezési gyakorlatának vizsgálatára
In Hungarian and English; published 4 times a year.

Public finance review / Elemzés az államháztartásról
In Hungarian and English; published 3 or 4 times a year.

In addition to those listed above, the Bank also occasionally publishes other materials.

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