Report on payment systems

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The smooth execution of payments and the reliable and efficient operation of payment and settlement systems are crucial for real economic and financial transactions. One of the main responsibilities of the Magyar Nemzeti Bank (MNB) as set forth in Act CCVIII of 2011 on the MNB is to promote the smooth execution of payments and the reliable and efficient functioning of the payment and settlement systems.

The purpose of this Report is to present a comprehensive review of trends in the field of payments and the operation of the overseen payment and settlement systems, the main risks and the measures taken by the MNB to fulfil its above mentioned responsibility as required. In publishing this report, the MNB endeavours to contribute to enhancing the transparency of the central bank's activities in relation to the execution of payments, and payment and settlement systems, to enhancing financial literacy and thereby raising awareness of payment-related issues.

The analyses in this Report were prepared by the Financial Infrastructures Directorate of the MNB, under the general direction of Márton Nagy, Executive Director. The Report was approved for publication by Dr. Ádám Balog, Deputy Governor. Contributors to the Report included: Lajos Bartha, Judit Brosch, Miklós Fenyvesi, Dániel Listár, Miklós Luspay, Dávid Oroszvári, Cecília Pintér, Kristóf Takács, Eszter Tanai, Lóránt Varga and Gergely Végvári.

At its meetings on 9 April 2013 and 28 May 2013, the Monetary Council discussed the key messages of the study as well as the Report, and provided valuable advice on the finalization of the document. The conclusions of the Report express the views of staff of the Directorate and do not necessarily reflect the official position of the Monetary Council or of the MNB.

The MNB staff relied mostly on the relevant information for 2012, although the Report looks forward and analyses current developments observed in 2013 as well.

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Executive summary

The MNB strives to make the electronic payments infrastructure accessible to the broadest possible groups of society and to promote the widespread use of cashless payment instruments

More extensive use of electronic payment instruments may have a number of positive effects on the Hungarian economy. It can help to reduce the resources needed to conduct transactions and to suppress the shadow economy, which may in turn have a beneficial effect on economic growth. Widespread use of electronic payment solutions requires broad access to the electronic payment infrastructure and payment instruments. Indicating the importance of this subject, the European Commission recently proposed a directive on access to payment accounts. In addition to ensuring access, appropriate incentives must be put in place to make the choice between payment methods more efficient. Achieving these objectives requires intervention in several areas, because – on their own initiative – market participants may not necessarily make the required improvements in the short term. A less cash-intensive economy may reduce financial exclusion and also promote the development of financial literacy.

The effects of the financial transaction tax can be evaluated only in the longer term; nevertheless, payment service providers are increasingly steering their clients towards electronic payment services

The financial transaction tax covers a wide range of payment transactions, but the effect of the tax on domestic payments is influenced by the manner in which payment service providers pass on the tax to their clients. As clients adjust gradually, the effect can only be assessed accurately over the longer term. The MNB's ad-hoc survey conducted in the spring showed that the majority of payment service providers pass through the cost increase caused by the tax to their retail and corporate clients in some way. From the perspective of the efficiency of payments, one favourable development is that, reflecting the structure of the tax, service providers are tending to steer their retail clients towards electronic payment services more vigorously. The effect of the transaction tax may be more complex in the case of corporate clients, and thus the ability to accurately determine the exact rate and structure of pass-through is limited. The structure of the tax could be revised to promote the growth of cashless payments even more. Changes could include increasing the relative difference between cash withdrawals and electronic transactions and abolishing the cap on the taxable amount of cash withdrawals.

Introduction of intraday clearing in the ICS (Interbank Clearing System) was one of the most significant payment-related projects in the past years in Hungary, resulting in numerous benefits for clients

The MNB survey shows that the introduction of intraday clearing is widely known among Hungarian consumers. The launch of intraday clearing has accelerated the execution of retail payments as in the case of credit transfers submitted electronically, as the maximum time between the debiting of the account of the payer and the crediting of the account of the payee's payment service provider may not exceed four hours. This is the time limit specified in the MNB decree, but in reality transactions are typically cleared and settled within 1 to 2 hours. This means that, in contrast to the one-day time lag in overnight clearing, the payer does not lose one day's

interest income and the payee can transfer the funds received on the same day. Despite the substantial system development and the loss of the interest (float) income, credit institutions only slightly raised the fees for electronically submitted credit transfers.

The payment audits of the MNB completed after the introduction of intraday clearing in the ICS confirmed that payment service providers broadly comply with the four-hour time limit

The MNB decree on the execution of payments specifies the so-called four-hour rule for the clearing and settlement of electronically submitted credit transfers. The payment audits of the MNB reveal that the examined credit institutions have basically established compliant procedures. Apart from an occasional exception, no violation of the four-hour rule was encountered. The introduction of intraday clearing had a beneficial effect on other payment procedures as well because, due to the five intraday clearing cycles of the ICS, credit institutions must assure their operation until the end of the fifth cycle on each working day of the week. In many cases, this has resulted in longer business hours, and thus the frequency of non-compliance found in previous audits due to early closing has also decreased.

A county-level programme has been launched to expand payment card acceptance network, but expansion of the POS network at the national level requires government intervention

At the initiative of the MNB, a county-level programme will be launched in mid-2013 with the participation and funding of market participants to make the card payment method available at the largest possible number of merchants in one county. However, re-channelling retail transactions to electronic means on a large scale would require a major expansion of the payment card acceptance network, which calls for government involvement. In addition to providing financing and coordinating implementation, the government must also play a part in the expansion of cashless payments through its regulatory role. For instance, following a number of international examples, the use of cash in retail transactions should be gradually restricted, and simultaneously an obligation to offer electronic payment facilities should be introduced step by step.

The MNB feels that it necessary for the proposed legislation on interchange fees to enter into force on 1 January 2014

The regulation of interchange fees proposed by the MNB, the GVH (Hungarian Competition Authority) and the MNE (Ministry for National Economy) would reduce the cost of merchants relating to the acceptance of cards, thereby contributing to the promotion of card use based on the cooperation of payment service providers and merchants. Pursuant to the proposed requirements, the weighted average of interchange fees applied in domestic payment card transactions shall not exceed the weighted average of fees applied in cross-border transactions carried out with cards issued in Hungary. This would reduce the average level of fees applicable to the most common retail debit cards to one half or one third of the current level.

To promote the shift of regular payment transactions into electronic channels on a large scale, differentiated pricing of the available payment methods must be introduced and interoperability between service providers facilitating electronic bill presentment and payment must be assured

The postal inpayment money order ('yellow cheque') continues to be the most common payment instrument for regular retail transactions, although the volume of transactions using that channel is continuously decreasing. Consumers need to be made aware of the real cost of the use of the 'yellow cheque' to steer them towards more efficient payment methods; consequently, the pricing of payment instruments must be made transparent. The legislative amendments adopted last year do not encourage service providers to pass through the costs of services used by households and corporates in a differentiated and transparent manner. Consequently, households and businesses receive no price signal that would allow them to make more efficient decisions in choosing between payment methods. Electronic bill

presentment and payment systems[1] are suitable for reducing the cash intensity of regular transactions, but the conditions for socially efficient competition between systems must be enhanced. This calls for interoperability, which allows households to use a single service provider for the presentment and payment of all their bills and facilitates the entry of large numbers of bill issuers in the system.

To promote the large-scale use of electronic payment methods, financial literacy relating to their use must be improved

The use and wider expansion of electronic payment methods is not hindered primarily by security reasons, but naturally the sense of security has a significant effect on their use. At present, the ratio of fraud in domestic electronic payments is fairly low. The confidence of users in electronic payment methods can be increased if they understand the operation of the payment instrument concerned and the related rules. Consequently, strong user authentication must be used for the initiation of transactions through the internet and for accessing bank services, which further enhances user confidence. To maintain confidence, users must be provided more information, and the risks and fraud events arising in the context of the use of electronic payment instruments in new areas must be closely monitored.

Legal regulation of the issuance of negotiable vouchers in Hungary facilitates the more transparent, safer and supervised functioning of the market

The absence of domestic regulation on the market of negotiable vouchers entails risks for consumers using the vouchers and presents a reputational risk for the authorities responsible for the safe functioning of financial services. The risks identified in the market of negotiable vouchers are adequately managed by the regulation proposed by the MNB. The rules that are expected to enter into force in the near future set requirements concerning the operation of the issuers of negotiable vouchers, the information to be given to users and the protection of clients' funds. This is also conducive to maintaining confidence in the existing systems of negotiable vouchers. The regulation designates the MNB as a competent authority for the supervision of the issuers of negotiable vouchers.

The overseen systems demonstrated a high level of operational reliability in 2012 as well

The MNB promotes and monitors the efficient, reliable operation of payment and securities settlement systems in the framework of its oversight activities. The risk of service continuity was low in the overseen systems. Experience from the first three quarters of the operation of the new ICS intraday clearing shows that, following the initial adaptation period, the system has shown a high level of operational reliability. Processing times are in line with prior expectations: the processing of a single cycle takes 14 minutes on average.

The oversight assessments showed that the overseen systems broadly and fully observed the international principles and recommendations

Last year, the biennial oversight assessment of the Hungarian overseen systems was carried out based on the requirements laid down in the relevant international principles. Since the previous assessments, several improvements have been made in the overseen systems, which further enhanced operational reliability and efficiency. The degree of system compliance with oversight expectations was in the top two categories on a scale of four in every subject (e.g. operational risk, governance). As a result of these assessments, the MNB recommended some improvements to the systems to promote the further enhancement of operational reliability and efficiency. Based on those recommendations, system operators prepared action plans, the implementation of which is continuously monitored by the MNB.

[1] Electronic Bill Presentment and Payment, EBPP.

Based on EU regulations (EMIR)[2] and the oversight expectations, re-organisation of the securities clearing and settlement infrastructure is underway

The process of re-structuring the securities clearing and settlement infrastructure was accelerated by the adoption of the EMIR, which lays down requirements for the operation of KELER CCP, in addition to the efforts of the MNB as an overseer and owner. The EMIR sets forth detailed requirements for the operation of the central counterparty and its risk calculation and management model, in particular the capital requirement. Within the KELER Group, KELER CCP needs to reach the final phase of full compliance with EMIR by mid-September 2013. As the first step, KELER transferred the clearing function of guaranteed markets to KELER CCP as of 31 December 2012. As the next step in these changes, a capital increase was implemented at the 2013 ordinary general meeting of KELER CCP, and by the end of the year the guarantee callable on first demand provided by KELER to KELER CCP is planned to be terminated. In parallel with this, the harmonisation of Hungarian law with the EMIR is ongoing.

Clearing and settlement risk was low in the payment systems. After the introduction of intraday clearing, intraday transaction and liquidity management gradually adjusted

After the launch of intraday clearing, the growing turnover in the ICS did not increase the clearing and settlement risks at the aggregate (system) level. The netting effect in the overnight clearing decreased significantly as the majority of credit institutions' credit transfer orders (including those posted to the Treasury) were migrated to the intraday clearing platform. The Treasury, however, stayed in the overnight clearing platform and thus its outgoing payments are executed there. From the aspect of the intraday liquidity management of the Treasury, it would be beneficial if it were to follow credit institutions and re-route its credit transfers to the intraday clearing platform. The introduction of intraday clearing resulted in significant changes in the intraday transaction and liquidity management of credit institutions, which are adjusting to the change through a gradual, still ongoing learning process. In the beginning, there were cases in the first two intraday cycles when some transactions were rolled over from one cycle to the other. However, this was always attributable to temporary insufficient liquidity. The balance sheet of the participants rolling over had sufficient eligible collateral which still could be pledged. The timing of the initiation of VIBER transactions has shifted noticeably later during the day. This is due to the fact that VIBER participants try to manage the uncertainty in forecasting the exogenous transactions outgoing in ICS intraday clearing with a more disciplined sending behaviour.

The MNB is in discussions on the possible eligibility of the forint for the CLS[3] settlement, which could facilitate the elimination of the FX settlement risk of foreign exchange transactions based on a payment versus payment principle

The data available to the MNB show that Hungarian credit institutions are exposed to a significant FX settlement risk. The importance of the FX settlement risk is indicated by the fact that in February 2013 the Basel Committee on Banking Supervision published its revised supervisory guidelines, which encourage the widespread use of the payment versus payment settlement (in particular, the CLS settlement method). An FX transaction can be settled via the CLS if the currencies concerned are eligible, but the forint is not yet CLS-eligible. In addition, the counterparties of the foreign exchange transactions must have access, directly or indirectly, to the CLS system. Recently, interest has been increasing in the CLS model. The MNB considers this to be a real opportunity to resolve the management of a sizeable FX settlement risk by the introduction of the forint into the CLS

[2] European Market Infrastructures Regulation (see more in Glossary).
[3] Continuous Linked Settlement (see more in Glossary).

system, which may have a beneficial effect on the whole (both domestic and offshore) forint FX market.

In June 2015, upon the launch of the TARGET2-Securities (T2S) platform, the European securities post-trading infrastructure will undergo a radical change; KELER will join the system in September 2016

The purpose for creating the T2S Pan-European settlement platform is to have a common, harmonised infrastructure in the single European market for securities services, making the settlement of cross-border securities transactions considerably cheaper and more efficient. Following KELER's entry, if cash settlement is in euro, transactions relating to securities kept in KELER will be settled in the T2S system. The participants of KELER will be able to use a custodian service that will give them access to the entire euro-denominated European securities market.

Treatment of the key issues identified in the Report

Key issues:	*Proposed measures:*
1 Promotion of a less cash-intensive economy and of electronic payments	
1.1 Improving access to financial infrastructure	• *Expansion of the payment card acquiring network in an individual county, financed by private entities.* • *Expansion of the payment card acquiring network throughout the country, with government involvement and EU funding.* • *Reduction of financial exclusion through improved access to payment accounts (basic account).* • *Assuring interoperability between EBPP service providers in the course of electronic bill presentment and payment.* • *Regulatory measures to gradually reduce cash usage and to create the conditions for card payment step by step.* • *Regulation of interchange fees.*
1.2 Transparency of costs relating to the use of payment instruments	• *Increasing the relative difference between the transaction tax on cash payment and cashless payment methods.* • *Differentiated pricing, distinct from the underlying service, of payment methods for the payment of utility bills and other services.*
1.3 Security of payments, trust in payment instruments	• *Regulation of negotiable vouchers.*
2 Reliable and efficient functioning of the overseen systems	• *Reorganisation of the KELER Group, recapitalisation of KELER CCP, termination of the guarantee callable on first demand, ensuring EMIR compliance, investigation of the possibility of legally separating the capital market from the gas and energy market, review of the methodology of the gas and energy market stress test.*
3 Maintenance of the low level of clearing and settlement risks, and their appropriate management	• *Maintaining the intraday liquidity available in the payment and settlement systems at a level that does not jeopardise the smooth execution of payments.* • *Increasing the ratio of use of DvP method of settlement[4] in the securities clearing and settlement system.* • *Increasing the ratio of use of PvP method of settlement[5] in VIBER.* • *Negotiations on the entry of the Hungarian forint into the CLS clearing and settlement system intended to eliminate FX settlement risk.*

[4] Delivery versus Payment.
[5] Payment versus Payment.

1 Introduction

One of the main responsibilities of the Magyar Nemzeti Bank (MNB) as set forth in Act CCVIII of 2011 on the MNB is to promote the smooth execution of payments and the reliable and efficient functioning of the payment and settlement systems. The MNB encourages economic agents to use electronic payment methods which are fast, secure and cost efficient (based on social costs) and which facilitate significant savings of resources.[6] This requires, however, that Hungarian payment and settlement systems provide high quality services in executing the real economic and financial transactions initiated by economic agents. Consequently, oversight of the payment and settlement systems is a key responsibility of the central bank. The reliability of the systems is monitored in a risk-based oversight framework. The first part of this Report presents the trends in the development of Hungarian payment methods, the MNB's related positions as well as activities pertaining to the regulation and supervision of the execution of payments. The logic of the chapter is determined by two analytical criteria: efficiency and security. The second part of the Report discusses the operation and oversight of the Hungarian payment and settlement systems. The analytical framework of the chapter is provided by the risks monitored and efficiency considerations.

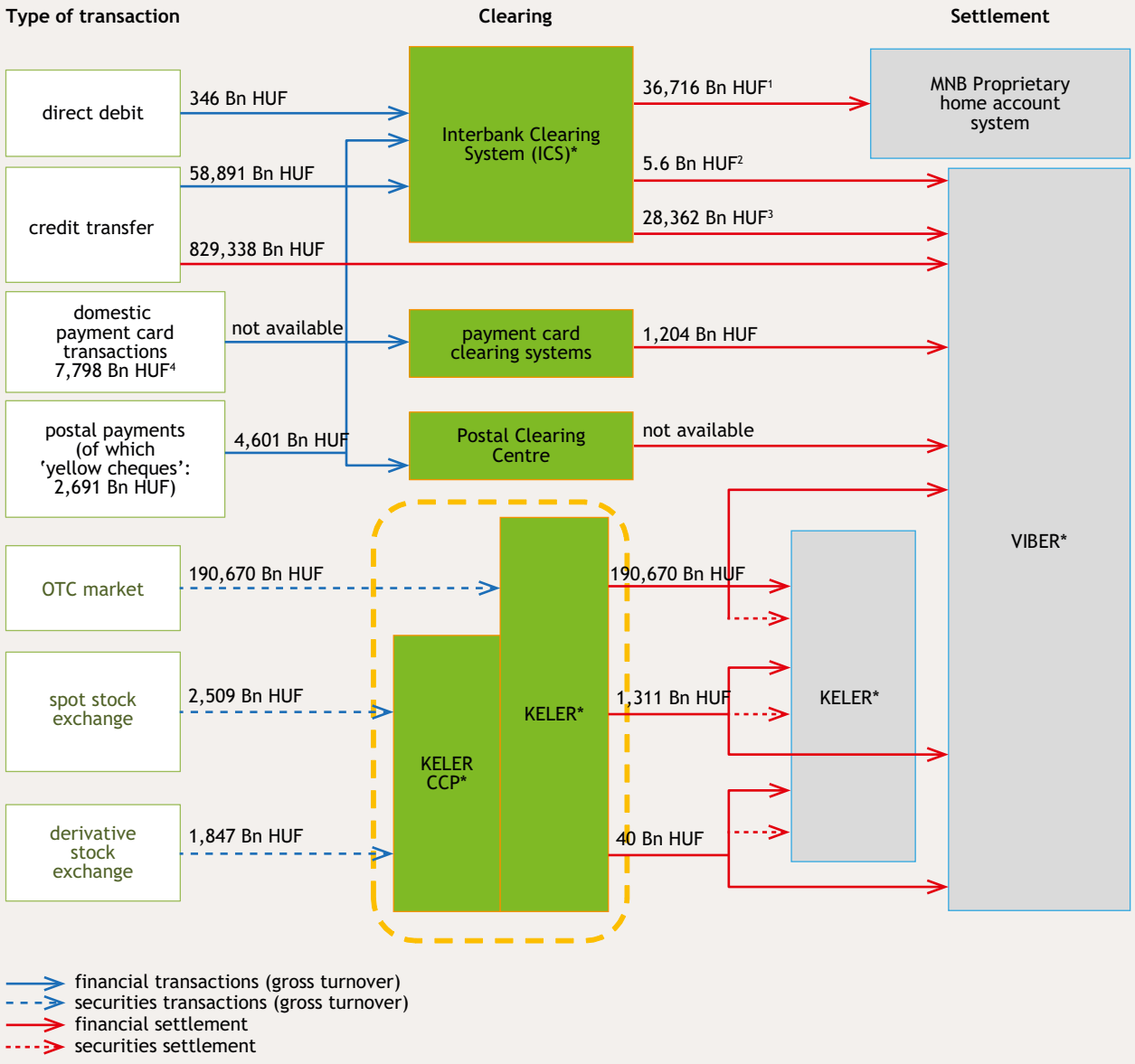
The MNB acts mostly as a catalyst in improving efficiency: it prepares analyses and uses the tools of active coordination and dialogue to create conditions where stakeholders take into consideration the interests of society when making decisions and also support the central bank's objectives to build a less cash-intensive economy. The more extensive use of electronic payment instruments may have a number of positive effects on the Hungarian economy. It can help to improve the efficiency of payments, to reduce the resource requirement of transactions and to repress the shadow economy, which may in turn also promote economic growth. In addition to its role as a catalyst, the MNB also regulates the execution of payments and can thus influence the market of payment services via the requirements laid down in decrees of the MNB Governor.[7] Compliance with the requirements set out in decrees is monitored by the MNB.

The smooth execution of payments and the reliable and efficient operation of payment and settlement systems are crucial for real economic and financial transactions. Account-based payments and securities transactions require centralised systems for the clearing and settlement of transactions. The payment system for large-value and time critical HUF credit transfers is the Hungarian Real-Time Gross Settlement System (called VIBER). Small-value HUF credit transfers and direct debits are cleared in the ICS system. Clearing of card transactions is performed in the systems of international card companies (Visa, MasterCard), while postal payment instruments are typically cleared in the Postal Clearing Centre. Capital market transactions are executed in the securities clearing and settlement system operated by KELER; in the case of guaranteed markets KELER CCP also participates as the central counterparty. If clearing and settlement of payments and securities transactions are carried out separately, settlement generally occurs in central bank money, on accounts kept in the MNB (in the proprietary home account system of the MNB or in VIBER) (Chart 1).

[6] Turján, Anikó, Éva Divéki, Éva Keszy-Harmath, Gergely Kóczán, Kristóf Takács (2011), 'Nothing is free: A survey of the social cost of the main payment instruments in Hungary', *MNB Occasional Papers*, 93. http://www.mnb.hu/Root/MNB/Kiadvanyok/mnbhu_mnbtanulmanyok/mnbhu_mt93.

[7] Decree No. 18/2009 (VIII. 6.) MNB on Payment Services Activities: http://www.mnb.hu/Penzforgalom/az-mnb-mint-penzforgalmi-hatosag/pe_szabalyozas/pe_hazaiszabalyozas.

Chart 1
Overview of Hungarian financial infrastructure
(2012)



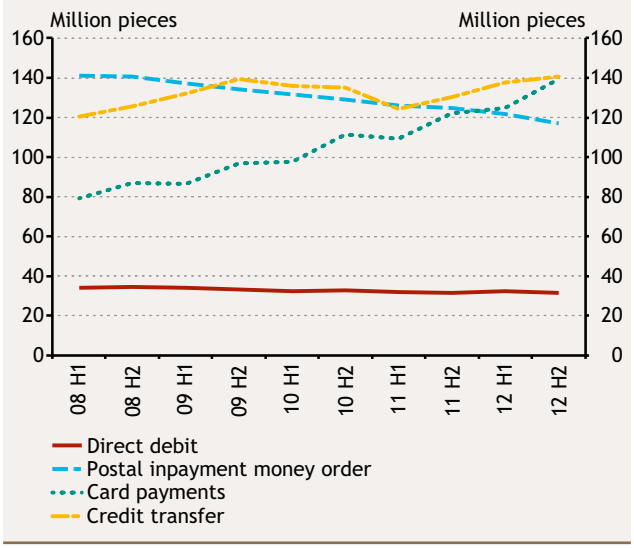
[1] *Transactions settled in the overnight clearing system, in which transactions differ from direct debit and credit transfer are also settled.*
[2] *Transactions settled in the second cycle of the overnight clearing system (due to queuing or late submission).*
[3] *Electronic credit transfers settled in the intraday clearing system as from 2nd of July 2012.*
[4] *Just the interbank part of total payment card transactions is cleared in the payment card clearing systems.*
* *Overseen systems.*

2 Trends in the development of payment methods and instruments

2.1 Efficiency of payments

The MNB strives to make the infrastructure of electronic payments accessible to the broadest possible groups of society and to promote the widespread use of cashless payment instruments. To this end, the MNB continuously monitors market trends and, based on its analyses, proposes developments to the participants of financial infrastructure and to the government. Hungary lags significantly behind other countries in terms of the use of electronic payment methods and, despite the continuous – and in some areas dynamic – growth seen in recent years, we cannot expect to come close to the EU average and even less to countries with highly developed electronic payment systems in the foreseeable future in respect of the key indicators of electronic payments. Achieving any substantial improvement in efficiency will require intervention in current market developments in several areas. Intervention is needed primarily because efficiency-improving projects would not be implemented or only in unnecessarily long time frames taking into account the short-term interest of market actors. This is attributable mostly to the different cost structures of paper-based and electronic payment methods. Measures are called for in particular to provide broad access to the electronic payment infrastructure, to promote the efficient choice between payment methods and to speed up the development of the electronic payment infrastructure.

Chart 2
Main payment methods used for small-value transactions
(2008–2012)



2.1.1 EFFECT OF THE INTRODUCTION OF FINANCIAL TRANSACTION TAX ON PAYMENTS IN HUNGARY

The financial transaction tax introduced in 2013 applies to a significant part of payment transactions, but its precise effect on payment services can only be assessed over the longer term. The tax covers a broad range of electronic payment services as well as cash withdrawals and postal inpayment transactions. The higher tax rate applicable to cash withdrawals encourages service providers, and indirectly customers, to prefer electronic channels. The effect of the transaction tax on payments in Hungary depends to a considerable degree on whether payment service providers pass through the tax to their clients and if so, in what way. Full and immediate pass-through is restricted by several regulations; furthermore, the complex pricing policies of payment service providers, sometimes based on cross-subsidisation, also hinders clarity.

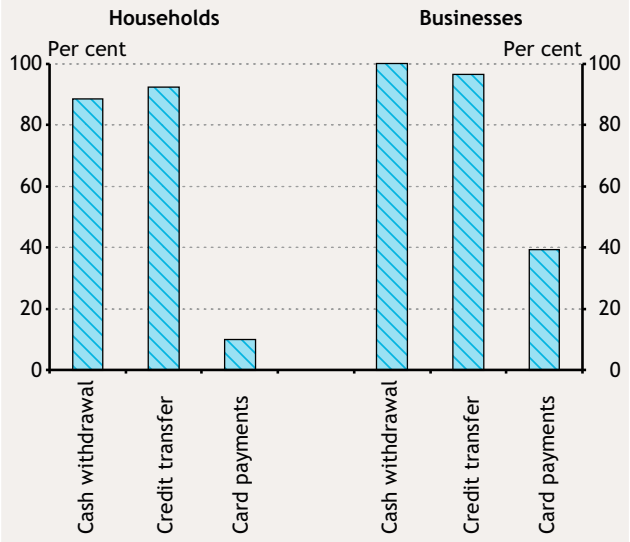
In response to the enquiry of the MNB early in 2013 several large banks stated that they saw no signs of economic actors substantially changing their payment habits as a result of the introduction of the tax. However, considering that pass-through occurred gradually and that a longer adaptation period should be expected whenever a

new type of tax is introduced and as detailed payment statistics will not be available before the second half of 2013, an analysis of the exact responses of economic agents to the transaction tax can be prepared only at a later time.

The majority of payment service providers pass through the cost increase caused by the tax to their retail and corporate clients in some way. The examination of the list of conditions effective as of March 2013 of the 12 commercial banks with the highest payment turnover reveals that the aggregated pass-through was 80-90 per cent of the tax in the case of households and 90-95 per cent in the case of corporate clients (Chart 3). This is a 'snapshot' of the current estimated degree of pass-through, which may change over time in response to market developments.

It is a favourable development that, in the case of retail services, payment service providers tend to steer their retail clients towards electronic payment services more vigorously through the structure of the pass-through and the changes in charges. In the case of cash withdrawal related fees, the tax is generally passed through directly, while for electronic payment services pass-through is partial or indirect. The eligibility criteria for discounts have been tightened for certain account packages, which may also represent a fee increase for some clients. Purchases made using payment cards remain free in most cases, and the new list of conditions indicate that the transaction fees on card payments introduced at the beginning of the year have been abolished in other cases as well. By contrast, free cash withdrawals have been cancelled or their numbers have been reduced. This process may be conducive to improving the efficiency of payments in Hungary through the lower social costs of electronic transactions.

Chart 3
Estimation of the aggregated pass-through of the financial transaction tax
(based on tables of charges in March 2013)

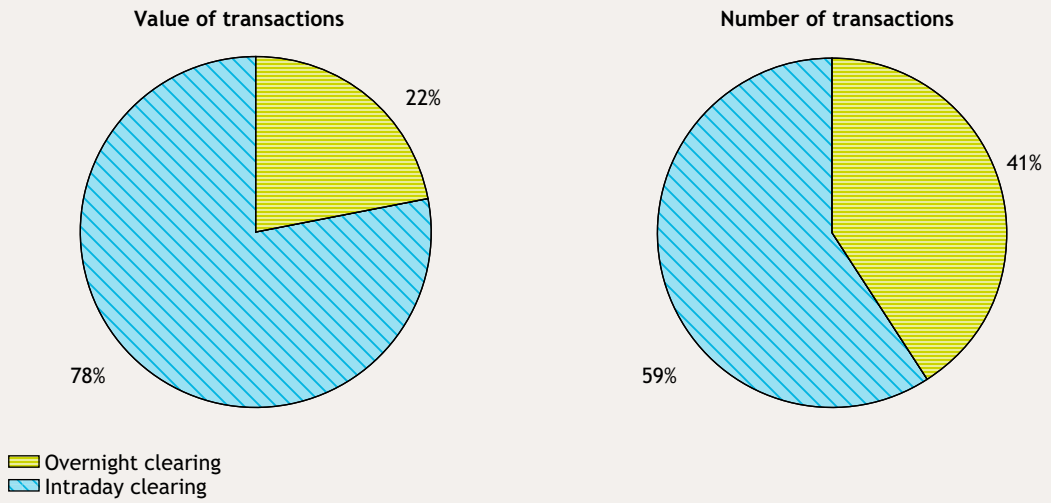


Note: The estimate was prepared based on data of 12 banks obtained from the tables of charges of March 2013. The various increases in charges were weighted with the annual turnover of the banks.
Source: MNB estimate.

The effect of the transaction tax may be more complex in the case of corporate clients. Due to the low tax rate and the cap per transaction, the MNB expects no significant adjustment in the HUF payments of corporates with large payment turnovers. Nevertheless, the payment habits of businesses may change somewhat: they may primarily merge transactions to reach the cap and some of FX payment transactions may be moved to other countries. In many cases, the terms offered to businesses may be different from the ones announced in the Terms and Conditions, often being part of tailor-made agreements. Accordingly, in practice the rate of pass-through may be lower than the 90-95 per cent level estimated based on the Terms and Conditions. All of this may reduce the probability that corporate clients with high payment turnovers will respond to the introduction of the transaction tax with major adjustment.

In the case of cash withdrawals, the effect of the consolidation of transactions may be more pronounced; consequently, in order to promote the growth of cashless payments, it may be reasonable to abolish the cap on such transactions and increase the relative difference to the tax rate of electronic transactions. The structure of the transaction tax may need to be changed so that it more strongly encourages the use of electronic payment methods. At present, the tax rate on cash withdrawals (0.3 per cent) is only one and a half times the standard rate for electronic transactions. While economic agents may execute several subsequent taxable payment transactions with electronic funds, no tax revenue is generated from cash transactions after the first, taxable withdrawal. Thus, the revenues foregone could be offset mostly by increasing the relative difference between the tax rates of cash withdrawals and of electronic transactions. However, if the cap on tax payments is left unchanged, the higher tax rate of cash withdrawals may encourage clients to merge transactions; therefore, it may also be appropriate to abolish the HUF 6,000 ceiling in respect of cash withdrawals. If the structure of the transaction tax is altered in this manner, the tax rate for electronic payment methods that are most suitable to replace the use of cash in certain situations may potentially be lowered. Examples may include the reduction of the tax rate for payments by card in case of retail transactions or core direct debit for regular transactions.

Chart 4
Distribution of ICS turnover between the overnight and intraday clearing
(2012 H2)



2.1.2 THE EFFECTS OF THE INTRODUCTION OF INTRADAY CREDIT TRANSFER

In 2012, the implementation of intraday credit transfer was the most significant payment-related development in recent years, which considerably accelerated retail electronic payments. The typical time lag of one day before the launch of the new system has been shortened to only four hours. Pursuant to the MNB decree, the time between the debiting of the account of the payer and the crediting of the account of the payee's payment service provider may not exceed four hours (4-hour rule). Thereafter, the payment service provider must credit the sum of the payment orders received to the payee's account immediately. In reality, because of the five intraday clearing cycles in ICS, customers can typically expect transactions to be executed in 1-2 hours.

Despite the substantial system development and the loss of the interest income (float), the fees for electronically submitted credit transfers increased only slightly. Due to the high number of fee packages and individual conditions as well as cross-subsidisation between products, the exact extent of fee increases in the banking system as a result of the introduction of intraday credit transfer is difficult to estimate.[8] In the case of the fees and conditions of credit institutions, changes in fee packages are worth comparing in cases where the monthly fix fee is minimal, and thus there is less possibility for cross-subsidisation between services. For these fee packages, credit institutions increased their fees by HUF 3.5 per credit transfer on average. This rate of increase is equal to the cost estimate prepared on the basis of the MNB cost survey concerning the launch of the system. Furthermore, introduction of intraday credit transfer practically eliminated the interest income (float) of the banking system from money in transit, estimated to be around HUF 3 billion.[9] According to the calculations of the MNB, credit institutions have not passed on this loss to their customers.

The establishment of the intraday clearing system may have a beneficial effect on the development of electronic payment services. This is evidenced by the fact that, according to the results of the research into awareness of the MNB, the introduction of intraday clearing was the best known central bank project in years. 37 per cent of the respondents stated that they considered intraday credit transfer to be the most important activity of the MNB in recent years. As a result of the developments, the payment

[8] Divéki, Éva and István Helmeczi (2013), 'The effects of the introduction of the intraday credit transfer', *MNB Bulletin*, January, pp. 14–21. http://www.mnb.hu/Kiadvanyok/mnbhu_mnbszemle/mnbhu_mnbszemle_201301.

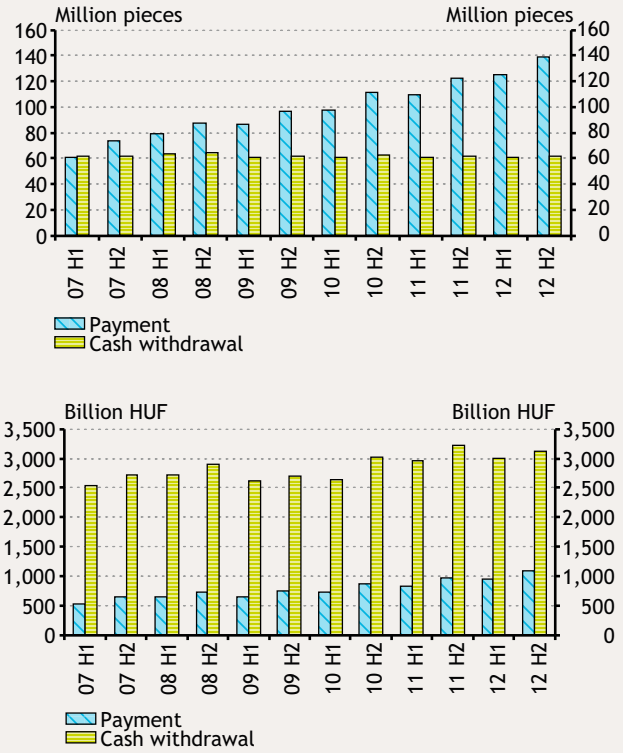
[9] The float income used to arise because banks debited the bank accounts of their clients on the value date of the payment order, but still held the funds; they had to transfer such funds to the account keeping bank of the payee only at a later date – typically on the date when the other client also received the funds. For this period, banks paid no interest to their clients, but they did earn interest income. In Hungary, this typically meant 1 day between two banks due to the overnight clearing arrangement, which increased to 3 days over the weekend (or even 4-5 days when working days were rearranged around public holidays).

habits of households and corporates may change in the longer run, and users of paper-based payment orders may also switch to electronic payment methods. Intraday credit transfer orders are based on the international SEPA message standard,[10] which contains significantly much wider data content and can be much more flexibly shaped than the previous one. This allows companies to change their accounts receivable and payable analytics in a way to significantly reduce manual work, potentially facilitating customer-to-customer automatic processing. In the case of special Hungarian payment methods (transfer of funds by the order of authorities, direct debit), the SEPA standard has not been introduced yet but standardisation is under way. The MNB plans to facilitate the clearing of all domestic payment methods in the new intraday system within a three-four year time frame.

2.1.3 RE-CHANNELLING OF RETAIL AND HOUSEHOLD PAYMENTS TO ELECTRONIC METHODS: DEVELOPMENT OF THE PAYMENT CARD ACCEPTANCE NETWORK AND PROMOTION OF CARD USAGE

In retail trade, the overwhelming majority of transactions are still conducted in cash, which could currently be most efficiently replaced with the use of payment card systems. At end-2012 the number of POS terminals enabling card acceptance exceeded 84,000, a 15.2 per cent increase over the previous year. In 2012, 245 million domestic payment transactions were executed with payment cards in the value of almost HUF 1,752 billion. Even though the number of payment transactions was up 13.1 per cent and their value rose by 11.9 per cent compared to the previous year figures, there is still room for substantial growth. The value of cash withdrawals is still considerably higher than the value of purchases using payment cards. In 2012, HUF 6,049 billion of cash was withdrawn using payment cards, which is only 0.9 per cent lower than the previous year figure (Chart 5).

Chart 5
Total number and value of payment card transactions in and outside the country
(2007–2012)



In order to promote the widespread use of payment cards, the option of using them must be provided in as many locations as possible. This requires the expansion of the payment card acceptance network through coordinated measures relying on synergies. Despite the apparent large-scale expansion of the card acceptance network, we still considerably lag behind other countries: 2011 data indicate that we are at only 48 per cent of the EU average in terms of the number of POS terminals per million inhabitants (Chart 6). Furthermore, only one third of Hungarian retail and catering facilities accept payment cards (Chart 7). In 2012, the MNB designed a complex package of measures[11] for the expansion of the payment card acquiring network, which may support the reduction of cash usage and the fight against the shadow economy in the field of retail transactions.

The increase in the national coverage of POS terminals requires the government's involvement, due to the high number of potential card acceptance locations and the size of the shadow economy. In addition to and supplementing direct regulation, the government needs to play a role in supporting the installation of POS terminals as well, which can be achieved using EU or Hungarian public funds. Terminal installations on a national scale cannot be

[10] SEPA, Single Euro Payments Area.

[11] The package contains the following measures: reduction of interchange fees through regulatory measures, supporting the installation of POS terminals using Hungarian government or EU funds and partly private funding, the gradual introduction of mandatory provision of electronic payment facilities (typically payment card acceptance) and simultaneously the limitation of cash usage in retail trade. The recommendations are described in detail in the MNB publication 'Report on Payment Systems 2012'.

Chart 6
Key indicators of the level of development of the payment card business in Hungary compared to the EU average
(2005–2011)

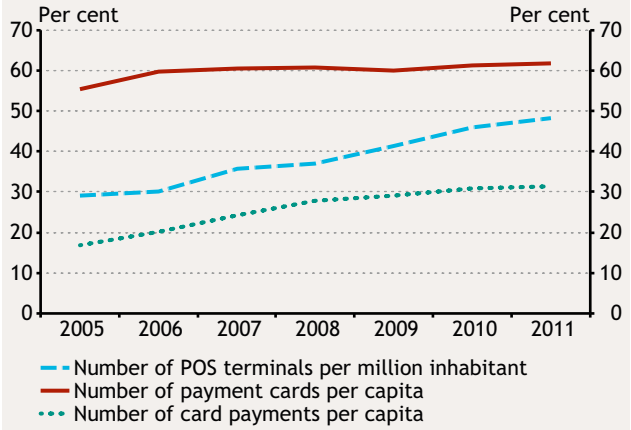
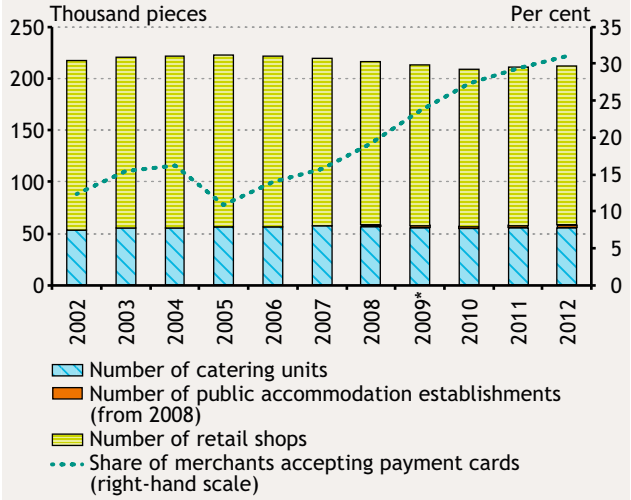


Chart 7
Number of retail outlets and the percentage of those accepting payment cards
(2002–2012)



implemented solely by private financing, but the previous experiences of a similar programme must be utilised. Last year, the MNB held a number of discussions with the Ministry for National Economy (MNE) and the Ministry of National Development (MND) on the implementation of a national subsidy programme. Based on these discussions, the MNB devised two arrangements whereby merchants could have been supported either directly or through payment service providers. The discussions last year indicated that direct support to merchants may have high administrative costs. Consequently, to keep costs low, it appears more appropriate to support a small number of entities. This can be achieved if the subsidy is paid to payment service providers, who would pass the discount on to merchants, installing terminals at a lower cost. The calculations of the MNB show that HUF 6-8 billion would be sufficient to make card payment available in the overwhelming majority of Hungarian retail and catering units. However, the amount of funding necessary depends to a large extent on the own funds required and the scope of merchants supported.

In mid-2013, a large-scale programme was launched, financed by market participants, to install POS terminals at a discount price at as many merchants in one county as possible. As the launch of the terminal installation programme with government involvement is uncertain at present, the programme will be implemented at the initiative of the MNB using one million euros in funding. Despite the repeated pleas of the MNB to market actors, only one international card company is supporting the programme with funding. As the resources available are insufficient for the efficient implementation of a larger-scale scheme, for the time being the terminal installation programme will be launched as a pilot in a smaller area, in one county. The county was selected taking into account its level of development based on data on retail trade, communities, households and certain macroeconomic figures. It was important that the level of development of the selected county should not be too different from the national average as this can assure that the experiences gained in the county can be utilised during the design and implementation of a national programme at a later time. It was important during programme design that the highest possible number of payment service providers can participate and that implementation is competition neutral. Thus, irrespective of their market shares, every payment service provider offering acquiring services in Hungary is able to participate in the programme under identical conditions. Under the programme, payment service providers may install terminals at potential merchants in the county, then they may claim a subsidy for certified installations. The subsidy is available only for merchants newly connected to the card acceptance network, and in order to promote the safety of transactions and the spread of innovative solutions, terminals must be capable of handling both chip and contactless cards. During and after the implementation of the programme, a detailed assessment will be prepared, and thus the experiences gained may be subsequently used in numerous areas.

To combat the shadow economy, it should gradually be made mandatory in the retail trade sector to ensure the possibility of electronic payment (typically the use of payment cards). In addition to the programme supporting the installation of POS terminals and the reduction of the costs of card acceptance, more regulatory intervention is

required to reduce cash payments because, due to the high prevalence of the shadow economy the measures promoting card acceptance may not always achieve the desired objective. The mandatory on-line connection of cash registers to the tax authority may be a step towards the reduction of the shadow economy. However, the ratio of cash transactions also needs to be reduced because the cash receipts of merchants generate more cash usage, which may support the shadow economy in other areas of the economy. The gradual introduction of the requirement for electronic payment facilities will assure that the overwhelming majority of retail units accept other means of payment beside cash.

As in several other EU Member States, cash usage during retail purchases should be limited in Hungary as well. Cash usage has been restricted in a number of European countries in recent years. To compare the Hungarian regulation with the other countries, in Hungary the law only affects b2b cash transactions while in most European countries the transactions of households are also influenced by the law. The limitation of cash transactions is typically between EUR 1,000 and 3,000 (Table 1). In addition, in countries with sufficiently modern payment systems and a higher level of financial literacy, such as Finland, the regulations do not aim to restrict cash usage; instead, wage payments are required to be made electronically in the broadest possible scope. In each country where regulations limiting cash usage have been introduced in recent years or there are plans to introduce such in the near future, the key objectives include the reduction of the risks of shadow economy activities, tax evasion, and the identification of various fictitious sources of income. Non-compliance with the established payment limits implies financial penalties.

At the initiative of the MNB, in the autumn of 2012 the MNE, in cooperation with the MNB and the Hungarian Competition Authority (GVH), drafted a bill on the regulation of interchange fees. As last year's report explained, the reduction of interchange fees with regulatory measures may significantly lower costs of merchants related to card acceptance; as a result, more merchants with smaller turnovers would find it profitable to start accepting cards. Pursuant to the proposed requirements, the weighted average of interchange fees applied in domestic payment card transactions should not exceed the weighted average of fees applied in cross-border transactions carried out with cards issued in Hungary. This would reduce the average level of fees applicable to the most common retail debit cards to one half or one third of the current level. Issuers may offset the revenue loss caused by the reduced interchange fee by increasing the costs to cardholders. The calculations of the MNB show that if the entire revenue shortfall were to be passed through by the payment service providers, the annual costs to cardholders would increase by no more than HUF 500-700 per card. However, competition between issuers limits the possibility of direct and full pass-through of the costs; furthermore, in certain cases issuers may respond to the new regulation by reducing costs and limiting the (mostly credit card related) discounts they offer. These factors, however, would not trigger a large-scale surrender of payment cards, particularly not to an extent where the ratio of persons holding payment cards

Table 1
Limitations on cash usage in some European countries

	Limit	Subject of relevant regulation
Bulgaria	BGN 5,000 (approx. EUR 2,557)	businesses, households
Denmark	individuals DKK 10,000 (EUR 670), merchants DKK 50,000 (EUR 3,350)	businesses, individuals
Lithuania		businesses, households
Spain	for cash payments EUR 2,500; for individuals who do not conduct business activities and are not Spanish citizens, EUR 15,000	businesses, individuals
Slovakia	EUR 5,000; for non-entrepreneur individuals: EUR 15,000	legal and natural persons
Italy	EUR 1,000	businesses, public administration
Greece	for individuals: EUR 1,500, for business to business and between businesses and the state: EUR 3,000	businesses, individuals
Belgium	EUR 3,000	businesses, individuals
Hungary	HUF 1.5 million (approx. EUR 5,170 at an EUR/HUF exchange rate of 290)	businesses

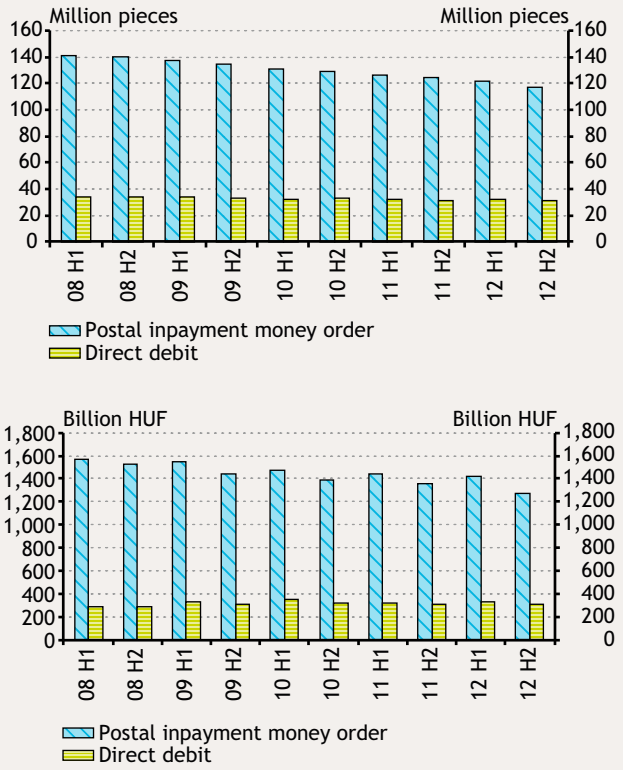
would decrease significantly.[12] The reduction of revenues from the interchange fee would not lead to any substantial decline in innovation in the card business as these development projects tend to occur at the international level and are driven by international trends. The introduction of new technical features in the Hungarian market is an important element in the competition of card companies for issuers. If card companies operate in a competitive environment, this may also assure that innovation is maintained at the present level.

As a result of decreasing card acceptance costs, larger merchants may have a direct interest in influencing the choice between payment methods. However, the promotion of card usage requires more intensive cooperation between merchants and payment service providers than is currently the case. At the moment, issuers use two main methods to promote card use: through discounts offered relating to credit cards and through limited-time campaigns. The former method may raise the card acceptance related costs of merchants considerably, while the latter is unable to influence the payment habits of cardholders in the longer term. Currently, the cost of card acceptance significantly exceeds the costs of cash transactions even for merchants with the highest turnovers. If the costs of card acceptance were reduced, the difference between the costs of cash and electronic transactions could become narrower for high-turnover merchants. This in turn may prompt merchants to encourage their customers directly to choose cashless payment methods when a payment is made. In many cases, this type of promotion may be more efficient than the currently used issuer-side schemes, but it would require each stakeholder to have an interest in promoting card use.

2.1.4 CASHLESS PAYMENT OF UTILITY BILLS AND OTHER SERVICE CHARGES

In the past year, no significant progress has been made in the growth of cashless payments of utility bills and other service charges. For regular transactions – typically various bill payments – the postal inpayment money order (yellow cheque) continues to be the most frequent payment instrument (in terms of both the number and value of transactions). In 2012, the Magyar Posta executed 238.9 million such transactions in the value of approximately HUF 2,691 billion. This is down 4.8 per cent in terms of transaction numbers compared to 2011, while the aggregate value of transactions declined by 3.9 per cent over the span

Chart 8
Use of postal inpayment money orders and core direct debits
(2008–2012)



of one year (Chart 8). The main problem with the widespread use of the yellow cheque is that it provides significant incentive for cash usage, thereby worsening the efficiency of payments. The issues relating to the functioning of the yellow cheque are explained in detail in the 2012 Report.

The regulatory changes relating to the pricing of the yellow cheque in 2012 may slow down the promotion of use of electronic payment methods in the field of regular transactions. Pursuant to amendments of laws enacted last year, public utility companies and telecommunications service providers may not charge any additional fee for payment by postal inpayment money orders. As a positive aspect of the regulation, service providers still have the possibility to offer discounts for electronic payment. This, however, is currently hindered by the fact that the cost of payment by yellow cheques is distributed among all the clients. As the service provider is not allowed to raise its prices to clients paying with yellow cheques, they cannot offer discounts for electronic payments because then they

[12] Cards may be surrendered mostly in cases when a client holds more than one payment card simultaneously. In this regard, however, adjustment may start earlier – partly as a result of the cost increases caused by the introduction of the transaction tax in 2013.

would be unable to fully cover the costs of the use of yellow cheques. The solution could be the differentiated pricing of services depending on the payment method. In that case, each client would pay, on top of the price of the underlying service, the cost of the payment method he uses to pay his bills. This would also be an improvement over the present situation from a consumer protection aspect as currently clients using electronic payment methods also pay for the price of a service (the yellow cheque) that they are not using. It should be noted that in this respect the former practice of some service providers was certainly inappropriate: they added the cost of the use of yellow cheques to the earlier price of the service, practically as a hidden price increase. This is problematic primarily because the costs of transactions involving yellow cheques had already been taken into account when setting the prices, and it was paid by each and every client irrespective of the chosen payment method.

Box 1
An example of the incorporation of the cost of the yellow cheque into the price of the service

Assume that a service provider has 1 million clients, the cost of processing transactions involving yellow cheques is HUF 150 per transaction, the cost of electronic transactions is HUF 30, and 20 per cent of the clients of the service provider pay by electronic methods. In this case, the cost of yellow cheque transactions to the provider is HUF 120 million per month (800,000 clients * HUF 150), while the cost of processing electronic transactions is HUF 6 million (200,000 clients * HUF 30). The service provider makes every client pay the cost of transaction processing equally; therefore, the price of each bill will be HUF 126 (HUF 120+6 million / 1 million clients) higher than the price of the underlying service. If the fee payable for the service were to be differentiated depending on the selected payment method, clients using yellow cheques would pay HUF 150 more, and those using electronic payment methods HUF 30 more than the price of the underlying service. Thus, relative to the present situation, the cost to clients using yellow cheques would increase by HUF 24 per transaction, while the cost to users of electronic payment methods would decrease by HUF 96. The sum of the fees collected by the service provide relating to transaction processing would remain unchanged.

A new service of the Magyar Posta introduced in 2012, the postal bill payment order (white cheque) may serve as a partial replacement of the yellow cheque, but this payment method still provides strong incentives for cash usage and is thus unable to substantially improve the efficiency of bill payments. This payment instrument works differently from the yellow cheque and is typically sold to payees as part of a complex service package, which could enable some partial cost reduction on the payee side. This does not, however, help customers choose the appropriate payment instruments, because the real cost of paper-based payment methods continues to be hidden from them. Even though in the short term improvements in paper-based products may increase efficiency slightly, in the longer term, as the apparent cost difference diminishes, it may even hinder the widespread use of non-cash payment methods and the major efficiency improvement the latter could offer.

It is necessary to ensure interoperability between electronic bill presentment and payment systems (EBPP providers). EBPP services eliminate one of the main hindrances to the spread of core direct debit[13] by leaving personal liquidity management in the hands of clients, that is, they may decide when to pay their bills. Their widespread use requires that the largest possible number of service providers are accessible through the EBPP systems and that they can be connected to the internet banks of as many payment service provider as possible. At present, there is little overlap in this field between the two EBPP service providers active in Hungary. It is important that these service providers do not compete on the systems, technical solutions and standard they use. For payees and payment service providers, such competition may result in parallel development projects, which may cause significant additional costs while consumers may need to register with several services at the same time, which also hinders the widespread use of the service. In order to create effective competition, all the electronic bill presentment and payment systems present in the market should be made available with a single development project on the payee and payment service provider side, while clients should have to register with only one service provider to pay all their bills. Technical interoperability must be created primarily on the EBPP service side. To foster implementation, the MNB has initiated discussions with the stakeholders.

[13] Helmeczi, István and Henrietta Olasz (2011), 'A csoportos beszedés és az elterjedését gátló tényezők', [Direct debit and factors impeding its penetration in Hungary], *MNB-tanulmányok,* 97. http://www.mnb.hu/Kiadvanyok/mnbhu_mnbtanulmanyok/mnbhu_mt97.

2.1.5 INCREASING THE EFFICIENCY OF THE VOUCHER MARKET

In order to improve the efficiency of the voucher market,[14] vouchers, which are currently available only in paper form, must be converted into electronic formats in a comprehensive and efficient operational model, which may also facilitate the control of the use of certain, targeted government benefits. Hungarian households have a brisk turnover in vouchers, which are typically provided as a non-wage benefit. The issuance of the SZÉP card in electronic form is a significant step forward in improving the efficiency of the voucher market. Through this limited-use payment instrument, the most common types of vouchers – initially recreation vouchers, later certain food vouchers – became available in electronic form as well. However, there are still some widely used vouchers – primarily the various Erzsébet vouchers – that exist only in paper form at present. The conversion of paper-based vouchers into electronic format allows for the elimination of a number of their disadvantages, for instance, the costs of their processing can be reduced, the security of the system enhanced, the secondary market trading of vouchers prevented, their use becomes easier to control and denomination problems are also resolved. Furthermore, more efficient operation facilitates lower charges. If Erzsébet vouchers were also available in electronic form, the efficiency of the payment of some of the social transfers would also be enhanced. In the case of certain government payments, targeted use is also a requirement. If payment is made in cash or in paper-based vouchers, the use of the transfer cannot be controlled, and thus compliance depends on the beneficiaries or, in the case of vouchers, the merchants acquiring the vouchers. By contrast, payment with electronic vouchers facilitates the control of use on the level of merchants or products, while the registration and redemption of vouchers can be tracked back accurately through the electronic records. If electronisation is implemented in card form or on the basis of payment card schemes, with the participation of more than one issuer, its operation should be designed similarly to the structure of four-party card systems. Accordingly, there should be a central entity in between the institutions issuing and acquiring the vouchers to mediate between the two sides of the system. This arrangement can prevent the establishment of parallel systems. Merchants acquiring the vouchers need to enter into a single agreement for the acquiring of vouchers even if there are several issuers involved, which may considerably shorten the time necessary for and accelerate the development of the acquiring network. To facilitate the secure operation of the system, a real-time record keeping system must be established.

It may be necessary to revise the operational model of the SZÉP card so that it can function efficiently in the longer term even if new actors enter the market, and that the fundamental rules of the system do not hinder its widespread development. In the SZÉP card system, the entities issuing the electronic vouchers are in direct relationship with cardholders and the merchants acquiring the vouchers, that is, at present the structure and functioning of the system is similar to the operation of three-party payment card systems. As there are no common standards specified for the processing of transactions, interoperability is not assured. Therefore, the joint and mutual acquiring of vouchers in a terminal is determined by the business interests of participants, which is not necessarily conducive to the evolution of a socially optimal system, and it may also increase operational uncertainties. Furthermore, participants may duplicate many of the resources in the course of development and operation. It should be noted that the present system may slow down the establishment of the acquiring network of any new actors wishing to enter the market as the current issuers may have an interest in hindering the market entry of new participants. As the size of the acquiring network is an important element in the competitiveness of issuers, a new issuer may have a significant competitive disadvantage relative to incumbent enterprises. In order to address the aforementioned problems, the system may need to be modified to make it resemble four-party payment card systems.

[14] Divéki, Éva, (2012), Card or Print? How to issue cafeteria vouchers electronically?, *MNB Bulletin,* June. http://www.mnb.hu/Kiadvanyok/mnbhu_mnbszemle/mnbhu_mnbszemle_201206.

Box 2
Operation of three- and four-party payment card systems and of the SZÉP card

Widely used payment card systems typically operate in one of two arrangements: three- or four-party models. In the case of the three-party model, the central operator of the payment system (card company) is in direct connection with both the cardholders and the merchants accepting the card. If the cardholder pays at the merchant, the transaction is executed directly by the card company, normally without the intervention of any other payment service provider. As in this case both parties to the transaction have direct connection with the card company, there is no need for any interbank clearing. However, in a number of cases the operators of three-party systems allow other payment service providers to issue or accept cards to promote the more efficient expansion of the system. This, however, does not change the fundamental operation of the system: in the economic sense it continues to be a three-party system.

By contrast, in the four-party model the card company operating the system has no direct relationship with the cardholders and merchants; instead, it has a contract with payment service providers that issue the payment cards and provide the acquiring service to the merchants. In this case, numerous payment service providers may participate in the system, and it is not necessary to have agreements with every other participant on the mutual acceptance of cards to cooperate with other members of the system; instead, it is sufficient for them to agree with the card company. If a payment service provider joins the system, the payment cards it issues will be accepted in each merchant location of all the members of the system, and merchants that have a contract with the participant will accept all the cards belonging to the card system concerned even in the absence of bilateral agreements between the parties. The definition of uniform rules and common technical standards is of utmost importance for the operation of the three- and four-party card schemes as this may assure smooth cooperation between participants.

The operation of the SZÉP card is modelled on three-party card schemes: the service provider issuing the voucher has direct relationship both with the holders of vouchers and the merchants accepting the vouchers. As there are currently three issuers on the market of SZÉP cards, practically three three-player systems have been created, which are completely independent from one another in economic terms. The redeemability of vouchers is assured by bilateral agreements between the issuer and the merchants. If the POS terminal used for the acceptance of the vouchers at the merchant is operated by a party other than the issuer concerned, then to assure mutual acceptance, the issuer of the voucher needs to enter into a bilateral agreement with the payment service provider operating the terminal as well. As a result, a complex network of bilateral agreements is created between the issuers of vouchers, the merchants accepting the vouchers and the payment service providers offering card acquiring services to the merchants – potentially not involved in the SZÉP card system in any other way – where the absence of common technical standards hinders cooperation between the parties.

2.1.6 COMPLIANCE WITH THE RULES OF THE MNB DECREE ON EXECUTION OF PAYMENT TRANSACTIONS

To protect consumers, the MNB conducts payment audits, in the course of which it monitors and enforces compliance with the central bank requirements concerning the execution of payments, thereby promoting the achievement of the payment related objectives of the MNB. One important benefit of central bank payment audits is the experience gained during audits, which can be used directly in the course of the development of payment systems and the regulation of payments.[15] The present level of Hungarian financial literacy and the information asymmetry characteristic of payment services precludes or hinders the sufficient enforcement of clients' rights. If the regulation fails to achieve its objectives, there is a danger of loss of consumer confidence in payment service providers, which, together with other factors, may contribute to clients turning away from cashless payment methods to the use of cash.

The institutions examined offering payment services were broadly found to function according to the law, but the MNB ordered measures to be taken to address the deficiencies which were identified. In 2012, 17 payment service providers were subject to payments audits. The audit programme, which defines the scope of the audit,

[15] Decree No. 18/2009 (VIII. 6.) MNB on Payment Services Activities.

Table 2
Audits of the MNB on payment execution in figures
(2010–2012)

		2010	2011	2012
Number of audits	Bank	8	9	8
	Cooperative credit institutions	4	6	9
Number of findings*		113	134	125
Number of measures*		67	78	113
Number of fines	Bank	2	2	–
	Cooperative credit institutions	2	5	4
	Total:	**4**	**7**	**4**
Amount of fines (in thousand HUF)	Bank	14,000	17,000	–
	Cooperative credit institutions	1,000	4,400	3,200
	Total:	**15,000**	**21,400**	**3,200**

** The 'Number of findings' means the deficiencies revealed in the audit reports while the 'Number of measures' means the actions ordered to eliminate the deficiencies.*

covered, among others, all of the provisions in the MNB decree which were incorporated in the context of the transposition of the PSD[16] as well as the ones referring to the execution of payment transactions. As of 1 January 2012, the MNB decree set stricter requirements for the settlement of payment orders in euro between payment service providers, shortening the time limit for the transfer of the amount of the payment transaction to the payment service provider of the payee. It also set new rules to assure the smooth functioning of the intraday clearing system introduced on 1 July 2012. To eliminate the deficiencies identified during the audits, last year the MNB required 13 credit institutions to implement measures only, while total fines of HUF 3.2 million were imposed on 4 credit institutions[17] as well. On the basis of the audits, the MNB required a total of 113 measures to be taken (Table 2). The number of various types of non-compliance cases in the 2010–2012 period is shown in Table 3.

The audits revealed issues relating to the settlement and debiting of payment orders and the required notifications at most of the credit institutions. Execution-related non-compliance cases included instances where the credit institution debited the accounts by the amount of payment orders submitted after the cut-off time for the day already on the day of submission or failed to execute orders in the sequence of their receipt. In connection with settlement-related non-compliance cases, the MNB required 17 credit institutions to take a total of 54 measures. At almost each audited credit institution there were examples of delayed crediting of the sum of the payment transactions or crediting on the wrong value date, relating mostly to VIBER transfers and postal inpayment money orders. In connection with non-compliant credit cases, the MNB required 17 credit institutions to take a total of 52 measures. In 2012, non-compliance with notification requirements fell to half the previous year level, leading to 11 measures required from 10 credit institutions.

Table 3
Non-compliance cases in payments
(2010–2012)

Type of non-compliance	2010	2011	2012
Number of payment audits	12	15	17
Non-compliant acceptance and receipt of payment orders	6	4	8
Delay in settlement of payment orders or rejections	27	30	35
Non-compliant queuing or partial payment	8	4	19
Failure to credit immediately, value date related deficiency	38	54	52
Failure to notify clients	9	22	11

[16] Payment Services Directive, Directive 2007/64/EC on payment services in the internal market.
[17] http://www.mnb.hu/A_jegybank/kozerdeku_informaciok/tevekenysegre_mukodesre_adatok/teljesitmenyeskapacitas_20100115 (only in Hungarian).

After 2 July 2012, compliance with legal regulations relating to intraday credit transfers was a priority for payment audits. The payment audits revealed that the examined credit institutions have basically established compliant procedures. Apart from an occasional exception, no breach of the four-hour rule was encountered in the credit institutions examined in the MNB's audits. Some of the occasional exceptions related to incidents in the month of switch-over. The introduction of intraday clearing necessitated reconsideration of the processes of the business day by credit institutions. As a result, the cut-off time for submission for same-day execution was modified mainly by credit institutions directly connected to the ICS. While previously, under the overnight clearing arrangement, orders could be accepted after the end of the business day, with intraday clearing, in view of the time requirement of in-house processes, banks need to adjust their timing to the last ICS cycle. Naturally, orders can be submitted after the cut-off time for execution in the first cycle of the next day. Credit institutions do not break down intraday clearing cycles any further, and thus orders are accepted from clients continuously up to the cut-off time of the last cycle of the day. The reorganisation of the business day had a beneficial effect on other payment procedures as well because, due to the five intraday clearing cycles of the ICS, credit institutions must assure their operation until the end of the fifth cycle on each working day of the week. In many cases, this has resulted in longer business hours, and thus the frequency of non-compliance found by previous audits, primarily in indirectly connected credit institutions, due to early close of business has also decreased. In previous years, there had been non-compliance cases where, due to shorter business hours on Fridays, transactions executed in VIBER in the late afternoon were credited on the account of the payee only Monday morning, and furthermore with the wrong value date. The audits led to some findings indicating that some credit institutions need further work to coordinate the overnight and intraday clearing processes. For instance, it is important that the credited amounts received in the last intraday clearing cycle can be used as fund for outgoing debits in the overnight clearing system.

The findings of the on-site payment audits also contributed to the amendment of the MNB decree on the execution of payment transactions. The audit findings justified the need for new provisions regulating the earliest possible end of the business day, with the purpose of ensuring that the amount of HUF and EUR payment transactions requiring no conversion are credited on the payment account of the payees on the same day. On-site audits alerted the MNB as the legislator to three negative phenomena which, though not violating the prevailing provisions of the aforementioned MNB decree as such in the period examined, hindered the realisation of the legislator's intent that payees can dispose of funds sent to them as soon as possible. Some payment service providers set very early cut-off times for same-day crediting, sometimes in the morning hours. Direct participants of payment systems (correspondent banks) did not make it possible to indirectly connected credit institutions to credit the funds received on the payment account of their clients on the same day because the detailed data necessary for crediting was often sent to them only on the next business day. Both practices had the result that the funds sent to payees were credited on their payment accounts only on the next business day; consequently, they could not be used on the business day of receipt for funding payment orders or transactions with bank cards. The rule governing the execution of payment transactions within the same credit institution has also been tightened, requiring the credit institution to credit the amount of payment transactions requiring no conversion to the payment account of the payee immediately after debiting the payment account of the payer.

Box 3
Payment related regulatory proposals of the European Commission

The European Commission held two public consultations in 2012 relating to payment issues. The first consultation concerned issues relating to card, internet and mobile payments, among them a number of topics relevant for Hungarian payment systems. Examples include the future of interchange fees applied in card systems, factors influencing the facilitation of the widespread use of payment cards, interoperability and innovation in the field of new internet and mobile payment solutions as well as issues relating to the security of electronic payments. The other consultation addressed payment account related questions, such as the comparability of account keeping costs, ensuring smooth bank switching and facilitating access to payment accounts. The conflicting positions of the large number of participants typically hinged on whether there is a need for regulatory intervention in the market segment concerned or if it is sufficient to leave market developments to market participants and market trends. While public entities and the various interest

representation bodies saw the need for regulatory intervention at several points, the representatives of the supply side often argued against such an approach.

Based on the results of the consultations and using the information collected, the European Commission is expected to put forth recommendations for regulation in two areas in 2013. One of them is the regulation of interchange fees, where regulation of fees at the European level is likely to be recommended. Even though the exact content of the proposed regulation is not yet known, it is likely to result in lowering the levels of interchange fees in line with the regulation proposed in Hungary. The other proposed regulation, published on 8 May 2013, relates to access to payment accounts. Pursuant to the proposal, the regulation aims to assure that every EU citizen has access to payment accounts, that the payment account related costs are comparable and that switching banks becomes simpler and quicker.

2.2 Security of payments

The widespread use of cashless payment instruments requires their safe, reliable and transparent operation to all parties concerned. To this end, the risks and fraud relating to payment methods must be continuously monitored and clear rules set up for the functioning of payment instruments. With the fast pace of technological progress and the use of payment instruments in new areas, it is important that innovation should not jeopardize the safe execution of transactions and trust in electronic payments.

2.2.1 SECURITY OF ON-LINE PAYMENT SERVICES

On-line payment services have made significant progress, their use becoming more common in Hungary as well. The number of payment accounts available on-line increased to 7.5 million by end-2012 (69.6 per cent of all accounts), an 8.3 per cent increase over the previous year. Furthermore, the number of credit transfers submitted on-line increased by 18.9 per cent in 2012, and thus last year 34.2 per cent of orders were submitted through that channel. The use of payment cards for on-line payment has also grown dynamically, card-not-present transactions increasing by 30 per cent to 15 million last year (Chart 9).

At present, the ratio of fraud in domestic electronic payments is fairly low, for instance, the rate of payment card related fraud is among the lowest in Europe. The ratio of fraud is higher in on-line transactions than in other transaction types (Chart 10). It is notable, though, that this ratio has been declining continuously as turnover increases. Because of the fast evolution of on-line banking and payment services and of the devices providing access to such services, fraud events must be continuously monitored and, in addition to known risks, new types of threats must be identified as soon as possible. In addition to regularly updating risk assessments, it must be noted that perpetrators of fraud are becoming more organised and their methods more sophisticated. Consequently, strong user authentication must be used for the initiation of transactions through the internet and for accessing bank services, relying on several independent authentication solutions. Furthermore, payment service providers must implement appropriate methods to recognise unusual transactions and thus prevent fraud.

The large-scale use of electronic payment methods is considerably hindered by the absence of information on their use. Consequently, to build trust, payment service

Chart 9
Number of credit transfers submitted on-line and of on-line card payments
(2008–2012)

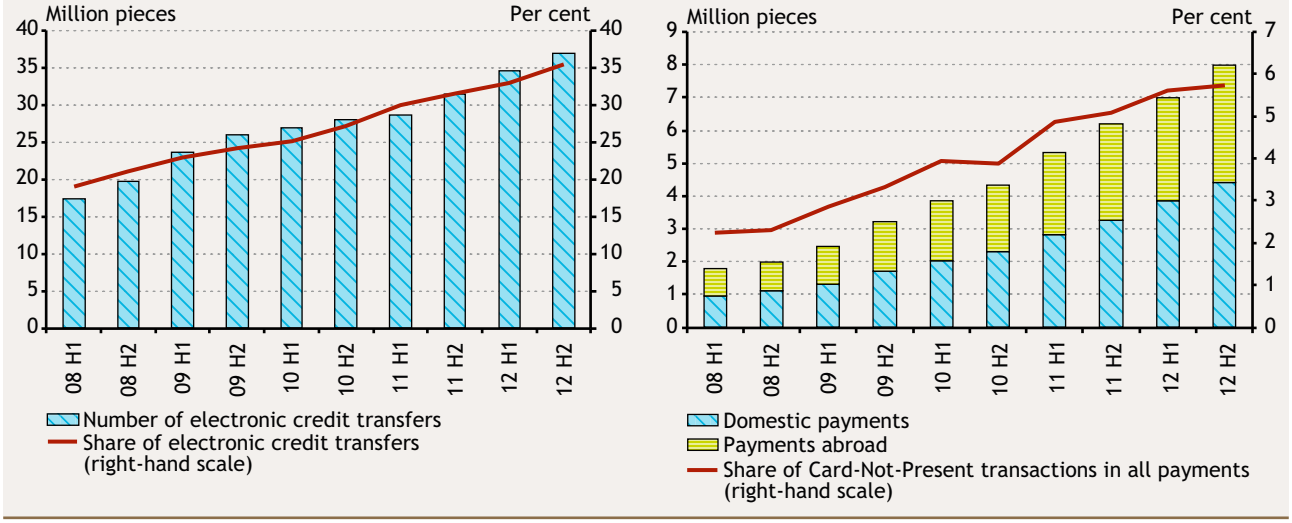
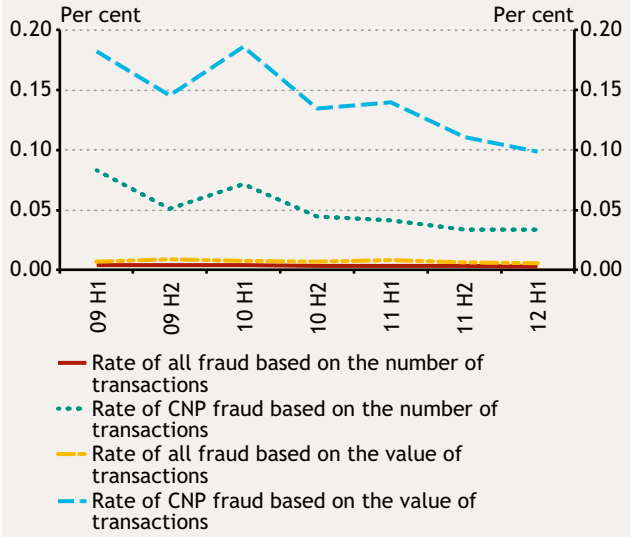


Chart 10
Fraud events on the issuer side of the payment card business
(2009–2012 H1)



providers must participate in enhancing the security awareness and security literacy of clients. An MNB survey conducted in 2012[18] shows that security concerns are not the main obstacles to the widespread growth of electronic payment methods, although naturally the sense of security has a significant effect on their use. If electronic payment methods are to be used extensively, user confidence in them must be created. This can be primarily ensured if clients understand the functioning of payment instrument concerned and the related rules. This is true for every type of electronic payment method, but is particularly relevant when payment and the delivery of the goods or services are not simultaneous. To create trust, clients must be educated more intensively and consciously on the use of payment instruments. The survey reveals that clients primarily expect their account keeper payment service provider to supply the relevant information, and as these are the institutions that are likely to reach clients most efficiently, they may have a key role in disseminating information and enhancing financial literacy.

2.2.2 PROPOSAL FOR THE REGULATION OF THE HUNGARIAN MARKET OF NEGOTIABLE VOUCHERS

The absence of domestic regulation on the market of negotiable vouchers, better known as 'local money', entails risks for consumers using the vouchers. Vouchers fall into two main categories: traditional vouchers, and cafeteria and negotiable vouchers. The characteristics and risks of these categories are described in the 2012 Report. Of cafeteria vouchers, the SZÉP card and the Erzsébet voucher operate in a regulated environment. The role of other cafeteria vouchers in payments has recently become significantly marginalized. By contrast, the role of negotiable vouchers ('local money') may increase while they are not subject to any type of regulation at present.

The lack of regulation of negotiable vouchers also entails reputational risk for the authorities responsible for the security of financial services (MNB, MNE, HFSA). Even though these vouchers have a limited scope of use and do not qualify as non-cash payment instruments, because of the way they are used, consumers may have the same expectations of them as of cash or non-cash payment instruments. Consequently, any problems arising during their use or redemption may have negative consequences for other areas of non-cash payments as well. 'Local money' vouchers present a reputational risk for the authorities responsible for the safety of payments (MNB, MNE, HFSA). If any problems are encountered in connection with vouchers, voucher holders expect a solution from the authorities responsible for the safe functioning of cash and non-cash payment instruments. At present, however, the supervision of the issuers of negotiable vouchers, the monitoring of their activities and the timely prevention of any problems is impossible due to the absence of regulation.

The legal regulation of the issuance of negotiable vouchers in Hungary, to be enacted in the near future, will facilitate the more transparent, safer and supervised functioning of the market; therefore, it is a major step forward in terms of consumer protection. The regulation would not cover the Erzsébet voucher and SZÉP card or other cafeteria vouchers, which already operate in a regulated framework. Negotiable vouchers would be regulated in legislation, by the amendment of the CIFE Act.[19] This would address the problems outlined above, as follows:

- the issuer must have a required minimum level of registered capital; furthermore, it may not count funds accepted from clients in exchange for the vouchers as its own, instead, it must hold these funds on a custody account or in government securities or conclude a bank guarantee or suretyship agreement with a credit institution

[18] Divéki, Éva and Dániel Listár (2012), 'Better safe than sorry. The views of the Hungarian public on the security of payment systems', *MNB Bulletin*, October. http://www.mnb.hu/Kiadvanyok/mnbhu_mnbszemle/mnbhu_mnbszemle_201210.
[19] Act CXII of 1996 on Credit Institutions and Financial Enterprises.

or insurance undertaking for the financial obligations arising from such funds;

- the issuer must assure at all times the redeemability of vouchers at face value and of defective vouchers under the business terms and conditions; no fee can be charged for redemption;

- the issuer is required to publish its general terms of business and to include in these terms certain content elements (rules of issuance, distribution, purchase, redemption and use of the vouchers, fees, commissions and charges, etc.).

Pursuant to the Bill drafted by the MNB and currently before Parliament, the MNB would supervise the activity of issuance of negotiable vouchers.

3 Operation and oversight of the Hungarian payment and settlement systems

Pursuant to Article 4 (5) of the Central Bank Act, the oversight of the payment and the securities clearing and settlement systems is one of the basic tasks of the central bank. The Act provides that oversight activities mean the monitoring of clearing and settlement systems, the institutions participating therein, the infrastructures connecting such institutions and system as well as the functioning of arrangements and payment methods used in the execution of payments, with a systemic risk approach. In Hungary, the oversight activity covers VIBER and ICS as well as the securities clearing and settlement system operated by KELER and KELER CCP, including the activities of the central counterparty. The significance of the overseen systems in the economy is shown by the fact that the annual turnover executed by them in 2012 amounted to 53 times the amount of annual GDP (Table 4).

Oversight comprises two considerations: the monitoring of the reliability and efficiency of the overseen systems, while its methodology relies on a risk-based approach. The three main types of risk resulting from the criteria : i) risk of service continuity; ii) clearing and settlement risk, and iii) system operational interdependency risk.[20] From the aspect of these three risks, the MNB continuously monitors and analyses the operation of the clearing and settlement systems and makes recommendations to reduce risk and improve efficiency. Oversight work is mostly preventive, 'advisory' in nature, manifested in recommendations and guidelines. The MNB applies the regulatory measures that are at its disposal pursuant to legal regulations only as the last resort. This approach will change in the case of KELER CCP because, under EU rules (EMIR), oversight activities will become statutory in respect of central counterparties, with the MNB and the HFSA closely cooperating in such work.

[20] See Box 5 of the publication 'Report on Payment Systems 2012'.

Table 4
General characteristics of the overseen systems
(2011–2012)

Overseen systems		Volume (thousands)		Value (HUF thousand billion)		GDP %		Typical transactions	Settlement agent	Clearing house	Central securities depository	Central counter-party	Participants	
		2011	2012	2011	2012	2011	2012						Direct participant	Indirect participant
VIBER		1,293	1,556	1,247	1,242	44.3	44	- bank to bank items: financial market transactions (i.e. HUF leg of HUF FX transactions, HUF cash leg of securities transactions) - central bank operations (pl. cash and monetary policy operations) - customer transactions: large value urgent household or corporate payments	MNB	MNB	–	–	60	126
ICS	overnight clearing	239,287	178,384	59.3	36.7	2.1	1.3	retail payments, mostly real economic transactions, paper based credit transfers (i.e. salary or pension payments), direct debits (i.e. bill payments)	MNB	GIRO	–	–	54	131
	intraday clearing	–	76,500	–	28.4	–	1	retail payments, mostly real economic transactions, electronic credit transfers (i.e. salary), urgent household or corporate payments						
KELER/ KELER CCP		691.9	570	230.9	192	8.2	6.7	spot and derivative stock exchange and OTC market settlement (including margin settlement*, the delivery of the underlying product, the settlement of the cash leg of the securities transactions and default fund contributions*)	credit insti-tution: MNB, brokers: KELER	KELER KELER CCP**	KELER	KELER CCP	74	✓

= *Operator.*
✓ = *There are indirect participants, however their number is not available.*
* = *The volumes do not contain these items.*
** = *KELER transferred the clearing function of guaranteed markets to KELER CCP from 1 January 2013.*

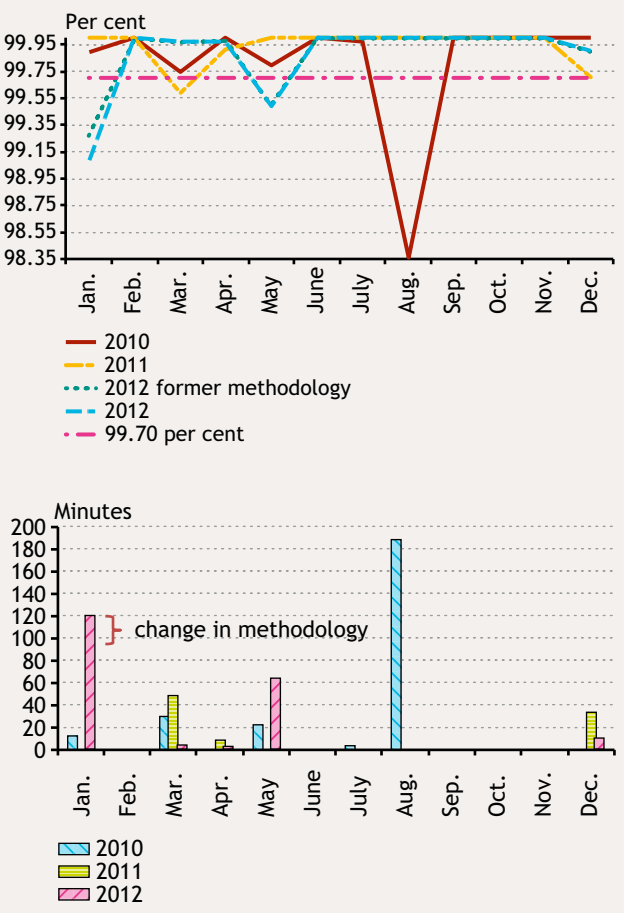
3.1 Risk of service continuity

3.1.1 OPERATING PROBLEMS IN THE CENTRAL INFRASTRUCTURE

The first three quarters since the launch of the new intraday clearing have shown that following the initial adaptation period the intraday platform has a high level of operational reliability, processing times were in line with prior expectations and the risk of service continuity was low. The operation of intraday clearing requires greater attention because the shorter clearing cycles leave much less buffer time for GIRO Elszámolásforgalmi Zrt. (GIRO), the operator of the system, to solve any problems that may emerge. In the first two months after the launch of intraday clearing, GIRO 'fine-tuned' the system. In the cycles cleared so far, the processing time exceeded 14 minutes on only seven occasions, which mostly occurred in the first two days after the launch of the system. There were some incidents in the first few days after start-up, but the ICS soon got over the initial phase of the adaptation curve and the sequence of cycles stabilised. Thereafter the number and business impact of incidents in the intraday platform were negligible.

In the overnight clearing platform the risk of service continuity was low in 2012 as well. The clearing and the settlement almost always complied with the time limits set out in the business rules of the ICS.[21] After the introduction of intraday clearing, a significant part of the turnover of the overnight platform was re-channelled from the overnight clearing system. This is one of the reasons that the rate of utilisation of the processing capacity of the IT system declined considerably in the overnight clearing system. The IT system was optimised in 2011, and as a result, the average and maximum processing times were already reduced significantly last year.

Chart 11
Monthly availability ratio of the core settlement service in VIBER (top chart) and frequency and duration of outages of the core settlement service in minutes (bottom chart)
(2010–2012)



Note: Because of the change in the methodology of calculation of availability, the effect of the incident reducing the monthly availability ratio of the core settlement service is marked in the chart.

In 2012, VIBER demonstrated a high level of operational reliability, but the risk of service continuity increased slightly. The monthly availability ratio of the core settlement service[22] of VIBER was below the internationally required 99.7 per cent in two months (Chart 11). Relative to 2011, the

[21] Pursuant to the business rules of the ICS, the deadline for sending out the results of the first phase is 11:00 p.m., for the second phase, 06:00 a.m. and for the extraordinary phase, 12:00 a.m. The ICS was unable to comply with the deadline on one occasion due to an incident in an interdependent system.

[22] The indicator is calculated based on the duration of incidents resulting in the outage of the core settlement service. An outage of the core settlement service occurs when an incident within the MNB results in a downtime noticeable to participants.

individual and aggregate duration of outages of the core settlement service increased.[23] In 2012, the MNB calculated the availability ratio of the core settlement service under the new methodology, where an outage of the component providing the data link between VIBER and the proprietary home account system of the MNB is also considered an 'outage of the core settlement service'. This is the component that assures, for instance, the settlement of certain central bank instruments in VIBER. The effect of the methodological change presented itself in January, however availability remained below 99.7 per cent even without the effect of the change in methodology (Chart 11). Incidents resulting in an outage of the core settlement service did not prevent the settlement of the intraday clearing cycles of the ICS and the closing of VIBER. The opening of VIBER had to be postponed by more than one hour on one occasion. The number of incidents causing outage of the complementary services[24] doubled since last year, while their duration quadrupled. These incidents were mostly caused by interdependent systems. These systems are discussed in detail in Chapter 3.3.

In 2012, as an impact from some incidents in VIBER, the liquidity of certain VIBER members (current account balance and intraday credit line) did not show their real positions. In 2012, the annual liquidity availability ratio in VIBER was 98.55 per cent (the duration of incidents was 2,182 minutes in total, with individual durations ranging from 151 to 796 minutes). Incidents impact on liquidity positions may lead to two types of risk. The MNB may face credit risk if the system 'allocates' more liquidity to a participant than its actual position (this occurred on five occasions, with an average duration of 115 minutes per incident). Participants run a clearing and settlement risk if the available liquidity is less than the actual liquidity position (this happened seven times, with an average duration of 229 minutes). Such incidents were caused by human error or software malfunctions in interdependent systems.

Incidents resulting in outage of the core settlement service or of the complementary services were caused by software error in most cases. In addition, incidents were occasionally caused by administrative error (account keeper, trader) or, to a lesser extent, due to IT operational or hardware errors. Based on the lessons learned from incidents in previous years, the MNB as the operator of VIBER has strengthened system monitoring and makes more active use of and updates its internal knowledge base, which allows for more effective handling of any issues that may arise. The incidents of 2012 highlighted the importance, for safe operation, of the appropriate descriptions (process, function and database) by third-party service providers and a greater emphasis on the preparation of version changes (e.g. test preparation and testing).

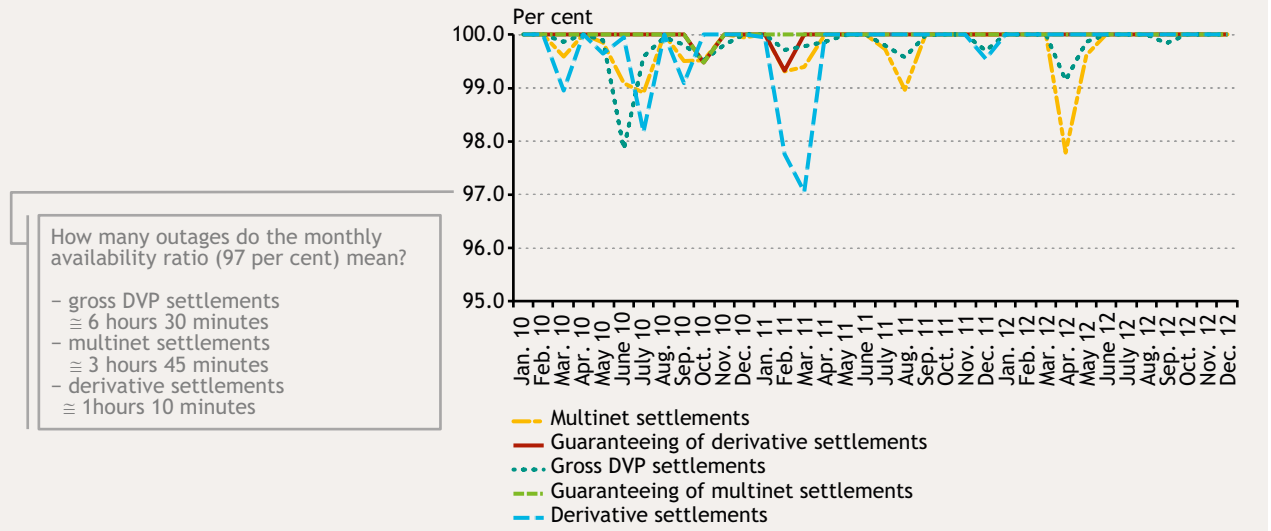
In order to assure the business continuity of VIBER, it is important to have adequate business continuity plans and to test them annually. In 2012, the methodological development of business continuity testing continued in two directions in the MNB. Progress was made in the so-called integrated business continuity testing of the critical systems of the MNB, including VIBER. In 2012, unlike in previous years, this test was not conducted in a test environment over the weekend but in a live environment for a whole week. During the test the live backup system of the critical systems was in operation at the secondary site of the MNB. The departments involved in the test performed their duties as usual in the head office on the first four working days of the week while they worked in the secondary site on Friday. The MNB obtained useful experience during the test, which have been reflected in the business continuity plans. Progress was also made in the so-called VIBER intraday interruption tests. In this area, the overseer's expectation is the continuous expansion of the coverage of the test to almost all the business events of VIBER. In addition to interbank and customer transactions, two new elements were added to the test in 2012: the settlement of the cash leg of DvP securities transactions and the modification of intraday credit lines. In the case of the interruption test, the correctness and applicability the incident management process without any data loss is tested: the so-called data gaps created by the interruption of operation are identified and corrected, and then the operation of VIBER is restarted.

In the context of the business continuity related decision making of the Crisis Management Committee (CMC) of the MNB, crisis situations requiring decisions were identified and scenarios and management information checklists relating to decision points were prepared. The CMC has the responsibility of making fast, efficient decisions based on the information available in unexpected, high-impact emergency situations to assure the business continuity of the MNB. This is to help supplement any insufficient resources, assist in recovery and, where

[23] On the whole, in 2012 the aggregate duration of incidents of the core settlement system increased by 152 minutes. The time between the start and end (recovery) of incidents grew longer relative to 2011; in 2012 there were 95-minute and 64-minute long outages of the core settlement service.

[24] An outage of the complementary services affects the operation of VIBER, but does not result in downtime (e.g. issues with cash deposit, difficulties with the modification of the intraday credit line), and thus it is not taken into account when calculating the total availability ratio of the core settlement service.

Chart 12
Availability of the key services of the securities clearing and settlement system
(2010–2012)



required, to inform external parties (crisis communication). The documents listed above detail the potential decision points and alternatives in the context of emergency situations affecting the critical functions of the MNB including the operation of VIBER. For instance, the actions required in the event of a bomb threat or the extended long-term outage of critical systems, the activities to be given priority, the decisions to be delegated to various departments, the instances when the critical systems and functions of the MNB must be relocated to the secondary site.

The key securities clearing and settlement services generally demonstrated a high level of operational reliability. Availability indicated a slight increase of risk of service continuity relative to 2011. Outage of the core settlement service means the duration of an incident affecting clients, which increased relative to 2011 (Chart 12). While in the past outages primarily affected business systems,[25] last year most outages stemmed from errors in the communication systems.[26] In 2012, major operational problems were not common in the securities clearing and settlement system, though a four-hour outage of the core settlement service did occur on one occasion.[27]

3.1.2 COMPLEX RISK CAUSED BY MARKET FLUCTUATIONS AND FINANCING RISK

In 2012, no credit risk crystallized in securities clearing that would have necessitated use of the own financial resources of the KELER Group. The capital position of the KELER Group is adequate. Based on the stress tests, the own financial resources of KELER CCP were sufficient in 2012 in view of the fact that the guarantee callable on first demand[28] provided by KELER by far exceeded the calculated risks not covered by the individual and collective guarantee elements. In the securities clearing and settlement system, the financing risk basically originates from the central counterparty function because KELER CCP – as the central counterparty – guarantees the settlement of transactions if the counterparties to the transaction fail to fulfil their obligations. Thus, the role of the central counterparty becomes significant when a credit risk event occurs. This is when collateral (e.g. individual collateral, collective guarantee funds, and ultimately the own funds of the central counterparty) is utilised and, if that is insufficient, the guarantee callable on first demand provided by KELER to KELER CCP may be called, and

[25] The systems that perform functions relating to securities clearing and settlement as a business activity.
[26] Outage affecting clients: 2 hours 27 minutes in 2011, 7 hours 13 minutes in 2012.
[27] There were several incidents on that day. The root cause initial issue was created by human error.
[28] HUF 8 billion.

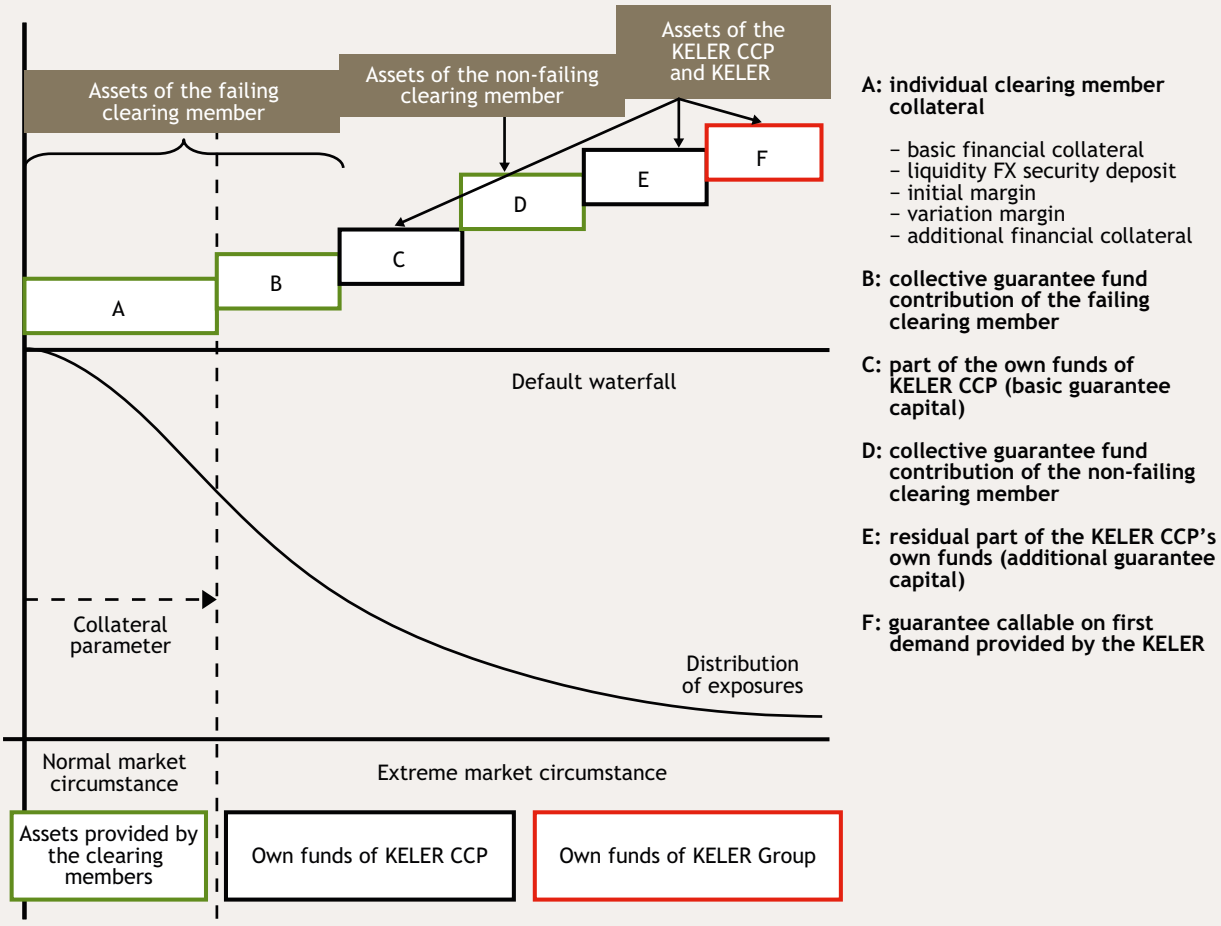
consequently part of the capital of KELER may be used (See Box 4). In the case of the markets guaranteed by KELER CCP (capital, gas and energy markets), there were no settlement fails in 2012 that would have necessitated the use of the own financial resources of the KELER Group. Based on the stress tests, the value of the guarantee callable on first demand was lowered from HUF 12 billion to HUF 8 billion in August 2012.

Box 4
Lines of defence at the central counterparty and their expected changes due to the EMIR[29]

The central counterparty employs various instruments to manage its exposures. Some of these instruments limit clearing membership on a risk basis. Others determine the holding of cash and financial assets based on risks calculated under normal as well as extreme but possible scenarios. Some of the financial conditions are imposed as requirements on clearing members as a prerequisite of membership (e.g. basic financial collateral) or as sanctions (e.g. additional financial collateral imposed in case of breaching the capital position limit). Still others arise from stress test calculations.

Central counterparties are key actors in financial infrastructures as well as risk aggregators. This is why it is essential to ensure their functioning even under extreme market conditions. The financial assets covering risks calculated from stress tests may be individual

Chart 13
Lines of defence of the central counterparty function (after the EMIR)



[29] EU regulation on OTC derivative transactions, central counterparties and trade repositories (European markets Infrastructure Regulation).

clearing member collateral, collective guarantee fund contributions and the own financial resources of the central counterparty. Individual collateral can be used only in the event of the default of the clearing member that pledged the assets. In the case of the variation margin, positions arising from transactions in the clearing cycle are adjusted to the current market situation (historical prices). If the clearing member is posting such margin, the central counterparty has zero replacement risk in the given market situation. If, however, the clearing member fails to post the margin and this failure is not temporary, the central counterparty runs not only the replacement risk arising from market price fluctuations up to the time of the default but also the risks thereafter[30] until it can close or liquidate the defaulting member's position (liquidation period). To address this risk, clearing members are required to provide an initial margin.

The required level of the collective guarantee funds is calculated based on stress tests assuming extreme market movements. In most countries, there are dedicated collective guarantee funds for each market. For instance, in the case of KELER CCP there are separate guarantee funds for the multinet and derivative capital markets (TEA and KGA- collective guarantee fund) and for the NFKP (Daily Natural Gas and Capacity Trading and Balancing Market) and CEEGEX markets (NFKP KGA and CEEGEX NFKP). This dedicated, pre-funded guarantee element is collective because if any member of the risk community of the market concerned defaults, it can be used to manage such a default. In addition to collective guarantee funds, even more extreme scenarios give rise to the requirement of a minimum level of own dedicated financial resources of central counterparties. Over and above this dedicated amount, the central counterparty needs additional capital to address residual risks (e.g. operational risk).

The default waterfall (which is the sequence of use of the aforementioned assets) has a special inherent logic. Logically, individual (dedicated and freely available) assets are used first, followed by the collective guarantee fund contribution of the defaulting party, and finally the collective guarantee fund contributions of other (non-defaulting) clearing members and the own dedicated financial resources of the central counterparty. In addition to reinforcing the previous oversight expectations and laying down the calculation method of the central counterparty's defence lines in a legally binding regulation, the EMIR introduced an important change relating to the default waterfall. The EMIR requires that before using the collective guarantee fund contributions of the non-defaulting clearing members, a dedicated part of the own financial resources of the central counterparty shall be used ('skin in the game'). Furthermore, the EMIR does not recognise as own financial resources the callable guarantee applied in the Hungarian market.

Based on the stress tests, the required capital is available on the level of the KELER Group. However, pursuant to EU rules (EMIR), the organisation and structure of the Hungarian securities clearing and settlement infrastructure must be changed so that the ratio of collateral elements to cover risks (individual collateral, collective guarantee fund contributions, and own financial resources) as well as the distribution of capital within the KELER Group are modified. The future operational model must meet requirements imposed by the EMIR (see Box 4) as well as by the MNB as overseer and owner. Within the KELER Group, KELER CCP needs to reach the final phase of full compliance with EMIR by mid-September 2013. Reorganisation already started on 1 January 2013, when KELER transferred the clearing function of guaranteed markets to KELER CCP. This process will continue in 2013. In parallel with this, harmonisation of Hungarian law with the EMIR is also underway.

In the context of the EMFESZ incident,[31] the MNB as overseer highlighted that the weight of the energy markets guaranteed by KELER CCP is continuously growing in the business portfolio of the company, and simultaneously the significance of potential spillover risks to the capital markets is also increasing. This is partly because the value of the guarantee callable on first demand offered by KELER is set at year-end at the group level (based on the audited financial statements valid at a certain point in time). Thus, the assets in the balance sheet of KELER may be revalued due to price fluctuations on the money and capital markets while the value of the guarantee remains unchanged. The available residual capital does change, however, and this capital is eventually meant to assure the operation of the central securities depository. Another consideration in the context of potential spillover risks is that KELER CCP guarantees the capital and energy markets as a single entity, and thus at the level of KELER CCP's own financial resources the clearing members of capital and energy markets constitute one risk community. The MNB had put forth an oversight recommendation that any risks must be managed by the institution where those

[30] In practice, the risk of the period since the payment of the latest variation margin.

[31] See Box 8 in the publication 'Report on Payment Systems 2012'.

risks arise. To this end, the MNB recommended that simultaneously with the risk proportionate recapitalisation of KELER CCP the callable guarantee model be terminated, and that ways of legally separating guaranteeing the capital and energy markets be investigated. This direction partially coincides with the EMIR requirements (recapitalisation of central counterparties) and with the intention of the MNB as the owner to achieve a clear organisational structure within the KELER Group. However, the MNB as the owner must also take into account the profitability of the KELER Group as any reorganisation may affect intragroup synergies.

The re-structuring process of the securities clearing and settlement infrastructure was accelerated by the adoption of the EMIR, which lays down requirements for the reorganisation of the operation of KELER CCP additional to the considerations of the MNB as the overseer and owner. The EMIR sets forth detailed requirements for the operation of the central counterparty and its risk calculation and management model, in particular the capital requirement. As a consequence of the EMIR and the related regulatory standards, the Hungarian legislative environment must also be changed. The EMIR is an EU regulation, and therefore it is directly applicable in Hungary. However, in view of the fact that the activities of the central counterparty had been regulated in Hungary already in the Capital Market Act (CMA), legal harmonisation is required. The MNE, in cooperation with the MNB and the HFSA, has planned this to be a multi-stage process. As the first step, the legal background of the central counterparty as defined by the EMIR will be re-regulated, and simultaneously the re-drafting of parts of the CMA relating to post-trading infrastructures will also be started.

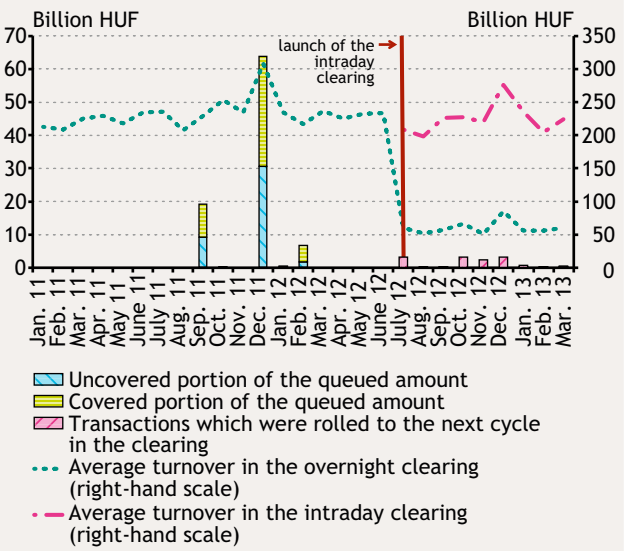
In accordance with the aforementioned requirements, reorganisation of the securities clearing and settlement infrastructure has started. As the first step, KELER transferred the clearing function of guaranteed markets to KELER CCP as of 31 December 2012, making it a full-fledged central counterparty for the purposes of the EMIR. As the next step of the change, the capital position of the KELER Group has been reinforced in the form of a capital increase in KELER CCP at the 2013 ordinary general assembly meeting. Simultaneously with the capital injection, a decision was adopted to terminate the callable guarantee offered by KELER by the end of 2013. The operational model of KELER CCP will gradually achieve a state to meet the EMIR requirements during the year. The comprehensive screening of the risk management system has already been completed, and the revision of the internal procedures and documentation as well as the terms and conditions is under way. After the entry into force of the EMIR-related standards, KELER CCP will have six months (up to 15 September 2013) to submit a request for re-authorization to the HFSA. The request will be assessed by the competent authorities in the new college system to be set up pursuant to the EMIR, with the participation of the HFSA as the designated Hungarian lead licensing authority and the MNB as a cooperating authority based on its oversight responsibilities.

3.2 Clearing and settlement risk

3.2.1 ICS

In 2012, the available liquidity continued to be abundant in the overnight clearing system of the ICS. Queues occurred on a total of three occasions; their aggregate value (HUF 5.6 billion) and in particular the size of the insufficiency of funds[32] (HUF 1.7 billion) have both decreased relative to previous years (Chart 14). During the year, there was one major incident of insufficient funds: in that case, the necessary liquidity was available in the balance sheet of the clearing member concerned (securities available for pledging), but the clearing member failed to provide for its pledging to the central bank in due time. The low number and value of queues is explained by the fact that, after the launch of intraday clearing, a significant part of the overnight clearing turnover was re-channelled to the new platform. In the overnight clearing system, the monthly average turnover fell by almost 80 per cent from its previous level (Charts 4 and 14). The only transactions remaining in the overnight clearing system are paper-based transactions, core direct debits and the transactions of the Hungarian State Treasury.

Chart 14
Turnover and queuing in the ICS
(2011–2013)



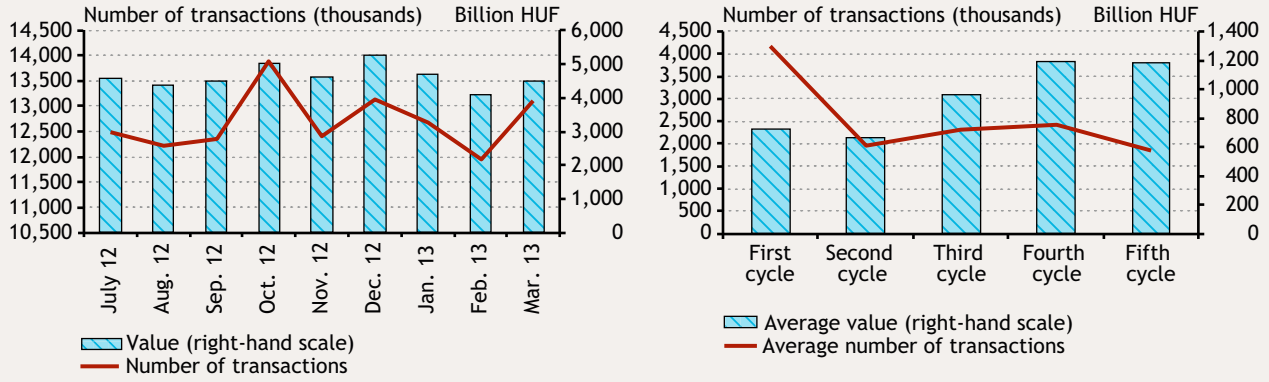
Note: In any queuing event, the line of overnight clearing also includes an 'uncovered portion of the queued amount' (blue column), but this is not always visible in the chart in the case of small-value queued items.

Due to the migration of turnover to the intraday platform, the netting effect in the overnight clearing system has diminished significantly, but this has not increased clearing and settlement risk. ICS overnight clearing operates on a gross basis, therefore settlement is conditional on the availability of sufficient funds. However, on the overnight platform transactions collected for processing can finance each other. In this way, transactions sent by participants to each other are accepted as cover by the receiving bank. This is the netting effect in clearing. The liquidity made available by the MNB to GIRO is used only if the outgoing payments of a participant exceed the sum of transfers received from other participants of the system (it is in a net debit position). The majority of the credit transfer orders of credit institutions (including the ones posted to the Treasury) were migrated to the intraday clearing platform. However, the Treasury stayed in the overnight clearing platform and thus its outgoing payments are executed there. In the overnight clearing system, credit institutions are likely to be in a net credit position, the Treasury in a net debit position. Due to this structural change, the previous net liquidity requirement of around 30 per cent[33] has increased to over 90 per cent in the overnight clearing system. However, this does not mean that the clearing and settlement risk has increased, because the distribution of transactions on a particular intended settlement date is separated between the two ICS clearing platforms. While credit institutions use the intraday platform (for instance, for payments to the Treasury), the Treasury has stayed in the overnight platform (this is where the payments to credit institutions cleared). From the

[32] In the case of insufficient funds, the entire batch is left in the queue in the ICS overnight clearing even if some of it could be executed with the available liquidity. No partial execution of batches is allowed.

[33] On a particular day, the net position of all clearing members in a debit position is divided by the available liquidity of the same clearing members.

Chart 15
Intraday clearing turnover of the ICS by day and cycle
(2012–2013)



Note: The average value on the right-hand chart means the average monthly amount, while the average transaction size shows the average size of a single transaction.

aspect of the Treasury's intraday liquidity management, it would be beneficial if it were to follow credit institutions and re-channelled its credit transfers to the intraday clearing platform.

In the intraday clearing system, the participants have had abundant liquidity in the months since launch. This is the case even though some VIBER transactions have been re-channelled to the intraday clearing system, and thus the value of the ICS turnover has increased. Due to the differences in the clearing systems, this relocation of turnover was not noticeable in VIBER (large-value payment system), while it was conspicuous in the ICS (small-value payment system). Also, it was found that the increase affected the number and value of higher-value transactions in the ICS. After the launch of intraday clearing, the value of transactions in the ICS in excess of HUF 100 million increased by 80 per cent and the number of payments by 50 per cent. In intraday clearing, a large proportion of the turnover in terms of value is cleared in the last two cycles, while in respect of the number of transactions a high ratio is cleared in the first cycle (Chart 15). During the day, as clearing cycles are processed, the GIRO sends a request for collateral to the MNB (intraday clearing settlement platform of VIBER). However, in aggregate, the debit transactions arising from intraday clearing amounted to only 1.5 per cent of the available liquidity of VIBER on average. Only in the last months of the year, which traditionally have higher turnovers (larger household expenditures, fewer ICS settlement dates due to the holidays) and on tax payment dates did it occur that this ratio rose noticeably, but its value was still not critical at below 3.5 per cent.

Box 5
Components of the liquidity of payment systems

The volume of liquidity required for the turnover executed is an important consideration for payment systems. A substantial part of settlement of the cash leg occurs in VIBER (thus both KELER and GIRO submit their cash-side intraday collateral calls to VIBER). The liquidity of VIBER participants consists of two elements: the current account balance and the central bank credit lines backed up by collateral. During the day, the current account balance changes continuously as credits and debits occur, but the possible level is effectively determined by the reserve requirement regime, while the intraday credit line is affected by the list of eligible collateral accepted by the central bank. VIBER participants try to close the credit line used during the day by the end of the day, because while the cost of the use of the credit line during the day is effectively the opportunity cost of the pledged collateral, if the intraday credit remains open at the close of the day of the central bank, it is automatically converted into overnight collateralized credit (on which interest is payable). The overnight clearing of the ICS (which is the start of the settlement date) uses the current account balance at the close of business of the central bank and the credit line freely available at the time for the purposes of the verification of cover. During the intraday clearing, ICS members use the liquidity available in VIBER at the time of the collection of collateral. At present, approximately one third of the liquidity of participant comes from the current account balance and two thirds from the credit line. Government securities and MNB bonds represent the largest portion within the pledged securities portfolio (at approximately 40 per

cent each). However, in addition to the pledged securities, credit institution also have securities in their balance sheets that are available for pledging (eligible securities), which is approximately four times greater than the pledged portfolio. Within the securities pledged and available for pledging, MNB bonds have the highest pledged ratio (i.e. these are the securities that are pledged in the highest ratio within the balance sheets of credit institutions). The ratio is 100 per cent for most credit institutions that hold MNB bonds. This ratio is considerably lower for other securities, ranging from 20 to 80 per cent. Of potential eligible collateral types, the sterilisation instrument of the MNB (at present the two-week MNB bond) has the lowest opportunity cost.

If the range of eligible securities were to be narrowed significantly (either because certain securities were ineligible or no longer existed), the effect would depend on the ratio represented by the security concerned within the liquidity of a particular participant. In addition, the rate of utilisation of the liquidity concerned (primarily the credit line) by the participant is also important. There may be instances where a credit institution pledges a substantial securities portfolio, but hardly ever uses it as most of its turnover can be covered by incoming items or the current account balance. By contrast, there are other credit institutions, mostly ones with a small balance sheet total, whose current account balance is extremely low compared to their turnover. The utilisation of the credit line is substantially higher for these participants. The calculations of the MNB show that if a security with a close to 40 per cent share is no longer available for pledging, it must be replaced in the system in some manner – as currently there are several important participants in the payment system that do not have sufficient securities available for additional pledging that would be required for their payment transactions.

The launch of intraday clearing represented a significant change in the intraday transaction and liquidity management of credit institutions. These institutions are adjusting to this change in a gradual, still ongoing learning process. With the launch of intraday clearing, Hungarian credit institutions effectively need to manage transactions in two clearing systems. In addition, the settlement of intraday clearing is a timed, therefore time-critical, process, which presents an additional challenge for credit institutions actively managing their liquidity and transactions in VIBER. Clearly, participants need time to get used to the new operational model. In the first three months after the launch of intraday clearing, transactions were only rolled over in a few cycles (a total of four occasions on three days).[34] However, from October 2012 the number of transactions rolled over increased (33 instances on 21 days). This affected four credit institutions, including high-turnover VIBER participants. Roll-over occurred most frequently in the first cycle of the day, but each transaction was cleared in the next cycle (roll-over did not spill over to another cycle). Roll-over between cycles in itself does not jeopardise the stability of operation, although it may potentially indicate problems with the liquidity of certain system members. The analysis of the data has clearly indicated, however, that the balance sheet of the participants rolling over had sufficient eligible collateral which still could be pledged. In other words, roll-over was attributable to temporary insufficient liquidity, which was probably due to the fact that participants need to get used to time-critical VIBER transactions appearing in the intraday liquidity (e.g. management of central bank credit line) and transaction management (e.g. posting and timing of transactions) due to the new intraday clearing system.

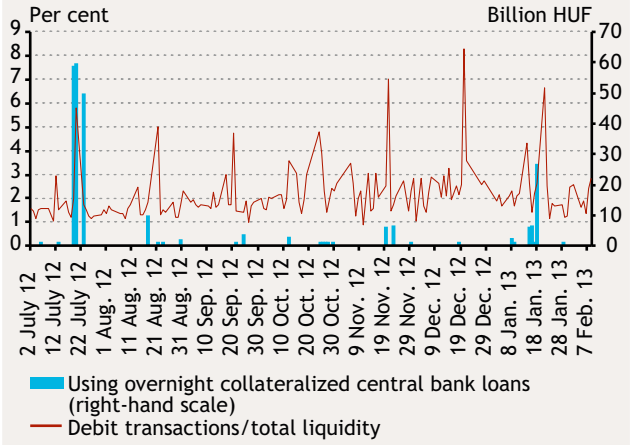
Adjustment is required not only in intraday liquidity management, but also in the end-of-day liquidity management in the maintenance period. The turnover of participants in intraday clearing may be higher than usual on tax payment dates. Moreover, a substantial part of the turnover is concentrated in the last cycles. On tax payment days, there is a substantial (exogenous) credit transfer flow from the clients of credit institutions to the Treasury. From the aspect of the liquidity of the interbank market, this is an autonomous liquidity shock. Because of this, credit institutions cannot necessarily estimate with any accuracy the outgoing transactions to be expected at the end of the day. After the last intraday cycle, they have approximately one and a half hours to redistribute liquidity. The efficiency of end-of-day liquidity redistribution depends on several factors. First, it depends on the timing of the liquidity of the interbank market within the day, which has not adapted to the extension of the VIBER operating hours on 1 January 2012, therefore activity is rather low towards the end of the operating hours of VIBER. Furthermore, it also relevant how much flexibility the reserving strategy leaves in averaging the autonomous liquidity shocks. Early in the month, credit institutions tend to over-reserve, and to offset this, they under-reserve at the end of the month. On tax payment

[34] In intraday clearing, if a transaction cannot be settled in a cycle due to insufficient funds, it is rolled over to the next cycle.

Chart 16

Debit transactions in intraday clearing in the case of the 6 participants with the largest VIBER turnovers and overnight central bank credit taken out in the period

(2012–2013)

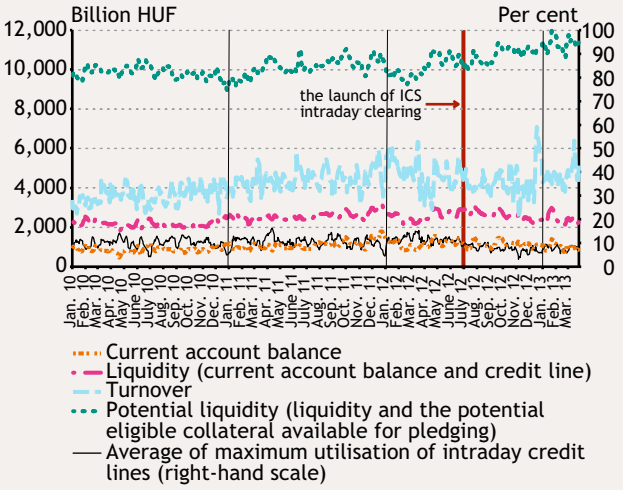


Note: From credit institutions using overnight collateralized central bank loans, participants which are likely to have had a completely different reason for taking out the loan have removed.

Chart 17

Turnover, current account balance, actual and potential liquidity of VIBER participants and maximum utilisation of intraday credit lines (MICL) in the system

(2010–2013)



Note: The figures exclude the MNB and represent a 5-day moving average. Pledged and unpledged eligible securities are aggregated at the acceptance value set by the MNB.

days, credit institutions sometimes need to use an overnight collateralized credit from the central bank at the end of the day (Chart 16). The uncertainty of forecasting of exogenous outgoing transactions in the ICS during the day, the low activity on the interbank market at the end of the business day as well as the normal reserving strategy of Hungarian credit institutions may all have contributed to this phenomenon. The experience gradually gained and the adjustment of credit institutions will definitely help address these issues in the future. The most recent data indicate that the frequency of O/N borrowing from the central bank on tax payment days has been declining.

3.2.2 VIBER

In VIBER, 2012 was a year without any extraordinary liquidity-related events. The available liquidity continued to be abundant, similarly to the previous years. The trend of growing turnover, which had been intact since 2009, broke in 2012. Moreover, the value of daily turnover was highly volatile from the beginning of the year on (Chart 17). Considering that this process clearly started at the end of the previous year and that the redistribution of turnover after the introduction of intraday clearing did not have any significant effect on VIBER in value terms, the hectic turnover probably mirrored the activity patterns of money and capital markets. Transaction numbers increased by 20 per cent during the year, mostly due to the growth in customer transactions. At the same time, with the introduction of intraday clearing some transactions moved to the ICS. In 2012, there was a slight increase in liquidity in VIBER relative to the previous year, mostly due to the four per cent growth in the pledged security portfolio as an annual average. Within the pledged portfolio, the ratio of short-term securities (T-bills and MNB bonds) increased, while the collateral category introduced in 2012[35] represented close to one per cent of the pledged securities on average. As a general rule for VIBER participants, credit institutions with a high turnover relative to their total assets tend to opt for a 5 per cent reserve requirement ratio in the optional reserve requirement ratio regime. This is because the relatively higher current account balance facilitates intraday liquidity management. Large participants did not change their reserve ratios during the year, while several smaller actors made use of the possibility to opt for a higher reserve requirement ratio. This had no substantial effect on the aggregate liquidity level.

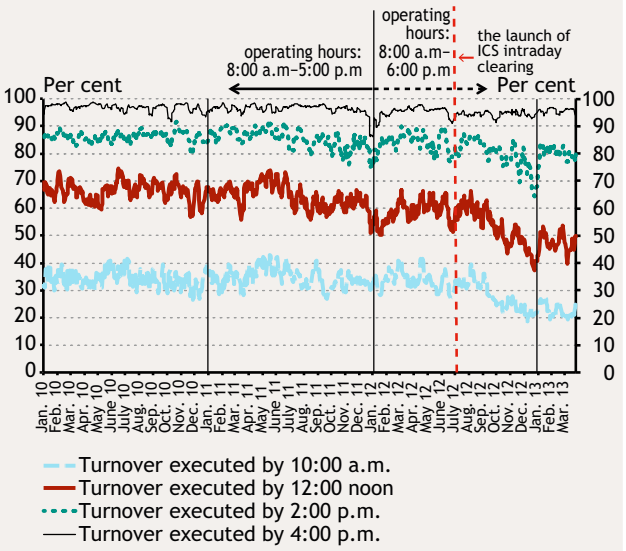
The maximum usage of intraday credit lines (MICL) reflected the volatility of turnover and the more

[35] Government securities issued abroad and pledgeable through KELER, corporate bonds issued by an entity registered in Hungary and in custody abroad as well as FX-denominated securities issued by the MNB became eligible collateral in April 2012.

disciplined spending behaviour adopted as a result of the introduction of intraday clearing. The MICL declined on the level of the system on average during the year while it was close to 90 per cent on certain days and at the individual participant level. The utilisation of the intraday credit line by participants is measured by the MICL[36] indicator. In 2012, the annual average value of the indicator was 9.5 per cent (Chart 17). In the second half of 2012, the MICL declined due to the more disciplined spending behaviour (see next paragraph) resulting from the introduction of intraday clearing. At the individual level, however, the value of the MICL is widely distributed. Some VIBER participants regularly had high MICL values. This, however, stems from a conscious choice in the intraday liquidity and transaction management of the participant and does not present a clearing and settlement risk at the system level because individual institutions' balance sheets continue to have sufficient eligible securities available for pledging (Figure 17). At the individual level, the frequency of MICL exceeding 90 per cent declined significantly relative to previous years, which is probably attributable to the fluctuations of turnover and the stricter spending behaviour resulting from the introduction of intraday clearing.

Chart 18
Timing of turnover in VIBER

(2010–2013)



Note: 5-day moving average.

After the start-up of intraday clearing, VIBER participants shifted the initiation of their transactions noticeably later, whereas they seldom make use of the one-hour extension of VIBER business hours. The change in timing habits did not cause any clearing or settlement problems. While in the first half of 2012 timing was similar to the earlier patterns, VIBER participants have moved their transactions later since the second half of 2012 (Chart 18). The adjustment affected turnover before 4:00 p.m., but not the end of VIBER business hours. On 1 January 2012, VIBER business hours were extended by one hour (until 6:00 p.m.) so that another cycle can be added to intraday clearing and participants have sufficient time after this last cycle to adjust their end-of-day liquidity positions (see Chapter 3.2.1). In contrast, the start of the intraday clearing system had a significant impact on the timing of transactions before 4:00 p.m., which were shifted noticeably later in time. There is some uncertainty in the forecasting of the outgoing exogenous transactions in the ICS intraday clearing system, which VIBER participants try to manage through the timing of other (VIBER) transactions, including stricter rules on the sending of transactions. Intraday clearing in VIBER is time critical, and consequently, participants do not want to risk settlement. Tighter controls on sending is a logical response to the appearance of time-critical transactions. The same thing happened in 2011, when the conclusion of deals and clearing of MNB bonds were move to the same day. The settlement of MNB bond issuance formerly cleared in the early morning hours was moved forward within VIBER business hours,[37] which had an effect on the intraday timing of other items.

[36] The MICL quantifies the daily maximum utilisation of credit lines at the system level (ranging between 0 and 100 per cent). The indicator aggregates the credit line utilisation figures of participants, then compares the daily maximum of this system-level figure within the day to the collateral value of the pledged securities portfolio. The calculation methodology of the MICL was changed in 2012. Previously, the end-of-day value of the pledged securities portfolio was used, while since 2012 the value of the portfolio at the time of the system-level maximum has been applied. This has made the MICL more accurate. It should be noted, however, that the timing of the occurrence of the global (system-level) maximum does not necessarily coincide with the timing of individual (local) maximum values.

[37] As of 1 July 2011.

Box 6
Special settlement risks in the payment and settlement systems. What are the DvP and PvP methods of settlement?

One of the monitored risk types in the risk-based oversight framework is clearing and settlement risk. In the case of the realisation of this risk, the clearing or settlement of (some of) the transactions is delayed or fails. Such a risk may be triggered by the operational or liquidity problems of a participant or in an extreme case its insolvency. However, there are many kinds of (e.g. FX or securities) transactions underlying the turnover in payment and settlement systems, and if they are settled late or not settled at all, this may have consequences over and above the effects on these systems. This is because some money and capital market transactions rely on the exchange of certain assets. Transactions representing the exchange of assets are generally executed in different payment and settlement systems, and their settlement is not always conditionally linked. Consequently, even if one leg of the transaction is not settled in one system due to the insolvency of the counterparty obliged to pay/deliver, the other counterparty may settle his obligation in a different system. As a result, the performing counterparty incurs a risk exposure, which is also called settlement risk in the literature – though this is a special risk relating to the clearing and settlement method of certain transactions (e.g. FX settlement risk).

In view of the significance of this transaction-specific settlement risk, in certain cases payment and settlement systems offer a service to manage or eliminate that risk. The Payment versus Payment (PvP) and Delivery versus Payment (DvP) methods of settlement used in payment and settlement systems allow the settlement of the two transactions relating to the deal to be made conditional on each other. With these mechanisms, counterparties to what are generally FX or capital market transactions can eliminate the risk of losing the entire transaction value in the event of the default of the other party. The PvP and DvP methods follow a similar business rationale, but are different in that in the case of PvP the conditionally linked clearing and settlement procedure connects the two cash legs of the transactions, while in the case of DvP the securities and cash legs are linked.

PvP is used, for instance, in the CLS clearing and settlement method (Chart 19), which was set up to manage FX settlement risk in FX transactions. PvP is also used in VIBER. In this case, however, the risk to be eliminated did not relate to a particular deal, but to the fact that due to the large-value customer payments transacted within the day between large foreign clients of Hungarian credit institutions, the credit institution had to temporarily provide more intraday credit to their clients than they had intended. The central PvP mechanism built into VIBER allows participants to submit the reciprocal payments of their clients for conditionally linked settlement. Even though Hungarian credit institutions specifically requested this VIBER feature, they are not using it. This function is important when settlement limits are tight due to a decline in trust in the market.

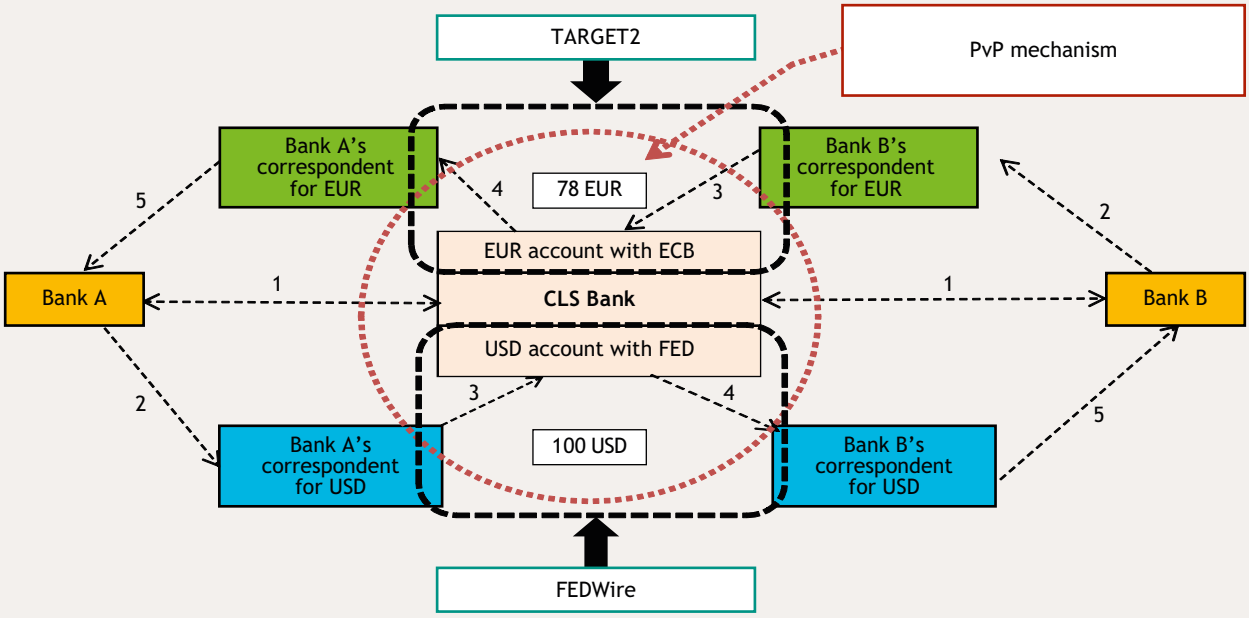
In Hungary, DvP is used by KELER and the MNB (Chart 23). In this procedure, the securities records in KELER are conditionally linked with the cash leg of settlement in VIBER, thereby eliminating the settlement risk of the transactions. However, the systems of KELER and of the MNB must cooperate closely during the procedure (system operational interdependency risk: Chapter 3.3).

3.2.3 A POTENTIAL METHOD TO ELIMINATE FX SETTLEMENT RISK: INTRODUCTION OF THE FORINT INTO THE CONTINUOUS LINKED SETTLEMENT SYSTEM

There is an international clearing and settlement model for the elimination of FX settlement risk (CLS), but at present the forint is not among the eligible currencies. One of the fundamental features of the various alternative clearing and settlement methods to eliminate FX settlement risk (see Box 6) is the linked settlement of the two currencies (conditionally and simultaneously), that is, one side of the transaction is booked only if the other is also booked, and vice versa. The CLS clearing and settlement model offers a solution to this problem (Chart 19). The importance of FX settlement risk is indicated by the fact that in February 2013 the Basel Committee on Banking Supervision published its revised supervisory guidance,[38] in which it calls on central banks and supervisory authorities to encourage the widespread use of the PvP mechanism (and in particular the CLS clearing and settlement method). First, the conditions of starting to use the CLS clearing and settlement system need to be ensured in the case of

[38] *Supervisory guidance for managing risks associated with the settlement of foreign exchange transactions* (BIS, February 2013).

Chart 19
Simplified scheme of the CLS clearing and settlement model of a USD-EUR FX transaction



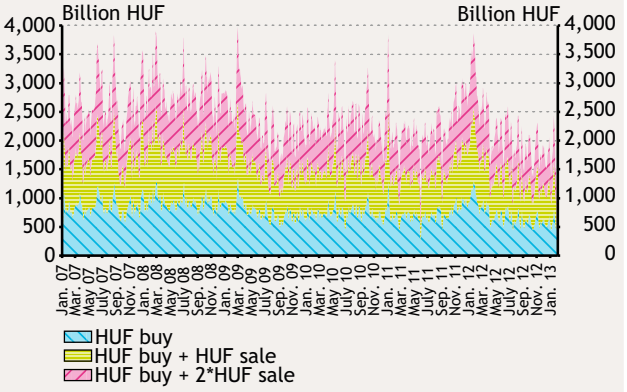
Note: In the example shown in the chart above, bank 'A' sells 100 dollars to bank 'B' for 78 euro. In Process (1) the parties to the transaction submit the transactions to the CLS Bank for clearing and settlement. The CLS Bank matches and validates the transactions received, then following multilateral netting, sends the pay-in and pay-out schedule to the counterparties. In Process (2), based on the pay-in schedule, the counterparties instruct their correspondent banks to transfer the sums to be paid to the CLS Bank (3). These payments generally occur in the local real time gross settlement system (TARGET2 for the Eurosystem, FEDWire for the US). In Process (4) the CLS executes the payouts arising from the FX transactions. It should be noted that clearing and settlement in the books of the CLS Bank requires a strict order. In Process (5), the counterparties receive information from their correspondent bank about their payments.

currencies that are not yet CLS-eligible. The forint is not yet CLS-eligible. The CLS system imposes requirements both on the currency joining and on participants, and the accession process may take one and a half to two years. If the forint were to enter the CLS system, the HUF side would be settled in VIBER.[39]

The data available to the MNB show that Hungarian credit institutions continue to be exposed to a significant FX settlement risk (Chart 20). This applies only to the size of the exposure. The magnitude of the systemic risk depends on the potential contagion paths as well as the probabilities of individual credit risk events and the probabilities of contagion. Based on the data of individual credit institutions, the FX settlement risk is considerably concentrated according to the domestic credit institutions bearing it. The FX settlement exposure-to-capital ratio is several times higher taking into account the Tier1 or the

Chart 20
Estimated size of the FX settlement risk exposure in the Hungarian banking sector[40]

(2007–2013)



Note: 5-day moving average.

[39] For more information, see Tanai, Eszter (2008), Management of FX settlement risk in Hungary (Report II), *MNB Occasional Papers*, 63., http://english.mnb.hu/Root/Dokumentumtar/ENMNB/Kiadvanyok/mnben_muhelytanulmanyok/mnben_op_63/op_63.pdf.

[40] The size of FX settlement risk was measured with two key indicators. The nominal value of HUF-buy FX transactions has been increased by one time the HUF-sell FX transactions for Indicator 1 and two times the HUF-sell value for Indicator 2 (rather, the nominal value of HUF-sell transactions of the current and previous value dates were added, but for simplicity's sake we called this a 'two-time' indicator). For HUF-sell FX transactions, the average 'duration' of FX settlement risk is app. 20 hours (or longer than one day) in the Hungarian banking sector; therefore it is necessary to include the HUF amount sold on a given value date both on the actual value date and on the subsequent working day (as well as holidays). As the 20-hour figure is an average, around which the data vary widely by bank and currency pair, we also consider the one-time HUF-sell indicator to be relevant. The 'real value' must be somewhere in between the two figures.

regulatory capital (its exact ratio varies from institution to institution).

Recently, there has been growing interest in the CLS model. The MNB considers this to be a real opportunity to resolve the management of a sizeable FX settlement risk by the introduction of the forint into the CLS system. Due to the reduction of settlement limits during the financial crisis, credit institutions have repeatedly expressed their interest in the CLS model. Simultaneously, the MNB contacted the CLS Bank to jointly review the criteria of CLS eligibility. The MNB would consider it a major step forward if the forint were to join the CLS system because this would eliminate FX settlement risk in both the local and offshore HUF FX market. At the same time, the commitment of Hungarian and foreign credit institutions is also needed as there is no point in making a currency CLS-eligible if counterparties do not intend to take advantage of this possibility.

3.2.4 SECURITIES CLEARING AND SETTLEMENT SYSTEM

3.2.4.1 Capital markets

In 2012, there were no settlement fails on the derivative market whereas large-value settlement fails occurred on several occasions on the cash market, just as in 2011. After the modification of the settlement deadline, the frequency and aggregate value of settlement fails have decreased. On the markets guaranteed by KELER CCP, a settlement failure occurs if the clearing member does not fulfil its financial, collateral or securities obligations relating to the clearing of transactions and positions in the required manner or in time. The management of such situations is governed by a complex settlement failure management procedure. The latter typically proved sufficient to manage settlement fails without having to resort to guarantee elements. In 2012, settlement fails occurred in the cash market on 16 occasions with a total value of HUF 4.05 billion (Chart 21); in each case, the reason was the lack of the security. Settlement fails are generally due to a failure in the chain of counterparties, but a sudden surge in market turnover may also be the reason. In addition, the relatively early settlement deadline of the cash markets (11:30 a.m.) leaves little time for arranging the OTC transaction which would provide coverage. In order to reduce the frequency of settlement fails, KELER CCP has moved the settlement deadline from 11:30 a.m. to 2:00 p.m. on the cash market as of 4 June 2012. The measure proved to be successful: after the change of deadline, the frequency of fails decreased.

Last year, additional financial collateral was not required due to breaching the market position limits, whilst breaching the capital position limits led to such a measure on 2 occasions involving 1 clearing member. The required additional financial collateral was provided in each case.

Chart 21
Value of settlement fails and the settlement ratio in CCP cleared capital markets
(2011–2013)

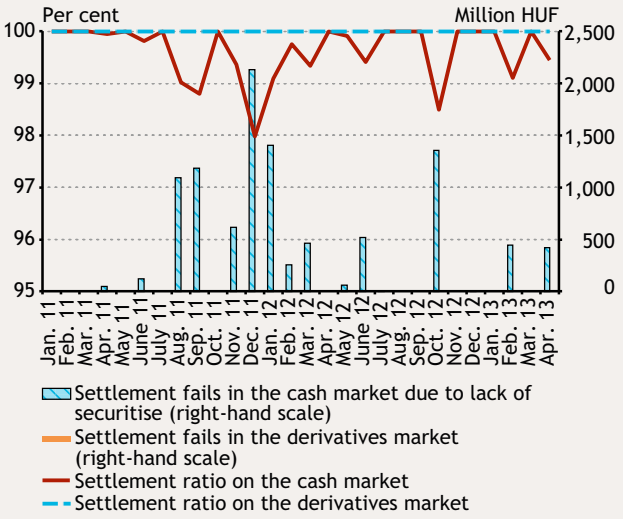
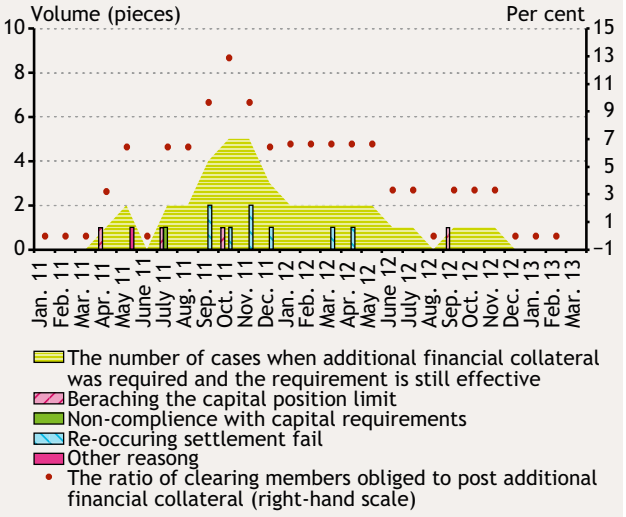


Chart 22
Additional financial collateral required by the central counterparty in the capital markets
(2011–2013)



The securities clearing and settlement system ensures the availability of the DvP service, but clients make little use of this facility. Less than 55 per cent of securities transactions are settled on a DvP basis (Chart 23). The relatively low ratio of DvP transactions (see Box 6) is attributable partly to the legal environment and partly to the

Chart 23
Distribution of transactions volume recorded by the central securities depository

(2012)

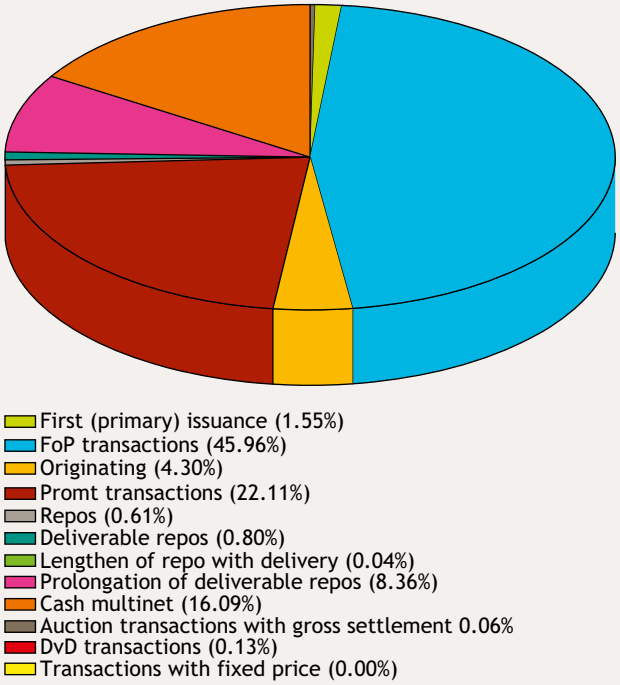
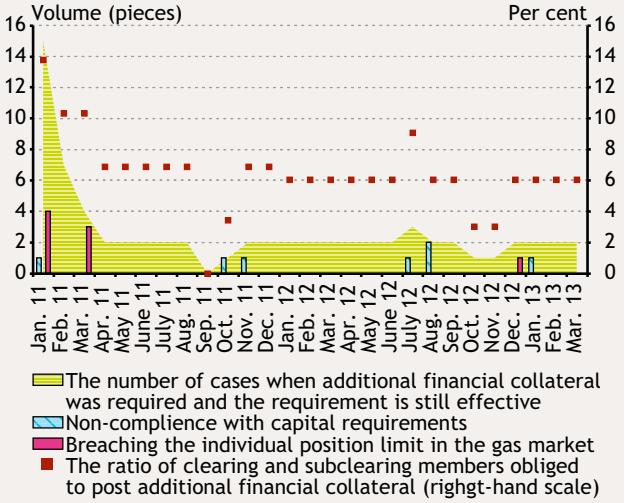


Chart 24
Additional financial collateral required by the central counterparty in the gas and energy markets

(2011–2013)



practices of foreign investors. Even though the DvP service is available in KELER for the physical delivery of cash multinet, prompt, repo, primary market transactions, transactions with fixed price, stock exchange auction transactions and derivative transactions, the clients have the choice. In Hungary, foreign investors tend to use different institutions for brokerage functions and for custodian services, and thus the execution of a single transactions entails two transactions. The broker purchases the security on his own account using his own funds (on DvP basis), then it settles accounts with the custodian (non-DvP basis). The latter could also be performed on a DvP basis, but due to the different fee levels, custodians separate the cash and securities sides of the transaction. In addition to the disincentives in the fee structure, the legal environment also contributes to this situation. The law requires funds to employ four fund managers and one custodian. The transfers between fund managers and the custodian are not settled on a DvP basis because of the reasons explained above.

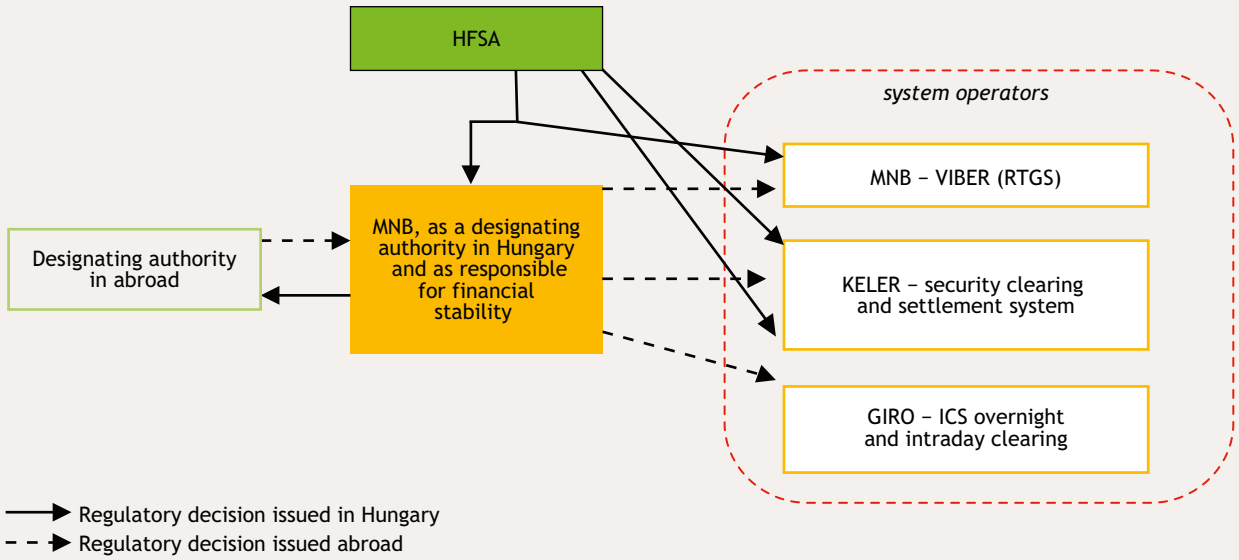
3.2.4.2 Gas and energy markets

In 2012, gas and energy markets showed a low level of clearing and settlement risk. Similarly to the guaranteed capital markets, in order to reduce risk KELER CCP may impose an additional financial collateral requirement on the gas and energy markets or suspend the clearing membership in the case of non-compliance with the requirements necessary for that membership or in other cases (e.g. breaching the position limits). In 2012, additional financial collateral was required on the gas market once due to a breach of the individual position limit and twice because of non-compliance with capital requirements. KELER CCP imposed additional financial collateral requirement once on an energy market sub-clearing member because of non-compliance with capital requirements (Chart 24). Of the oversight recommendations issued after the EMFESZ case in 2011, the legal separation of guaranteeing the capital market and gas and energy markets has still not yet been implemented (Chapter 3.1.2). KELER CCP also still has to define what is considered to be 'a stress event' in the gas and energy markets and to incorporate this into its methodology of stress testing. That is because some segments of the gas and energy markets are exposed to volume-based rather than price-based stress.

3.2.5 EFFICIENT COOPERATION BETWEEN THE MNB, HFSA, MNE AND THE SYSTEM OPERATORS IN THE CONTEXT OF THE PRACTICAL APPLICATION OF SETTLEMENT FINALITY PROCEDURES

Because of the cooperation between the operators of designated systems, the MNB, the HFSA and the MNE, the legal rules applicable in insolvency proceedings against the participants of these systems have been clarified. Based on the discussions of the MNB, MNE and HFSA and at the initiative of the MNB, Act XXIII of 2003 on Settlement

Chart 25
Channels of communication of the decision on the opening of insolvency proceedings in Hungary and abroad



Finality in Payment and Securities Settlement Systems (SFA Act) and Act CXII of 1996 on Credit Institutions and Financial Enterprises (CIFE Act) were amended. The SFA Act lays down the legal bases that ensure the finality of clearing and settlement in the so-called designated systems when insolvency proceedings against the participants are opened. The earlier, so-called '0-hour rule' meant that payment and settlement systems operating during the day had to reverse the clearing and settlement positions, which lead to legal uncertainty. Today, instead, there is a process relying on a supervisory or court notification procedure in the case of the designated systems (Chart 25); after notification the systems must suspend the clearing and settlement of outgoing transactions without delay. However, they do not need to reverse their activities over time. In the SFA Act, in agreement with the HFSA, the list of supervisory measures potentially accompanying insolvency proceedings was amended. A requirement was added to the effect that the resolutions and notifications of the HFSA must explicitly state whether its decision is to be considered as insolvency proceedings and whether the decision is temporary or definitive. This has significantly reduced the uncertainties in interpretation relating to the application of insolvency proceedings. Furthermore, the SFA Act also specifies requirements concerning the channels of communicating regulatory notifications. Considering that the SFA Act regulates the suspension of outgoing (debit) transactions, a consensus was reached among stakeholders that the HFSA would benefit from having a similar tool for incoming transactions as well. Thus, the CIFE Act now provides for the right of the HFSA – exclusively in respect of the direct participants of payment systems (ICS and VIBER) – to also restrict incoming transactions of participants subject to insolvency proceedings, and thus it may prohibit the settlement of such transactions in a separate resolution.

The review of business rules and internal procedures as well as the preparation of cooperation agreements is under way to ensure more efficient implementation of resolutions on the opening of insolvency proceedings. In line with the oversight requirements of the MNB, the operators of designated systems reviewed their processes relating to insolvency proceedings and performed internal testing in conjunction with the review. As a result, the business rules of the ICS and VIBER were modified. The change of business rules due to the reorganisation of the KELER Group (Chapter 3.1.2.) was implemented in 2013, although the KELER Group also conducted the internal tests. In addition to the adoption of internal and external rules, system operators, the MNB and the HFSA decided to lay down certain procedural issues in a cooperation agreement. On 12 December 2012, the tripartite cooperation agreement between the GIRO, the MNB and the HFSA was signed and entered into force. A bilateral agreement between the MNB and the HFSA (VIBER) and a tripartite agreement between KELER, the MNB and the HFSA may be signed in 2013. Comprehensive process tests will then be performed until the end of the year with the participation of stakeholders, for partially by system, and then in combination, so that the operability of processes designed in cooperation is checked and interdependencies between the designated systems are also tested.

3.3 System operational interdependency risk

System operational interdependency risk may typically arise between organisationally separate clearing and settlement service providers, although it may also occur within a single institution even if the clearing and settlement functions are integrated. Monitoring system operational interdependency risk is important, because interdependencies between systems may lead to spillover risk.

Inter-system operational interdependency risk was low in respect of all three overseen systems relative to the previous year. In the ICS, there was only one occasion in the overnight platform when the MNB was unable to pass on to GIRO the liquidity information necessary for the start of the clearing process. Settlement of the ICS intraday clearing suffered no delay due to the MNB or KELER incident. In 2012, a slight increase of the operational interdependency risk was observed in VIBER from the direction of the ICS. GIRO requested the extension of the interbank operating hours on two occasions, for one hour each, due to technical problems in the intraday platform. Overnight clearing caused no system operational interdependency risk. System operational interdependency risk emerged in VIBER due to technical problems in KELER on one occasion; its size was similar to the problem experienced last year. In the securities clearing and settlement system, the MNB initiated the extension of operating hours on only three settlement dates.

From the aspect of VIBER, intra-institutional system operational interdependency risk increased in 2012, due to its cash management system and the MNB's proprietary home account system. For the execution of cash transactions at the counter, there is an interactive connection between the cash accounting system (where physical cash is deposited or withdrawn) and VIBER, where transactions are settled. In some cases, the transaction got stuck in the data transmission applications; however, none of the incidents caused any liquidity shortage in the system. Identification and resolution of the causes of the errors is underway, and meanwhile, transaction flows are being monitored continuously. The proprietary home account system of the MNB is an important interdependent system, because at the opening of the operating day VIBER takes over the task of account maintenance for direct VIBER participants from that system. The proprietary home account system also performs collateral management in special modules. There was one instance of the outage of the core settlement service in VIBER due to the proprietary home account system, which occurred after the launch one of a new system development. Most of the incidents resulting in the outage of complementary services in VIBER occurred because of software errors in the context of change management; consequently, it is important that the effects of system changes be modelled in advance.

3.4 Oversight assessments[41]

The oversight assessments showed that the overseen systems are stable and broadly and fully observed the international principles and recommendations. Last year, the biennial oversight assessment of the Hungarian overseen systems was carried out for the fourth time in line with the requirements laid down in the relevant international standards.[42] The oversight assessments of 2012 took account of and evaluated the condition of the system in the period since the previous assessment, the environment of the system, its operations, developments, related events and incidents. In line with international procedures, the assessment started with a self-assessment-based questionnaire, followed by interviews with system operators and the evaluation of the data, information made available and internal audit findings. Since the previous assessment two years ago, several improvements have been made in the overseen systems that enhanced operational reliability and efficiency. The degree of observance by the overseen systems was either 'broadly observed' or 'fully observed' in every subject (e.g. operational risk, governance).[43]

As a result of the assessment, the MNB recommended some improvements to the overseen systems to promote the further enhancement of operational reliability and efficiency. As a result of the assessments, overseers expect progress in the overseen systems mostly in the fields of change management procedures, accountability, operational reliability, updating of internal rules and business continuity testing. Based on the recommendations of the MNB, the system operators have prepared action plans, and their implementation is in progress.

[41] We have discussed the launch of the intraday clearing system in several sections, therefore this subject is not addressed in detail in this chapter.

[42] Core Principles for Systemically Important Payment Systems (CPSIPS) (BIS, January 2001); Business Continuity Oversight Expectations for Systemically Important Payment Systems (SIPS), (ECB, 2006); Recommendations for Securities Settlement Systems (BIS CPSS-IOSCO, 2001); Recommendations for Central Counterparties (BIS CPSS-IOSCO, 2004).

[43] The assessment was against a scale of four, the rating of the subjects being fully observed, broadly observed, partly observed or not observed. Certain subjects are not relevant for some systems, in which case they were not assessed.

3.5 Efficiency: development projects

The most recent version of SWIFT was installed in VIBER in 2012, which eliminated delays due to the 'morning queuing effect'. The change mainly accelerated the flow of messages to KELER in the morning. Settlement of these transactions is time-critical as it serves to ensure the collateral required for stock exchange clearing. If no response message is received by 08:45 a.m., KELER may interpret this as insufficient cover, which may have consequences for the participant concerned. These transactions have high priority in VIBER; consequently, they must be settled in the first round, before the value-dated transactions. Earlier, such transactions were settled but due to the different priority handling in SWIFT, the response message was delayed (this message serves to inform KELER about the execution of the transaction). The solution of the problem was facilitated by the implementation of the new version of SWIFT as well as increasing the bandwidth of VIBER and of the allowed size of batches to be sent. The resolution of the problem became particularly urgent, because the settlement of intraday clearing occurs through similar message types as the KELER transactions, and consequently, GIRO could have faced similar problems.

In June 2015, upon the launch of the TARGET2-Securities (T2S) pan-European settlement platform, the European post-trading infrastructure will undergo a radical change; KELER will join the system in September 2016. The settlement of cross-border securities transactions continues to be expensive and slow, despite the consolidation attempts implemented. The European Central Bank has been working on the development of the T2S pan-European settlement platform since 2006. The purpose of the platform is to provide a common and harmonised infrastructure in the single European market for securities services, making the settlement of cross-border securities transactions considerably cheaper and more efficient. Following entry, if the cash settlement is in euro, transactions relating to securities kept in KELER will be settled in the T2S system. T2S entry will require KELER to implement major development projects in the coming years; furthermore, Hungarian custodians will also have to adjust to the requirements of T2S. In return, the scope of services offered by KELER will expand and the quality of certain services will improve. Furthermore, the participants of KELER will be able to use a custodian service that will give them access to the entire EUR-denominated European securities market. At start-up, the new system will only allow settlement in euro. Non-euro area central banks (among them the MNB) have decided not to make their currencies available for settlement in the T2S system at the launch of the system. Consequently, HUF securities transactions will continue to be settled by KELER, although the MNB may revise this decision at any time. This may happen primarily if Hungarian securities issuers, in particular the Government Debt Management Agency (ÁKK), request the entry of the forint into the T2S system.

Glossary

4-hour rule

Pursuant to MNB Decree 15/2010. (X. 12.), starting from 1 July 2012, in accordance with the so-called '4-hour rule', the payment service provider of the payer must assure that Hungarian forint credit transfers generated by customers electronically within the time period specified for same-day execution (i.e. before the final submission time) are received by the payment service provider of the payee within 4 hours of acceptance.

Acquirer (payment card)

The payment service provider that the merchant accepting payment for purchases by payment card enters into an agreement to execute transactions. In the course of the clearing and settlement of transactions the acquirer collects and forwards to the merchant the value of card transactions.

Additional financial collateral

Surplus collateral required by KELER CCP from clearing members and power market non-clearing members for guaranteed capital market, gas market and power market transactions.

ATM

Automated Teller Machine, through which cash withdrawals as well as other transactions (e.g. credit transfers) can be executed using payment cards.

Batch processing

Simultaneous collective processing of items received at different points in time which are put in the same group if specific features are identical.

BÉTa

Multilateral trading facility (MTF) operated by the BSE, as a platform for trading foreign stocks in Hungarian forints. The stocks purchased in the BÉTa market are identical with the stocks listed on foreign stock exchanges.

Blue-chip stocks

The most liquid and most traded stocks in a market.

BSE

Budapest Stock Exchange Ltd.

Capital position limit

Quantity of the open derivative positions which a clearing member or client may have as a percentage of equity. At KELER CCP the position limits are calculated by dividing the initial margin requirement calculated by KELER CCP by the equity.

CEEGEX

Central Eastern European Gas Exchange

Central counterparty

The central actor that interposes itself between the counterparties and guarantees the settlement of the transaction even if either party fails to fulfil its obligations.

Central securities depository

Its main responsibility is the safekeeping of printed (physical) securities, the registration of immobilised or dematerialised securities (existing in the form of electronic signals) and the registration of the owners of securities by main

	account. Central securities depositories operate securities settlement systems, in which securities transactions are settled by book entries (that is, without physical movement of the securities).
Chip migration	The equipping of payment cards bearing only a magnetic stripe with chips, simultaneously the enabling of devices handling payment cards to accept chip cards.
CIFE Act	Act CXII of 1996 on Credit Institutions and Financial Enterprises.
Clearing	The acceptance, formal and substantive verification of orders followed by the calculation of the bilateral or multilateral liabilities of clearing members. Liabilities may be calculated on a gross or net basis.
Clearing and settlement risk	A delay or failure of clearing or settlement in the payment or securities clearing system, despite the fact that the clearing or settlement service is uninterrupted. The term 'clearing and settlement risk' is justified by the separation of the two phases (clearing and settlement) in some systems. Depending on the structure of the system, the realisation of clearing risk does not necessarily result in the failure of settlement and settlement risk may occur even if the clearing phase goes smoothly. Clearing and settlement risk may crystallise from the insufficient liquidity or insolvency or operational problems of participants.
Clearing house	The entity performing the processing, clearing and, in the absence of a settlement agent, settlement of transactions.
CLS (Continuous Linked Settlement)	A clearing and settlement model facilitating the elimination of FX settlement risk relying on a multi-currency PvP mechanism. The CLS is operated by the CLS Bank.
Collective guarantee fund	Collateral required by net clearing systems, which is part of the guarantee system and can be used if any of the members of the risk community fail to fulfil their obligations. Its purpose is to reduce losses arising from transaction settlement fails and delays through a jointly owned guarantee fund.
Cooperative credit institutions operating with an integrated model	Cooperative credit institutions signing the 'agreement on the integration of cooperative credit institutions'. They participate in the payment and settlement systems indirectly, through Magyar Takarékszövetkezeti Bank Zrt. as their correspondent bank and they execute their payment transactions through the correspondent bank.
CSDR	Regulation on improving securities settlement in the European Union and on central securities depositories.
Customer payments	Payment orders generated by customers of system participants.
Designated system	The payment and settlement system which the Magyar Nemzeti Bank as the designating authority designates as being covered by the SFA as well as a system operated by the Magyar Nemzeti Bank pursuant to the provisions of the SFA.

Designating authority	The Magyar Nemzeti Bank pursuant to the SFA.
Direct submitter	A customer who has an agreement with the clearing house exclusively for the direct submission to the clearing house of payment orders relating to its own economic management, pursuant to the authorisation of a direct participant and under a clearing arrangement with such participant, who is not considered a participant in the payment system.
DvP	Delivery versus Payment. The settlement method which links the cash and securities legs of orders for the settlement of securities transactions; it assures that the settlement of securities leg occurs only after the settlement of cash leg has been completed, or conversely, the settlement of cash leg occurs only if the securities are available and settlement is assured.
EBPP	Electronic Bill Presentment and Payment
ECC	European Commodity Clearing AG, a Leipzig-based clearing house acting as a central counterparty mainly for clearing in the energy market.
Eligible collateral	The scope of collateral that the MNB accepts as cover for the secured credit transactions it enters into (including intraday credit lines). The types of eligible collateral are listed in the 'Terms and Conditions of the Central Bank's Operations in Hungarian Forint and Foreign Exchange Markets'.
EMIR	Regulation on OTC derivative transactions, central counterparties and trade repositories.
EuroMTS	A multilateral trading platform mainly for secondary market trading in government bonds, where government bond series in excess of EUR 5 billion issued by most European countries are traded.
GIRO	GIRO Elszámolásforgalmi Ltd.
Gridlock	Gridlock may emerge if orders submitted by one or a few participants in the payment or securities clearing system are not settled due to the lack of funds or securities. As a result, the orders of a number of other participants remain unsettled.
Gross settlement	A clearing mechanism whereby only entirely funded transactions are cleared.
Guarantee callable on first demand	For transactions guaranteed by KELER CCP, in addition to the protection offered by the individual and collective guarantee elements, KELER also provides a guarantee to KELER CCP up to a certain percentage of its capital. If in the course of the management of settlement fails KELER CCP needs, over and above the use of individual and collective guarantee elements, to resort to the guarantee callable on first demand, KELER is obliged to make available to KELER CCP funds up to the amount of the guarantee callable on first demand.
HHI (Herfindahl–Hirschman-index)	Indicator measuring market concentration, calculated by summing the squares of the percentage market shares held by the various market participants. Its value may be between 0 and 1. A value close to 0 means the absence of concentration, while 1 indicates a monopolistic market structure.

HFSA	Hungarian Financial Supervisory Authority.
ICS	Interbank Clearing System, a deferred time gross clearing system operated by GIRO Zrt., offering two types of clearing: overnight clearing and, since 2 July 2012, intraday clearing.
Individual guarantee elements	Collateral required by net clearing systems, which are part of the guarantee system and can be used only if the clearing member providing the security fails to settle (in case of the KELER CCP: basic financial collateral, variation margin, initial margin, additional financial collateral, liquidity FX security deposit).
Information asymmetry	A (decision) situation where one of the parties to a transaction has more, or more accurate, information that the other party. This upsets the balance of power between the parties and in the worst case scenario may lead to market failure.
Interchange fee	A fee calculated as proportion of the purchase price and paid by the acquiring payment service provider to the issuer in respect of purchases made with payment cards.
Intraday credit line	Given sufficient collateral, the settlement agent (mostly the central bank) provides intraday credit lines to system participants to facilitate the prompt execution of the payment orders cleared in the system. The scope of eligible collateral is determined by the settlement agent. The credit line and the current account balance of participants together result the liquidity available as collateral for payment orders.
Issuer (payment card)	The payment service provider that makes the payment card available to the card holder and in the course of the settlement of transactions, forwards the value of the transactions to merchants through acquirers.
KELER	Központi Elszámolóház és Értéktár Zrt. (Central Clearing House and Depository Ltd.)
KELER CCP	KELER KSZF Központi Szerződő Fél Zrt. (KELER KSZF Central Counterparty Ltd.)
KGA	Collective Guarantee Fund
KID system	A system that ensures electronic communication between KELER and its clients.
Liquidity	The totality of financial instruments that can be used to settle orders in payment and settlement system.
Maximum usage of intraday credit lines	An indicator calculated for the usage of the central bank's intraday credit line which shows the maximum percentage used in a given business day for the settlement of orders.
MNB	Magyar Nemzeti Bank (the central bank of Hungary).
MTF	Multilateral (alternative) Trading Facility.

MTS	The multilateral trading facility operated by EuroMTS.
Net settlement	In the process of netting, the conversion of the payables and receivables of clearing members vis-à-vis one another into a single payable or receivable by deducting the receivables from the payables. Netting may be bilateral or multilateral. Then the net debit positions thus calculated are settled. If funds are insufficient, the guarantee system of net clearing must be activated.
NFKP	Daily Natural Gas and Capacity Trading Market
Optional reserve requirement ratio	Since the reserving period of November 2010, credit institutions subject to a reserve requirement have been able to choose their reserve requirement ratio. They can change their ratio twice a year (in April and October), and choose between rates of 2, 3, 4 and 5 per cent.
OTC	Over the Counter market (including MTF and OTF platforms).
OTF	Organised Trading Facility
Participant	An entity entitled to send orders to the payment or securities clearing system in its own name or on behalf of its customer. Participants can be direct or indirect, depending on whether they are connected on their own or through another participant.
Payment account	An account held in the name of one or more customers of a payment service provider which is used for the execution of payment transactions, including bank accounts.
Payment service provider	A credit institution, institution issuing electronic money, institution operating the Postal Clearing Centre, payment institution, the MNB and the Treasury offering payment services.
Payment system	In the case of the overseen systems, the form of cooperation based on the agreement between cooperating parties to run the system specified in point 18 of Chapter I of Annex 2 to the CIFE Act. Part of the financial infrastructure. It includes the different means of payment, bank procedures as well as interbank payment systems, which in combination facilitate the execution of payments.
POS terminal	Devices facilitating the execution of payments by payment card (occasionally also the withdrawal of cash) in merchant locations. Information relating to the transactions is collected in electronic or paper formats; the former is the electronic POS (EFTPOS: Electronic Funds Transfer POS), the latter the imprinter.
Post-trading infrastructure	The group of institutions performing clearing and settlement functions after the conclusion of a transaction.
PSA	Act LXXXV of 2009 on the Pursuit of the Business of Payment Services
PSD	Payment Services Directive, Directive 2007/64/EC on payment services in the internal market.

PvP	Payment versus Payment. Simultaneous execution of interbank and customer payment orders of two participants in a payment system, which assures that they are settled when and only when the other party has sufficient funds for the settlement and both orders can be settled.
Queue management	A central procedure whereby the system does not reject temporarily uncovered orders in the payment or securities clearing system, instead, they are put in a queue, then processed automatically when sufficient funds are available.
Risk of service continuity	The disruption or downtime of the clearing or settlement service in the payment or securities settlement system. This is generally attributable to some operational irregularity at the service provider or it may arise from its financing or commercial problems.
Settlement	Execution of payment and securities delivery obligations between system participants. Settlement occurs through accounting records on the accounts kept at the entity functioning as settlement agent.
Settlement agent	An organisation that maintains the settlement accounts of the entities participating in the payment and securities settlement system and the account of the central counterparty, providing the execution of orders and, if necessary, grants credit to an entity or the central counterparty for the purpose of facilitating settlement.
SFA Act	Act XXIII of 2003 on Settlement Finality in Payment and Securities Settlement Systems.
Social cost	It includes the entire resource requirement of the payment chain, that is, the expenditures of all the participants in the payment chain excluding the fees paid by the parties to each other within the chain.
System operational interdependency risk	It may arise if the various interdependent steps in the clearing and settlement process are performed by different service providers. The mostly liquidity-related interdependencies of systems may give rise to contagion.
T2S (TARGET2 Securities)	Pan-European settlement infrastructure for the settlement of transactions in European securities markets.
TEA	Exchange Settlement Fund
Third-party, external service provider	A party not directly involved in the process of clearing and settlement. Mostly performs communication services, supply of software and hardware, other support or outsourced services.
Trading	The mutual contractual agreement between trading members with the purpose of the sale and purchase of financial instruments. Settlement may be through physical delivery or cash settlement.
VIBER	Real time gross settlement system, a payment system primarily for the purpose of settling large-value and time critical transactions. Clearing and

settlement occurs in real time, upon the verification of cover (gross settlement), in a single step. If in the course of the processing immediately following the submission of the transaction there are sufficient funds available, the order is executed finally and irrevocably.

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