



PAYMENT SYSTEMS REPORT



2015

*'Remember to set an example
in everything you do.'*

King Louis I. ('The Great')



PAYMENT SYSTEMS R E P O R T

2015

Published by the Magyar Nemzeti Bank

Publisher in charge: Eszter Hergár

H-1054 Budapest, Szabadság tér 9.

www.mnb.hu

Pursuant to Act CXXXIX of 2013 on the Magyar Nemzeti Bank, the primary objective of Hungary's central bank is to achieve and maintain price stability. One of the main responsibilities of the Magyar Nemzeti Bank (MNB) as set forth in the Act on the Magyar Nemzeti Bank is to promote the smooth execution of payments and to facilitate the reliable and efficient functioning of the payment and settlement systems. The sound and smooth functioning of payments and the payment and settlement systems are essential for the execution of real economic and financial transactions.

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 the responsibilities above. In publishing this report, the MNB wishes to contribute to enhancing the transparency of its activities in relation to payment and settlement systems and the execution of payments, while also endeavouring to enhance financial literacy and hence, raise awareness about payment-related issues.

The analyses in this Report were prepared by the Directorate Financial Infrastructures of the MNB, under the general direction of Director Lajos Bartha. The Report was approved for publication by Dr Ferenc Gerhardt, Deputy Governor. Contributors: Patrik Gergely Balla, Dániel Béres, László Bodnár, Éva Divéki, Miklós Fenyvesi, Gábor József Harkácsi, Tamás Ilyés, László Kajdi, Eszter Király, Miklós Luspay (Head of Department), Beáta Kovács-Papp, Cecília Pintér, Kristóf Takács (project manager), Lóránt Varga (Head of Department).

The key messages of the study as well as the Report were discussed and valuable advice on finalisation of the document was provided at the meetings of the Financial Stability Board on 10 March 2015 and 26 May 2015, and at the Monetary Council meeting on 5 May 2015.

The MNB staff relied primarily on information relevant to 2014, although in a forward-looking manner the Report also analyses the ongoing developments observed in the course of 2015.

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Key messages

In line with previous trends, the use of electronic payment instruments continued to increase in 2014, and the significant development of the contactless card infrastructure may support the further expansion of card usage.

The use of electronic payment instruments continued to gain ground in the past year, with a parallel decline in the number of cash withdrawals. There were no significant changes in respect of the electronic payment infrastructure. Customers' payment account and card coverage did not change, despite the decline observed in the number of accounts. The card acceptance network increased at a slower rate than in the past. The simplification of card payment due to the rapid expansion of the contactless card technology may facilitate increased card usage and thus improve the efficiency of payment transactions. In international comparison, retail payment transactions in particular have ample room for improvement. Even though card payments are still extremely safe by international standards, market participants must make an effort to preserve the existing security level, taking into account international trends.

The pricing of payment services stabilised in 2014, but the role of value-proportional charges remains far more significant than reasonable.

Following the regulatory changes in recent years, the pricing of payment services stabilised in 2014 and, owing to the consumer protection procedures of the MNB, charges for certain services declined slightly. For customers using the option of free cash withdrawal, withdrawal charges fell below the level prevailing before the introduction of the financial transaction tax, and these customers now have free access to cash up to the level of average income. Revenues expressed as a proportion of transaction value represent a significant share within the revenues from payment services, which may point to cross-pricing, as well as the fact that banks pass on the transaction tax to customers. The reduction of the ICS fees for credit transfers was only reflected in customer fees to a limited degree as the application of value-proportional pricing by banks – a practice potentially detrimental to customers – exceeds the level warranted by the financial transaction tax in the case of credit transfers.

Even over the short term, regulatory changes affecting payment services may facilitate more intensive use of efficient electronic payment solutions and improve the transparency of the conditions associated with their use.

Effective as of 2015, the modification of the financial transaction tax with the lump sum duty on card transactions may motivate card issuers to promote card payments, which may facilitate more intensive use of payment cards. During the transposition of the payment account directive, Hungary is also expected to introduce a basic payment account which allows unbanked and inactive customers to access electronic payment services at low costs. Thanks to the directive, the pricing of payment services is expected to become far more transparent in the future. In order to ensure the execution of euro credit transfers in accordance with the uniform European standards, by the end of October 2016 payment service providers and their customers are required to switch to the use of the new standards.

As in previous years, the operation of the overseen systems was highly reliable; however, their risk exposure increased somewhat compared to 2013.

Payment and securities transactions were executed efficiently and safely in the overseen systems, with moderately increased turnover in 2014. Due to a slight increase in the duration of individual incidents, service continuity risk rose to a small extent in the payment systems, but improved moderately within the KELER Group. In 2014, in respect of transactions processed in the payment systems, the clearing and settlement execution time remained favourable. During the year, the average execution time of bank-to-bank and customer transactions was one and a half minutes in VIBER, and the average duration of clearing and settlement in the ICS was approximately 10 minutes per intraday clearing cycle.

The liquidity available for executing payment transactions decreased compared to the previous year, requiring adjustment in banks' liquidity management.

Although there was sufficient liquidity in the payment systems in 2014 both at system level and on an individual bank basis, clearing and settlement risks increased somewhat. As a result of the Funding for Growth Scheme (FGS), within the security portfolio pledged by banks in favour of the MNB the share of securities providing the source of liquidity for payment transactions declined further, but thanks to banks' adjustment, this did not increase clearing and settlement risks. The modification of the monetary policy instruments in August 2014 slightly increased such risks, as the MNB's key policy instrument, the two-week MNB bill, was removed from the group of eligible central bank collateral, which reduced the amount of available liquidity even further. In order to replace the liquidity shortage, participants purchased a substantial amount of government securities on the one hand, and improved their liquidity management on the other hand.

According to the on-site inspections performed in 2014 payment transactions were basically executed in compliance with regulations; however, some violations were detected which affected a broad range of customers.

The provisions of the Act on payments services significantly widened the scope of payment inspections performed in 2014, while the number of on-site inspections continued to increase. Key violations involved faults arising from the failure to provide required information, and problems affecting a broad range of consumers, such as charges imposed by banks for account statements that are to be provided free of charge. In general, the inspections found that all inspected credit institutions had committed violations. In consideration of the magnitude of the violations found, the MNB imposed fines amounting to a total of HUF 62.5 million.

On 4 July 2014, KELER CCP obtained the license prescribed by EMIR, bringing its operations in line with the requirements of the European Union. The adoption of the new EU regulations (CSDR) requires KELER to apply for a license under CSDR in 2016.

KELER CCP's continuous compliance with the requirements is reviewed once a year by an international authorisation college. Another member of the KELER Group, KELER, is required to meet the criteria of EU regulation on central securities depositories effective from 2014; accordingly, the relicensing of KELER under the CSDR is expected to take place in 2016. The CSDR prescribes tighter rules, *inter alia* in respect of securities reconciliation and continuous monitoring of settlement defaults.

Upcoming developments affecting credit transfers will accelerate domestic payment transactions and expand the range of electronic payment options.

From September 2015, domestic payment transactions will accelerate further as the clearing cycles of credit transfers will be doubled. As a result, credit transfers initiated during business hours are expected to reach the beneficiary within an hour. In addition, the extension of the operating hours of the ICS will ensure that domestic credit transfers are executed faster over a broader time range. The earlier execution of the first clearing cycle benefits households primarily, while corporations may take advantage of the fact that the timing of the last cycle is shifted to a later hour. From 2016, paper-based credit transfers and the transactions of the Hungarian State Treasury also will be processed during the intraday clearing system; however, in case of the latter, it will be necessary to manage the problems arising from the large number of transactions on peak days.

As a result of the developments affecting small-value payment transactions, electronic payment options may become widely available both in retail trade and in the area of regular bill payments.

The reduction of interchange fees lowered merchant-side card acceptance costs, resulting in substantial savings for the merchants with the largest turnover. In their case, the difference between the costs of cash payments and card payments was reduced to a minimum. Consequently, in the future, larger merchants should actively contribute to improving the efficiency of domestic payments and participate intensively in the promotion of card usage. Developments affecting bill payment services widen the range of electronic bill payment options with a potential increase in the number of customers opting for quick and simple electronic payment solutions.

The roll-out of the CLS system commenced in October 2014, and the foreign exchange settlement risk between the forint and other CLS currencies may be eliminated as early as the end of 2015.

The diligence phase of the CLS accession project was completed at the end of 2014 and accordingly, both the MNB and CLS decided upon implementation of the system. In this context, the tasks ahead include the clarification of legislation, the harmonisation of IT systems and the modification of the central bank's account management policy and business terms. The foreign participants of the system must find a forint account manager through which they can execute their settlements. In addition, Hungarian credit institutions must also build up their own access to the system. It is a priority objective of the MNB to ensure that Hungarian banks settle their own foreign exchange turnover using the CLS service. There is a sufficient amount of liquidity in VIBER for the processing of morning settlements; however, the redistribution of the liquidity may appreciate the role of the Hungarian interbank market after the launch of the system.

In 2014, the risk-based oversight framework was renewed with the implementation of the new international principles of financial market infrastructures in the Hungarian oversight practice.

Incorporating lessons learned from the recent financial crisis, the BIS and IOSCO renewed and harmonised existing international oversight principles, and in 2012 they published a publication (PFMI) containing 24 principles to be observed. As the incorporation the PFMI into respective national practice falls within the competence of individual countries, the risk-based Hungarian oversight framework has been revised in view of the specific characteristic of domestic financial market infrastructures. With this, the MNB follows practices which are also forward-looking and exemplary at the international level. The revision of the framework relied on the currently used risk-based approach. The new principles were fully incorporated into the revised regulatory framework. In 2015, the biannual comprehensive oversight assessment of the overseen systems, which is designed to assess the systems' compliance with international principles and recommendations, will already be performed on the basis of the renewed framework.

The main purpose of the guidelines on the security of internet payments is to prevent fraud and abuse related to internet payments and hence to maintain confidence in payment methods.

For the efficient prevention of fraud associated with internet payments, it is necessary to develop international security requirements and regulations for internet payments and incorporate them into the oversight of payment instruments. The MNB assesses compliance with the new requirements released by European Central Bank and European Banking Authority. As a first step it has been started to assess compliance with the guidelines of the domestic payment service providers through a self-assessment questionnaire which is expected to be followed by regulatory steps as well.

1 Introduction

One of the main responsibilities of the Magyar Nemzeti Bank (MNB) as set forth in the Act on the Magyar Nemzeti Bank is to promote the smooth execution of payments and the reliable and efficient functioning of the payment and settlement systems.

If fast, secure and cost efficient electronic payment methods were even more broadly used by economic agents, it would save significant resources in payment transactions at the level of the society. This requires, however, the possibility of the simple and safe use of electronic payment instruments besides cash usage in most payment situations, at low and transparent costs. In addition, it is also essential to ensure that the Hungarian payment and settlement systems support the execution of the real economic and financial transactions initiated by economic agents by providing high quality services in accordance with regulations. Consequently, oversight of the payment and settlement systems is a key responsibility of the central bank. The reliability, efficiency and liquidity management of the systems and the relevant interdependent services are monitored and analysed in a risk-based oversight framework.

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. The more extensive use of electronic payment instruments may have a number of positive effects on the Hungarian economy. It can help improve the efficiency of payments, reduce the resource requirement of transactions and repress the shadow economy, which in turn promotes 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 requirements laid down in decrees issued by the Governor of the MNB. Compliance with the requirements set out in decrees

and in the Act on the Provision of Payment Services is monitored by the MNB.

The first part of this Report presents the trends in the development of Hungarian payment methods and instruments, as well as the changes affecting the efficiency of payments and developments related to the operation and oversight of the Hungarian payment and settlement systems. In addition, it addresses the audit experiences pertaining to the execution of payments, current issues in domestic and international regulatory activities, and the operational transformation of the securities clearing and settlement system. The Report subsequently provides a detailed description of ongoing and pending developments in the area of domestic payments, and elaborates on the renewed and expanded oversight tasks.

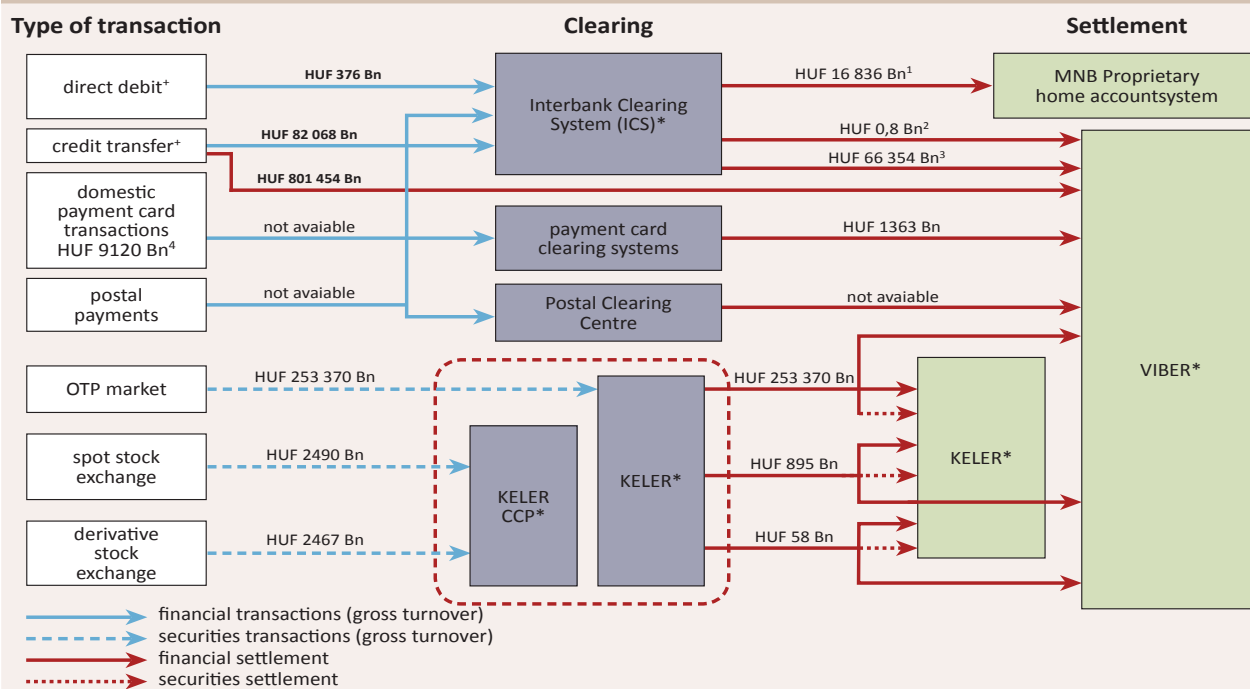
- The continuous enhancement of payment services facilitates reduction of the social costs associated with payment transactions and the fast and safe execution of transactions. Owing to the upcoming enhancements of credit transfers, domestic payments are expected to accelerate even over the short term, and the ongoing enhancements affecting electronic bill payments will make these services available for broad segments of the population. After the reduction of payment card acceptance costs, merchants must participate actively in the promotion of card usage.
- The oversight of payment and securities clearing and settlement systems supports the safe and efficient operation of the overseen systems and hence, the maintenance of financial stability. With the renewal of the Hungarian oversight framework, the systems will have to meet a broader scope of tighter requirements. The extension of oversight activities will enable the monitoring of the entire process of transaction execution.

2 Operation of the domestic payment system

The sound and smooth functioning of payments and the payment and settlement systems are essential for the execution of real economic and financial transactions. Account-based payments and securities transactions require centralised systems for the clearing and settlement of transactions. The Hungarian Real-Time Gross Settlement System (commonly referred to as VIBER) is operated by the MNB. Its primary purpose is the settlement of large-value and time-critical financial transactions and, since 2012, the intraday clearing of the Interbank Clearing System (ICS). The system is primarily intended to ensure the settlement of items related to the execution of time-critical money and capital market transactions and other urgent customer orders. ICS is a domestic, gross retail clearing system operated by GIRO Zrt. (GIRO), offering two clearing methods: intraday and overnight clearing. GIRO performs the clearing

of payment orders, while the MNB, as settlement agent, is responsible for settlement. The 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. Members of the KELER Group, the central securities depository (KELER) and the central counterparty (KELER CCP), are responsible for securities clearing and settlement services, and the registration of domestically issued securities (Chart 1). In accordance with European Union regulations and international guidelines, the Hungarian securities clearing and settlement system has been transformed in recent years, and the central securities depository and central counterparty functions have been separated from each other even at the organisational level. The oversight activity of the MNB covers the operations of VIBER, the ICS, KELER and KELER CCP.

Chart 1
Overview of the Hungarian financial infrastructure



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.

*= On-us transactions are not included.

*= Overseen systems.

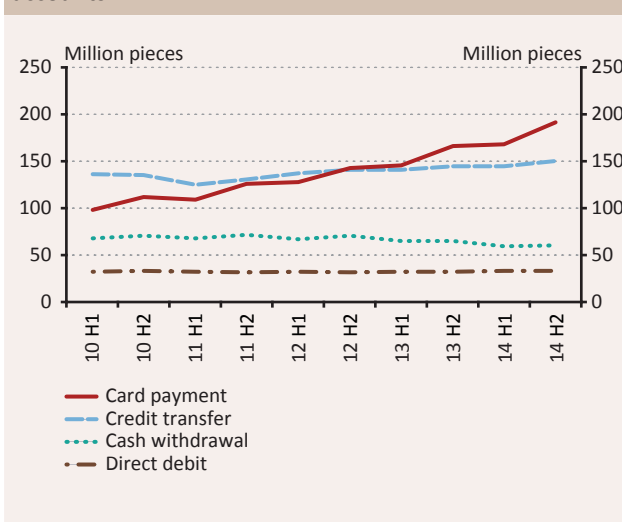
2.1 Development of payment methods and instruments

2.1.1 TURNOVER OF MAIN PAYMENT INSTRUMENTS

In 2014, domestic electronic payment methods developed in line with the trends from previous years, and the turnover of electronic transactions continued to steadily increase. The volume of payment card purchases also continued to increase: there were 359 million purchases with domestic cards in 2014, up 16 per cent compared to the previous year. Consistent with the trends from previous years, there was a moderate increase in the number of credit transfers, which approached 300 million in 2014. Similarly, 2014 saw a slight upward shift in the use of core direct debit, with a 2.4 per cent increase in the number of transactions compared to the previous year. The number of cash withdrawals was down 8 per cent (Chart 2).¹

The coverage of the payment infrastructure did not change significantly; access to the electronic payment infrastructure remained largely the same both on the customer and the beneficiary side. Although the number of payment accounts held by natural persons declined by about 300,000 in 2014, compared to the 9.4 million total number of accounts, this contraction cannot be considered significant. The share of debit cards within the stock of payment cards dropped slightly during the year but, with a roughly corresponding increase in the number of credit cards, the number of cards did not change noticeably and remained close to 9 million. Similarly, developments in the payment card acceptance network were also more or less in line with the trends from previous years. In 2014, the number of merchants accepting payment cards rose by less than 1 per cent, while the number of POS terminals was up 3 per cent. Although this represents a slowdown compared to the growth rate of previous years, modernisation of the infrastructure continued with the large-scale installation of

Chart 2
Turnover of main transaction types related to payment accounts



contactless terminals. By contrast, the rapid expansion of card payments on the Internet continued: at nearly 6,700, the number of online points of sale rose by 47 per cent in 2014. There were no material changes in the cash withdrawal infrastructure: while the number of ATMs increased by 1 per cent, POS terminals installed in branches and post offices fell by 1.5 per cent. Based on a 2014 survey² on households' payment habits, bank account and bank card coverage in the household segment is high. Of the adult population, 76 per cent have access to a bank account and 72 per cent have bank cards; at the household level this ratio is even higher. These values are not very different from the results of previous surveys, suggesting that the recent decline in the number of payment accounts can be primarily attributed to the rationalisation of households' access to financial services: in order to reduce service charges, households terminated their unused secondary accounts. When asked for their reasons, the majority of unbanked respondents stressed that they did not need a bank account or

¹ The detailed payment statistics are included in the payment table set available on the MNB's website: http://english.mnb.hu/Statiztika/data-and-information/mnben_statiztikai_idosorok/mnben_penzforgalmiadat_en/payment-data

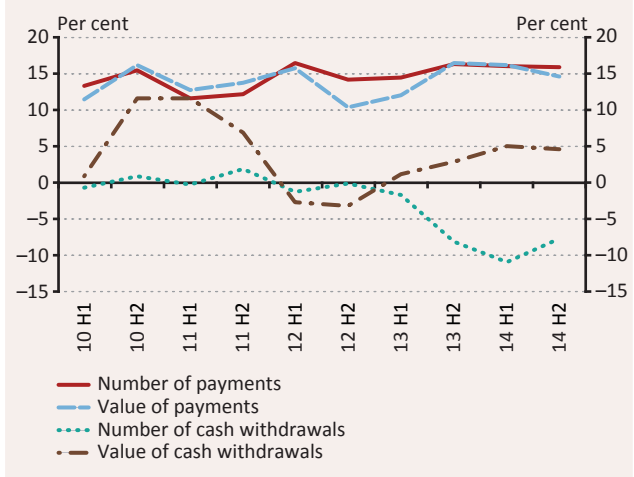
² Tamás Ilyés – Lóránt Varga: An analysis of the socio-demographic factors influencing the payment habits of Hungarian households. Financial and Economic Review, June 2015.

a bank card. Apart from this, although at a far lower ratio, the most frequently cited reasons included the high maintenance costs of bank accounts and cards. It is noteworthy that safety concerns were among the least frequently cited reasons. There is no significant relationship between income received in cash and respondents' perception of not having a need for bank cards. Similarly, there is no meaningful relationship between the value of the income credited to a bank account and the need for a bank card. Those who hold a bank account but do not have a bank card receive two to three times more income in cash than those who have a bank card.

In the execution of payments, the trend seen in recent years in payment card transactions continued: while the number of card purchases rose, the number of cash withdrawals declined somewhat. The most significant increase in the number of purchases made by payment cards issued in Hungary was observed in the second half of 2014 (Chart 3). There were more than 335 million domestic purchase transactions, representing a nearly 20 per cent increase compared to 2013. The total value of domestic purchases rose by a similar degree, 18 per cent, and exceeded HUF 2,300 billion in 2014. As regards the types of purchase transactions, there was a steep rise in the turnover of online purchases. The number of domestic card-not-present purchase transactions with cards issued in Hungary was up 42 per cent compared to 2013, far outstripping even the rapid increase observed in purchases made on physical merchant POS terminals. At HUF 7,400 on average, the value of card purchases did not change significantly in 2014. Over HUF 10,500, the average value of online purchases was still considerably higher than that of traditional, physical transactions last year. In 2014, the number of cash withdrawals with payment cards decreased by more than 9 per cent to 106 million transactions. Despite the decline, the total value of cash withdrawn rose by 5 per cent to HUF 6,287 billion, which means that the average value of such transactions was close to HUF 62,000. The average value of ATM transactions, which account for the majority of cash withdrawals with card, was under HUF 56,000. The introduction of the option of free cash withdrawals twice a month may have contributed to the rise in the average value of card cash withdrawals observed last year. Household customers may take advantage of this option to withdraw more funds with their payment cards with fewer transactions and hence, reduce their transaction costs. As a result of the continuous increase in card

purchase turnover, the number of transactions is more than triple the number of cash withdrawals, while in terms of value, the cash withdrawal turnover is still two and a half times higher than card purchase turnover. Although there are some differences between the various demographic groups in respect of access to the payment infrastructure, the intensity of the infrastructure's use does not depend on these factors primarily in the case of those who otherwise have bank accounts. Cash purchases represent a large share of the payment transactions executed by households, especially in the case of lower value transactions. As regards electronic payment methods, households continue to use them less frequently, typically for the execution of larger amount payment transactions.

Chart 3
Annual growth rate of transactions made by payment cards



Thanks to the quick and simple payment process, the contactless technology may contribute to improving the efficiency of payment transactions. The rapid development of the contactless infrastructure seen in recent years continued in 2014 as well, and contactless cards took another large step forward last year in respect of their possible uses. By the end of the year, 3.7 million payment cards were equipped with the contactless functionality. This means that the number of contactless cards doubled within a year, and their ratio rose to 41 per cent. The number of terminals supporting contactless payment increased by 38 per cent in the acceptance network, bringing up the ratio of contactless enabled POS terminals to 48 per cent. Contactless payments are one of the most dynamically developing areas of card payments; the number (47.4 million) and total value (HUF 175 billion)

of such transactions has more than tripled since 2013. Even so, at 13 per cent, the ratio of contactless transactions to the total turnover of card purchases is far behind the level warranted by the infrastructure's level of development. It can be observed that, customers tend to use the contactless functionality mainly for small-value transactions. The average value of these transactions is HUF 3,700 – merely a half of the average value of transactions executed by using traditional methods. In addition to quick transaction processing, the contactless technology enables self-service payment as well. Accordingly, it may further simplify card payment, and also boost customers' confidence by allowing them to pay without handing over their cards. Because of these advantages, this payment method is likely to gain prominence in larger-value transactions as well.

The fraud ratios in the Hungarian payment card system are low in international comparison as well, but market participants must make further efforts in order to maintain these levels. In the first half of 2014, damages from a total of 7,600 fraud events in relation to domestic payment card transactions amounted to HUF 267 million, or 0.006 per cent of the combined turnover of card purchases and cash withdrawals. As for the direction of the transactions, fraud affected mainly cross-border turnover. On the acquirer side, only 893 fraud events were recorded, causing HUF 29 million in damages. Domestic card payments remain safe in international comparison. According to the latest survey of the European Central Bank based on data pertaining to 2013, Hungary is among the EU Member States recording the lowest ratio of payment card fraud to transaction turnover. It is important to stress, however, that all participants of the card payment system must step up their efforts to maintain this level of security. Given the large scale of international card fraud events, security enhancements in other countries may be detrimental to the domestic security level by shifting card fraud toward the direction of Hungary. Thus, both the number of fraud events and the fraud to turnover ratio may rise if the level of domestic payment card security solutions is not on par with international standards, as the Hungarian payment card infrastructure may become a target of perpetrator groups expelled from other countries. Payment card fraud mainly affects card-not-present purchases, primarily those

made on the Internet. The extensive use of one-time codes and even the introduction of the geographical restrictions (geoblocking) already in place in several countries may contribute to curbing fraud committed with such transactions. In this context, as a default, the issuer restricts the use of cards in the countries deemed most affected by fraud, while the restriction can be lifted any time at the request of the cardholder. Another solution could be the restricted use of the magnetic stripe on the payment card: with this method, the use of payment cards can be restricted in countries that pose higher risk for fraud, i.e. those without a chip card payment infrastructure in place.

Despite the expansion of electronic payment turnover, the volume of currency in circulation increased further in 2014. Last December, the average monthly volume of currency in circulation was around HUF 3,800 billion, up 16 per cent compared to the previous year. Demand for currency in circulation is essentially made up of the following factors: currency demand for the purposes of transactions, savings, and the cash demand perceived in the shadow economy. The upward shift in the retail sales volume in recent years may have boosted transaction-related cash demand, despite the increase in the ratio of electronic payment methods to retail transactions and to regular bill payments in 2014. However, through heightened currency demand for savings, the low interest rate environment may have been an even more important contributor to the increase in the volume of currency in circulation. Changes in the regulatory framework of cash withdrawals may also influence the demand for currency. Previous analyses have found that preferential or free cash withdrawal options tend to have a significant impact on cash withdrawal habits. According to payment statistics, the average value of cash withdrawals was on a steady rise after the introduction of the free cash withdrawal option in February 2014. This may indicate that, taking advantage of the opportunity to save costs by the free cash withdrawal option twice in a month, retail customers opt for getting a larger amount of cash with a reduced number of transactions. It is noteworthy, however, that the average turnover of household cash withdrawals is still lower than the limit ensured by law for free withdrawals, and thus the vast majority of household customers continue to have access to cash free of charge.

2.1.2 EFFICIENCY OF DOMESTIC PAYMENTS IN INTERNATIONAL COMPARISON

In 2014, indicators monitoring the efficiency of domestic payments continued to rise. The use of electronic payment methods increased further during the year, gradually bringing Hungary's payment efficiency indicators in line with the values of the European Union. The ratio of credit transfers – the electronic payment method with the highest turnover, mainly used by corporations and other institutional actors – to GDP is close to the EU average. The annual value of credit transfer transactions initiated by customers in Hungary is more than sixteen times higher than Hungarian GDP.

Households' use of electronic payment instruments still lags behind the EU average; although the direction of the progress is favourable, its pace is slower than desired. There is ample room for improvement in electronic purchases as well, but the most significant shortfall in EU comparison primarily affects electronic bill payments. The share of electronic – typically card – purchases in the consumption of households is less than 15 per cent compared to the European average of 28 per cent. Since, for the time being, innovative electronic payment methods have low prevalence in Hungary, payment card transactions practically cover all electronic purchases. In view of this, there is still plenty of room for improvement. This could be supported by new payment solutions, for example, by the spread of the contactless card technology or the introduction of mobile payment services. By international standards, Hungary lags

significantly behind in respect of the electronic payment of utility bills and other service charges as well. In Hungary, customers paid a quarter of their annual bill payment transactions with electronic payment methods in 2014, compared to 70 per cent in the European Union. The 25 per cent electronic bill payment ratio is extremely low also in consideration of the fact that the vast majority of electronic payment transactions could be executed through the use of core direct debit. The ratio of electronic bill payments may be improved in the future by the enhancement of postal payment services, the widespread use of electronic bill presentment and payment solutions and the market introduction of certain innovative bill payment solutions (Table 1).

2.1.3 PRICING OF PAYMENT SERVICES

In 2014, the MNB implemented the payment pricing monitoring system enabling the detailed analysis of the effects of market and regulatory changes on the service charges of customers and the revenue structure of service providers. The pricing of payments may influence the choice between different services and as such, it may also affect the utilisation of more efficient payment instruments. In using payment services, the actual costs of retail customers are not transparent in many cases due to the complexity of the various service packages, the numerous discount systems and cross-pricing between different services. It is therefore extremely difficult to ensure that customers have clear and comparable information about the charges imposed on them. The pricing monitoring system offers an accurate view of the price formation of payment services at the level of

Table 1
Changes in indicators measuring the level of development of Hungarian payment services compared to the EU

Indicator	Calculation method	Hungary 2013	Hungary 2014	European Union 2013
Credit transfers	Annual value of credit transfers / GDP	15,8	16,1	17,2
Electronic payment of retail purchases	Annual value of payments made by payment cards and other electronic solutions / Annual household consumption	12,8%	14,9%	27,9%
Electronic payment of utility bills and other service charges	Estimated annual value of direct debits and other electronic bill payments / Estimated annual value of bill payments	24,3%	25,4%	70%*

* Estimated value based on the data supply of individual EU Member States, per capita core direct debit figures and the study of Deutsche Bank (2005).

Source: MNB, ECB

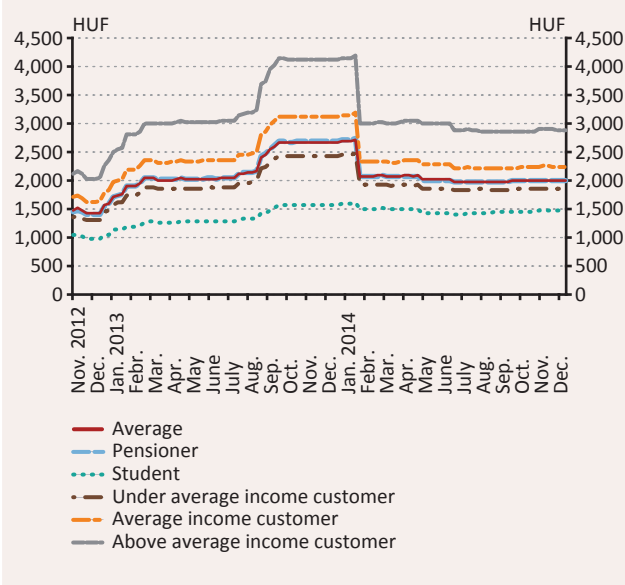
payment services on the one hand, and by providing details on service providers' revenues from payment services on the other hand. The lists of the terms and conditions for retail customers collected by the MNB cover the services used by the vast majority of customers. Meanwhile, data pertaining to the revenue structure give an insight into the level and structure of the charges imposed on the entire customer base of payment service providers broken down by main payment services.

2.1.3.1 CHANGES IN THE PRICING OF RETAIL PAYMENT SERVICES AND THE PAYMENT CHARGES OF RETAIL CUSTOMERS

While several regulatory changes affected the pricing of payment services in 2013, since the beginning of 2014 the average costs of retail customers using payment services have stabilised. The payment pricing monitoring system³ developed by the MNB has been monitoring the changes in retail payment services since the end of 2012. In the past two and a half years, the fees of payment services have changed considerably as a result of regulatory changes. This led to significant changes in the average monthly costs of customers as well. In 2013, changes in the pricing of payment services were mainly driven by the pass-through of the financial transaction tax: accordingly, the introduction of the transaction tax and the raising of the tax rate increased the affected service charges⁴ to a considerable degree. The adoption of the regulation on free cash withdrawals in 2014 reduced the charges payable by customers, including their average monthly payment transaction costs. Subsequently, the pricing of Hungarian payment services remained essentially stable, with the exception of a moderate reduction arising from the modified terms and conditions resulting from the consumer protection procedures conducted by the MNB. The pricing changes of recent years affected individual client segments to a different degree. The high-income segment, which is the most intensive user of electronic payment methods, was affected more strongly, while students comprised the least affected segment. As a result of the free cash withdrawal regulation, monthly average costs were reduced to the largest extent in the segment composed of high and average income customers (Chart 4). From 2015, the monitoring system was extended to

additional payment services and to phased out account products which, nevertheless, may have involved a large customer base. Due to the methodological changeover data are not directly comparable; however, indirect comparison checking indicates that the charges imposed on retail customers did not change at the beginning of 2015.

Chart 4
Changes in the average monthly payment costs of retail clients

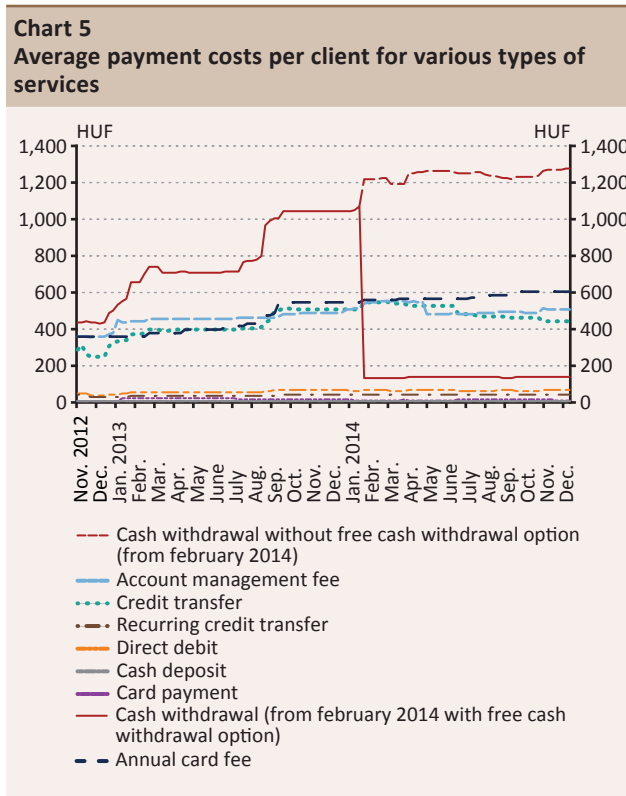


Cash withdrawal costs declined significantly for customers taking recourse to the free cash withdrawal option in 2014 and, thanks to the regulation, most retail customers have free access to cash. Looking at the average monthly costs of the main services, cost elements related to withdrawal increased to the largest degree. From February 2014, however, for customers taking recourse to the free cash withdrawal option, i.e. 78 per cent of retail customers, cash withdrawal costs dropped to the level prevailing before the introduction of the financial transaction tax in November 2012. Parallel to the introduction of the free cash withdrawal regulation, the charges of non-complimentary cash withdrawal were raised significantly, primarily increasing the costs of those customers whose cash withdrawal exceeds the limit defined in the regulation. Although this reduces the need for excessive cash usage, it is not detrimental to the vast majority of retail customers, as they typically withdraw less

³ For further details on the payment pricing monitoring system, see the 2014 Payment Systems Report.

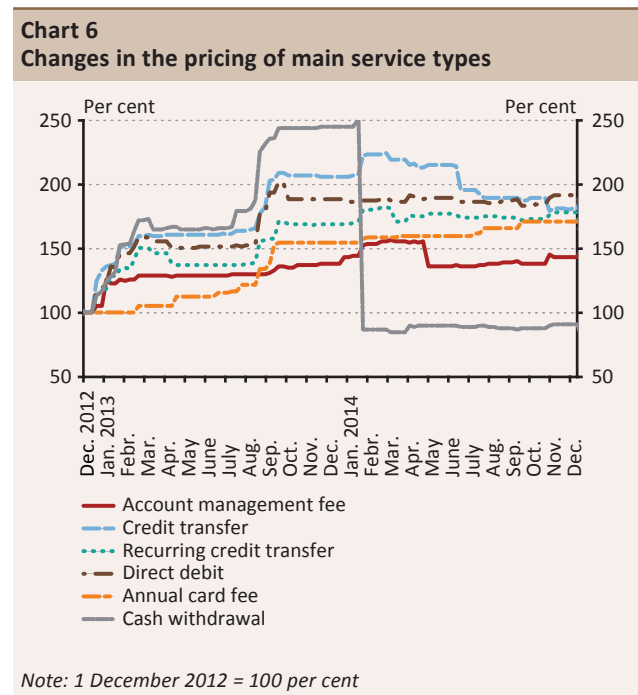
⁴ Ilyés, Tamás – Takács, Kristóf – Varga, Lóránt: Changes in the fees on payment services and the structure of payments following the introduction of the financial transaction tax. MNB Bulletin, March 2014

cash than the level of the prevailing average income. Cash withdrawal costs vary widely among individual account products. Most account packages continue to offer some free or preferential cash withdrawal options; thus the charges on these accounts are still only a fraction of the average charge even without the declaration requesting the free cash withdrawal option. In 2014, periodical costs were also reduced by the fee modification resulting from the series of consumer protection procedures of the MNB. Account management fees, yearly card fees and credit transfer charges have a more or less identical share in total monthly costs. Account management fees and credit transfer charges declined from the middle of 2014. Annual card fees have gradually increased in recent years; however, 97 per cent of the customers are not charged directly for each payment card purchase. For the most part, payment service providers passed on the financial transaction tax associated with card payments in their annual card fees; thus the changing structure of the financial transaction tax from 2015 is not expected to alter the pricing of payment cards significantly (Chart 5).



In recent years, changes in transaction costs were mainly influenced by the introduction of the financial transaction tax and its increase. The fees charged for recurring credit transfers and direct debits have

stabilised since the end of 2013; credit transfer charges have declined slightly since 2014, dropping to the level seen after the pass-through of the financial transaction tax. Average account management fees rose sharply in parallel with the introduction of – and subsequent increase in – the financial transaction tax and the adoption of the free cash withdrawal regulation. This fee increase materialised despite the fact that, both according to the MNB’s previous studies and the latest results of the pricing monitoring system, the financial transaction tax was fully and directly passed on at the transaction level as well (Chart 6).



Despite the intensive changes seen in price formation in recent years, electronic transactions retained their cost advantage over paper-based orders. For the payment services used by retail customers, unit costs to volume varies widely depending on the submission channel and the direction of the transaction. The pricing of electronically submitted transactions is more favourable in any case. The vast majority of payment service providers charge a fee proportional to transaction number for permanent orders (i.e. direct debits and recurring credit transfers) while the fees charged for cash withdrawals and ad-hoc credit transfers are largely determined by the amount to be transferred or withdrawn. Intrabank transactions are nearly always more preferentially priced, both in the case of permanent and ad hoc items. The unit cost of card purchases charged directly is negligible (Table 2).

Table 2
Unit cost of main service types in 2015 Q1

	Paper based	Electronic
Intrabank credit transfer	1 315 Ft	243 Ft
Domestic credit transfer	1 040 Ft	580 Ft
Cross-border credit transfer	6 239 Ft	3 573 Ft
Intrabank recurring credit transfer	101 Ft	84 Ft
Domestic recurring credit transfer	159 Ft	134 Ft
Intrabank direct debit	69 Ft	69 Ft
Domestic direct debit	74 Ft	70 Ft
Cash withdrawal at own bank's branch	902 Ft	
Cash withdrawal at own bank's ATM	521 Ft	
Cash withdrawal at other bank's ATM	1 343 Ft	
Cross-border ATM cash withdrawal	3 078 Ft	
Card purchases	1 Ft	

Note: The smaller unit cost of paper-based domestic interbank ad-hoc credit transfers is typically due to the larger average value of intrabank transactions.

Box 1

Definition of client segments in the payment pricing monitoring system

The payment pricing monitoring system of the MNB distinguishes between five different client segments; the client segments defined by the MNB primarily reflect the criteria manifested in banks' price formation. Payment service providers typically set up their client segments on the basis of the monthly value credited to the customer's account; in addition, they offer special accounts to pensioner and student customers. In the segmentation applied in the monitoring system, the group of lower-than-average income comprises banked, working-age customers belonging to the lower six income deciles. Average-income customers make up the 7th, 8th and 9th income deciles, while those with above-average income belong to the top income decile (Table 3). Based on income, the definition of client segments is aligned to the monthly crediting criteria included in the payment service providers' lists of terms and conditions. Accordingly, the lower category has no minimum crediting requirement; the average-income category typically corresponds to a minimum crediting requirement ranging between the minimum wage and HUF 100,000, while the upper category is associated with a minimum crediting requirement of HUF 180,000–200,000. In respect of payment habits, the segments vary primarily in function of income. High-income customers are typically characterised by an intensive flow of payments, with high-frequency transactions of higher-than-average value. Low-income customers generally take limited recourse to payment services, although they still pay the fixed access charges, such as account management and card fees. Based on the intensity of the use of payment services, the segment of pensioners largely corresponds to the segment of average-income customers, while students participate in electronic payments even less than low-income customers. Although the classification of customers on this basis primarily follows the pricing practice, the MNB's surveys have found that individual payment habits are more influenced by age, education level and, in part, by type of residence.

Table 3
Proportions of client segments among customers with payment accounts

Pensioner	21,77%
Student	6,18%
Under average income customer	43,95%
Average income customer	22,72%
Above average income customer	5,38%

2.1.3.2 STRUCTURE OF REVENUES FROM PAYMENT SERVICES AND ITS CHANGES

Value-proportional revenues represent a large share in the revenues deriving from the payment services of financial institutions. Since the middle of 2014, in addition to the pricing of retail payment services and the charges imposed on retail customers, the MNB has been closely monitoring the structure of payment market participants' revenues from payment services. This includes all fees and commissions charged by service providers to both retail and institutional clients in relation to the infrastructure required for the payment services and the execution of transactions.⁵ Amounting to HUF 72 billion, fixed revenues accounted for around 30 per cent of the revenues of service providers in the second half of 2014. These revenues typically include the periodical charges for payment services and payment instruments and the fees and commissions charged for the acquisition of the authorisation required for the use of the services or the execution of the transactions. Nearly one half of the revenues – more than HUF 118 billion in the review period – derived from value-proportional charges. Revenues from charges proportional to transaction number account for 20 per cent of total revenues; they amounted to HUF 48 billion during the six-month period

under review. Even though most of the costs incurred by payment service providers during the execution of payment transactions change in proportion to the number of transactions, they predominantly charge customers on the basis of value-proportional pricing. The value-proportional transaction tax may be one of the reasons for the change in the revenue structure, as payment service providers typically pass on the tax to customers directly in transaction charges. Cross-pricing could be another reason for the application of value-proportional pricing. With the application of cross-pricing, service providers offset the lower revenues from other payment services or the revenues of other financial services with the higher revenues collected from large-value payment transactions. This, however, deteriorates the transparency of payment service charges, which, in turn, reduces the comparability of the terms of the use of services and thereby hinders competition in the market of payment services. The largest portion – over 30 per cent – of the revenues proportional to transaction value comprises revenues from credit transfers, but in this category the share of revenues from cash withdrawals and interbank revenues is also high. As regards revenues proportional to the number of transactions, interbank revenues have the highest share, while a smaller portion of these revenues is related to cash deposits, payment card purchases and core direct debit transactions.

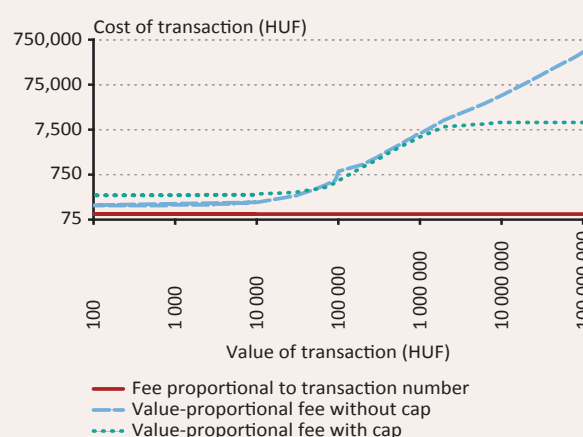
⁵ This data include account management fees, the periodical fees of payment cards, costs related to POS terminals in the case of corporate clients, the transaction fees charged on individual payments and the fees of any ancillary services (e.g. internetbank, SMS notifications) required for the execution of payment transactions.

Box 2

Pricing of forint credit transfers

Some payment service providers apply value-proportional pricing to a higher degree than warranted by the financial transaction tax. One of the objectives of the MNB's acquisition of GIRO Zrt. – the company responsible for the execution of interbank clearing – in 2014 was to be able to take more efficient action for the enhancement of payment transactions and to facilitate the reduction of the fees of clearing services. As a result, in 2015 GIRO Zrt. executed a fee reduction of HUF 3 (20 per cent) affecting clearing services. Simultaneously, the MNB expressed that it expected payment service providers to reflect this fee reduction in the prices of their services provided to customers. So far, it appears that the fee reduction has materialised only at a limited number of institutions. The pass-through of the fee reduction may be impeded by the practice of value-proportional pricing; thus these account packages retained the fee schedules imposing significant charges on customers. Based on data available to the MNB, credit transfer charges may vary widely between account packages.

Chart 7
Changes in the fees of electronically initiated domestic interbank forint credit transfers depending on transaction value



Note: Values are interpreted as a logarithmic scale. Pricing proportional to transaction number does not include complimentary transactions.

The pricing functions applied for electronically initiated domestic credit transfers can be classified into three main groups. Some payment service providers offer the service to customers free of charge or at a fee proportional to transaction number, HUF 100 on average. In the case of most account packages, however, service providers also charge value-proportional fees. While 76 per cent of customers use account packages where the value-proportional fee is capped, no upper bound is assigned to the value-proportional fees imposed on 5 per cent of customers. As a result, in the case of ad-hoc, large-value transactions – such as home or vehicle purchases – retail customers may pay an amount as high as HUF 100,000 for a single credit transfer. When an upper bound is applied, the transaction fee is capped at HUF 11,000 on average (Chart 7). It is easy to see that charging HUF 100,000 or even HUF 10,000 is excessive, given that banks pay a mere HUF 12 to GIRO Zrt. for each of these transactions – the same amount as they pay for any small-value credit transfers – and none of their other costs increase in line with the value of the credit transfers either.

As indicated above, when the pricing is proportional to the number of transactions, the customer is charged the same fee regardless of the value of the credit transfer. By contrast, value-proportional fees increase continuously in line with the amount transferred; if, however the payment service provider applies an upper bound, the fee may not exceed a pre-determined amount (Table 4). The value-proportional part of the fee charged for domestic electronic credit transfers reaches 50 per cent in the case of more than a half of the transactions, and the fees charged for the transfer of amounts over HUF 100,000 or HUF 1,000,000 are defined, nearly in full, in proportion to the value of the transaction.

Table 4
Example for the three different pricing methods of credit transfers and the transaction fee charged

Pricing method	Cost of domestic electronic credit transfer	Value of transaction	Fee of transaction
Fee proportional to transaction number	HUF 100	HUF 1,5 million	HUF 100
		HUF 30 million	HUF 100
Value-proportional fee with cap	0,6%, capped at HUF 11 000	HUF 1,5 million	HUF 9000
		HUF 30 million	HUF 11 000
Value-proportional fee without cap	0,60%	HUF 1,5 million	HUF 9000
		HUF 30 million	HUF 180 000

2.2 Operation of the payment and settlement systems

2.2.1 CHANGES IN THE TURNOVER OF PAYMENT AND SECURITIES SETTLEMENT SYSTEMS

In 2014, the turnover of payment and securities settlement systems increased slightly in value relative to the previous year. The GDP-proportionate annual turnover amounted to 52.19 times the amount of annual GDP (Table 5).

VIBER turnover increased by 2.7 per cent in 2014, but the number of transactions did not change noticeably compared to the previous year. The increase in turnover value can be primarily attributed to increases in the forint transactions associated with the Hungarian State Treasury's foreign exchange credit transfers to foreign accounts, the settlement orders submitted by GIRO and KELER, and new deposits placed with the MNB. The value of customer and bank-to-bank transactions did not change notably, which indicates the lack of turbulence in financial markets in the review period. Meanwhile, the number of transactions decreased by 1.2 per cent, mainly as a result of the decline in the number of securities transactions after the MNB bill was phased out.

In 2014, the number of transactions in ICS overnight and intraday clearing increased by 3 per cent, while

the value of turnover rose by 10.5 per cent compared to the previous year. The increase in turnover can be partly attributed to the increase in the number of transactions initiated by corporations, and partly resulted from the one-off effect of a single participant: the Hungarian State Treasury executed some of the credit transfers due in January 2015 at the end of 2014. Based on transaction number, by 2014 the share of intraday clearing exceeded the share of overnight clearing. In intraday clearing, the bulk of the turnover value is still concentrated in the last two cycles, but the number of transactions peaks during the first cycle (Chart 8). This is because retail payments received by banks after the closure of transaction receipt on the previous day are typically executed in the first cycle, at the beginning of the day, while large-value corporate transactions are more often executed during the last two cycles. At the same time, consistent with the previous trend, the rejection rate of direct debit transactions – the payment method typically used for the payment of utility bills and other regular service charges – declined by an additional 13 per cent in 2014.

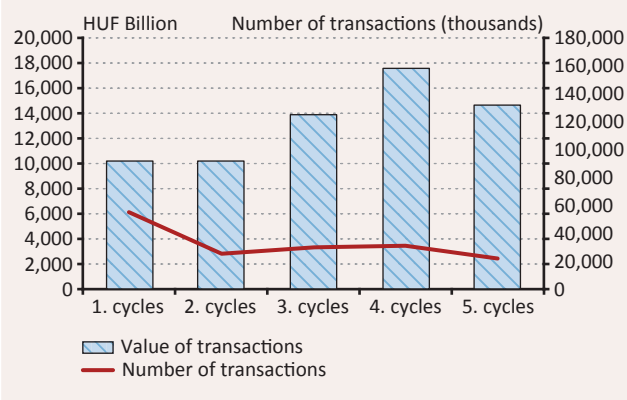
The number of items recorded in the central securities depository rose sharply compared to 2013. These items are increasingly composed of Free of Payment (FoP)⁶ transactions. Although the number

Table 5
Turnover and main figures of the payment and securities settlement systems
(2013–2014)

Overseen systems		Volume (thousands)		Value (HUF thousand billion)		Turnover/GDP		Participants in 2014	
		2013	2014	2013	2014	2013	2014	direct participant	indirect participant
VIBER		1417	1392	1287	1322,6	44,07	41,47	47	129
ICS	overnight clearing	158 288	159 405	15,9	16, 8	0,54	0,53	40	158
	intraday clearing	155 326	163 662	59,2	66,35	2,03	2,08	40	158
KELER CSD		698,7	747,2	272,4	253,4	9,1	7,95	208	n.a
KELER CCP		9164	8861	5,6	5		0,16	70	n.a

⁶ Importantly, despite the fact that there is no cash movement at the moment of settlement, the original securities transaction does involve a cash movement.

Chart 8
Number and value of transactions in ICS intraday clearing by cycle
 (2014)



of transactions recorded in KELER rose by 6.9 per cent compared to the previous year, the total value of transactions declined by 7 per cent. The decline mainly reflects the fall in turnover generated by primary issues (for example, due to the phasing out of the two-week MNB bill), the value of which dropped by 34 per cent compared to 2013. This could not be offset even by the increased turnover (up 35.8 per cent) of the book transfers⁷ between securities accounts due to OTC (spot) transactions.

KELER CCP's turnover realised in the capital market declined in comparison to 2013, both in respect of the number and value of transactions cleared.

In KELER CCP's turnover, the number and value of transactions cleared declined by 3.3 per cent and 11.7 per cent, respectively, primarily owing to a fall in spot and derivative market turnover.⁸ As regards spot market transactions, the number and total value of transactions cleared decreased by 10.2 per cent and 18.8 per cent, respectively, while derivative market transactions declined by 1.9 per cent in respect of transaction number and by 3.2 per cent in respect of total value. In 2014, the turnover of the derivative market was five times larger than that of the spot market in terms of transaction number, but the total turnover value was nearly identical in these two

markets. Items deriving from the clearing of energy market transactions play an increasingly important role in the transactions guaranteed by KELER CCP.

2.2.2 TRANSACTION EXECUTION TIME IN THE PAYMENT SYSTEMS

In 2014, the length of clearing and settlement in respect of the transactions processed in the payment systems remained short and met expectations. In the payment systems, all transactions are settled – debited to the sending bank's payment account and credited to the beneficiary's bank – in VIBER. Only after this can the beneficiary bank credit the transaction to the payee's account. Accordingly, one important element in the execution time for payment orders is the speed at which VIBER processes and settles the transactions submitted by participating banks, the ICS, KELER or the card settlement systems, and informs the participants of the result. The time required for the settlement of bank-to-bank and customer transactions in VIBER did not increase in 2014 compared to the previous year; based on the time stamps on SWIFT messages, they ran through the system in 1.5 minutes on average.⁹ In the intraday clearing of the ICS the average duration of a clearing cycle was around 10 minutes, which covers the time elapsed between the receipt of the last transaction for the given cycle and the bank's receipt of the results. Within this, the collateral required for the execution of the items received for the given cycle in VIBER¹⁰ was determined in 49 seconds on average; the settlement in VIBER was within 2 minutes on average and, following the collection of the collateral, the results related to the clearing of the cycle were available for ICS participants within 4 minutes and 48 seconds on average. Obviously, the time requirement of these phases depends on the number of transactions processed in the given cycle. In 2014, the maximum execution time did not take longer than 30 minutes even during the cycle with the largest number of transactions. In 2014, substantial deviations from this only occurred in case of incidents or a technical error on the participant's side.

⁷ These are not identical to the spot transactions of the central counterparty.

⁸ The turnover of the Budapest Stock Exchange also declined in 2014.

⁹ The method measures the time elapsed between the time stamp of the individual transaction received by the MNB via SWIFT and the time stamp of the response message sent via SWIFT following the transaction's settlement in VIBER (confirming settlement).

¹⁰ Clearing in the ICS is considered executed when the debit balance of the participant is booked on its payment account with the MNB. This booking is based on the collateral amount which determines the amount to be debited to the payment account of a participant for its turnover in a given cycle. This collateral must be available in VIBER as liquidity.

2.2.3 RISK DEVELOPMENTS IN OVERSEEN SYSTEMS

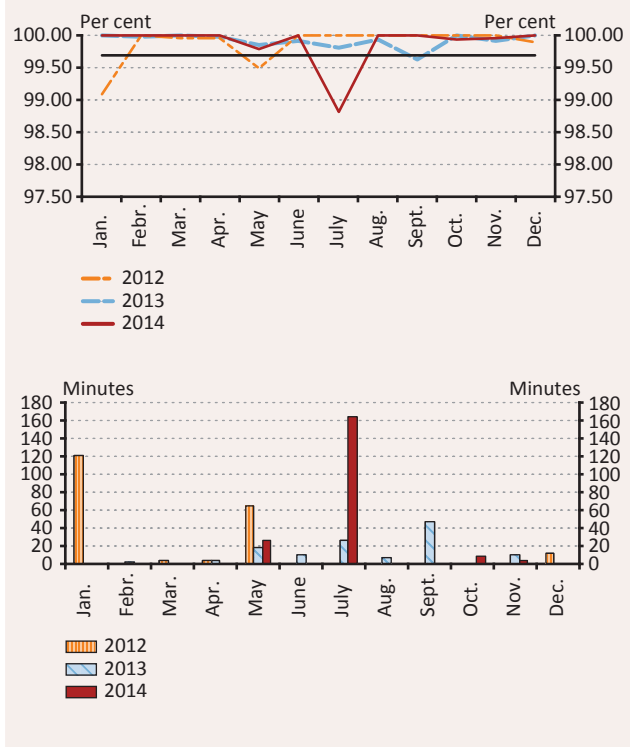
As in previous years, the operation of the overseen systems was highly reliable, although the risks associated with the systems increased slightly compared to 2013. As an overseer, the MNB continuously monitors, assesses and analyses the operation of the clearing and settlement systems along the lines of integrated risk categories – thus, in particular, service continuity risk, clearing and settlement risk and system operational interdependency risk – and based on the analysis of other criteria affecting efficient operations.

2.2.3.1 SERVICE CONTINUITY RISK OF PAYMENT AND SETTLEMENT SYSTEMS

As in previous years, in 2014 VIBER demonstrated a high degree of availability and operational reliability, but the risk of service continuity increased slightly compared to 2013. Similar to 2013, the monthly availability ratio of the core settlement service dropped below the 99.7 per cent level expected by the international and domestic oversight practice in one month only (Chart 9). However, as regards the outage of core settlement services, compared to 2013 the individual and aggregate duration of incidents nearly doubled.¹¹ The longest incident was caused by a software error occurring during the upgrade to a new version of the VIBER account management system. During the incident, which lasted for 163 minutes, VIBER received and settled transactions as required, but failed to send response messages to participants and the ancillary systems. Thus, the majority of VIBER participants were not notified¹² of credit transactions to their accounts, and KELER and GIRO received no information on the settlement of the transactions submitted by them. It mitigates the severity of the incident significantly that settlement was continuous in the account management system of VIBER, with no disruptions during the incident. The operators of VIBER drew the lessons from the incident and in order

to avoid a similar situation in future, they reviewed their testing processes, their disaster recovery plans and existing procedures for crisis communication with participants.

Chart 9
Monthly availability ratio of the core settlement service in VIBER (top chart) and aggregate duration of outages of the core settlement services in minutes (bottom chart) (2012–2014)



In ICS, both overnight and intraday clearing platforms functioned with high reliability throughout the year, but in the first half of 2014 the risk of service continuity increased slightly. Both clearing platforms of the ICS processed transactions with high speed and adequate efficiency, but the number, as well as the risk rating of incidents increased compared to 2013. On three occasions in 2014, the monthly availability ratio¹³ defined in accordance with international practice dropped below the SLA limit of

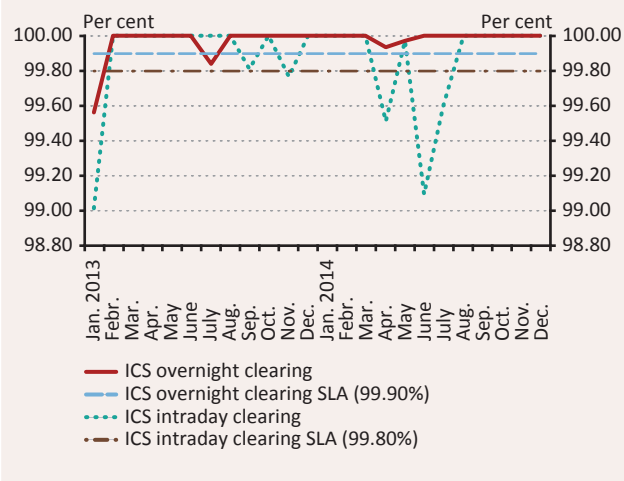
¹¹ The aggregate duration of incidents resulting in the outage of core settlement services increased by 90 minutes in 2014. The time between the start and end (recovery) of incidents also increased compared to 2013, with the longest downtime lasting for 163 minutes compared to 46 minutes in 2013. Incidents resulting in the outage of core settlement services occurred in 4 months.

¹² Participants equipped with VIBER monitors were able to query their transactions and their account balances. In addition, by using the relevant SWIFT messages, participants had access to information about their turnover.

¹³ Monthly availability ratio = ((number of working days*GIRO (overnight or intraday) opening hours – duration of outage resulting from incidents)/(number of working days*GIRO (overnight or intraday) opening hours))*100. The guaranteed service level (SLA) is 99.90 per cent in the overnight clearing of the ICS, and 99.80 per cent in intraday clearing.

GIRO (Chart 10).¹⁴ As a result of the MNB's acquisition of GIRO – the operator of the ICS – from the banking sector in 2014, the financing risk and business risk of the company was reduced to a minimum.

Chart 10
Impact of incidents affecting overnight and intraday clearing on availability

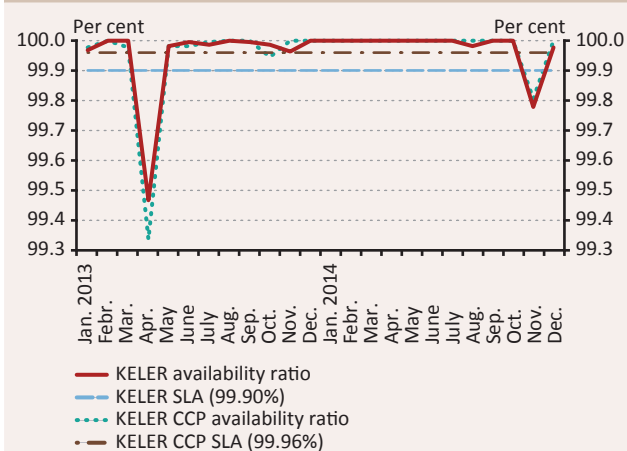


As in previous years, in 2014 the service continuity risk of KELER was low. The availability of KELER's services to customers improved compared to 2013 and for each service, it exceeded the expected 99.9 per cent level in all but one month (Chart 11). The operational reliability of the securities clearing and settlement system was determined by a combination of two factors: the availability of KELER's IT infrastructure (with over 60 components) and the severity of malfunctions and crisis events. In all cases, KELER resolved all incidents encountered during the year rapidly and professionally, and took several measures aimed at the prevention of future incidents. KELER is planning to replace its entire account management system in 2015, and the new system is expected to replace several existing systems and improve the harmony between certain IT and business processes.

KELER CCP's level of service provision improved compared to 2013, and it continued to operate at a high, 99.98 per cent availability ratio. There is a mutual outsourcing agreement between KELER and KELER CCP. Under the agreement, the information technology infrastructure required for the provision of

central counterparty services is operated by KELER. In 2014, five of KELER CCP's eight services were available to customers at 100 per cent, the only exceptions including the availability of multinet and derivative settlements and energy market services. Thanks to KELER's targeted IT developments, in 2014 the aggregate downtime affecting the services of KELER CCP was 2 hours and 6 minutes on an annual basis, which entails a significant improvement compared to previous years (Chart 11).

Chart 11
Availability of the central securities depository and the central counterparty
(2013–2014)



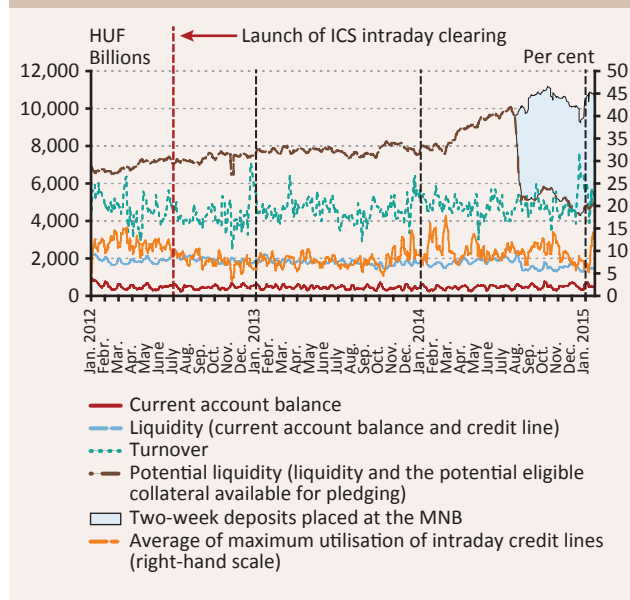
2.2.3.2 CLEARING AND SETTLEMENT RISK

The liquidity in VIBER and the ICS is essentially determined by the same factors; any changes in these factors equally affect both systems and their participants. The participants of both systems are largely the same. One of the conditions for an institution's direct membership in the ICS is to participate in VIBER as well, given that clearing in the ICS is settled in VIBER on the participants' payment accounts held with the MNB. Participants use the same liquidity in both systems, including their available account balance and the intraday credit line provided against their security portfolios pledged to the MNB. Participants are entitled to settle payment orders both in VIBER and in the ICS up to the value of this collateral.

¹⁴ Of the five incidents affecting clearing in the ICS, besides intraday clearing, the incident also affected the overnight clearing process in two cases.

Chart 12
Turnover, current account balance, actual and potential liquidity of VIBER participants, maximum utilisation of intraday credit lines (MICL) in the system, and the volume of two-week deposits potentially convertible to collateral

(2012–2014)



Effect of the factors determining the liquidity of VIBER and ICS participants

Although the liquidity available for execution of payments declined compared to previous year, there was sufficient liquidity in the payment systems both at the systemic and individual bank level. However, owing to the decline in liquidity, clearing and settlement risk increased slightly. As a result of the extension of the Funding for Growth Scheme (FGS), within the collateral portfolio pledged by banks to the MNB, the share of securities providing the source of liquidity for payment transactions declined further,¹⁵ but thanks to bank's adjustment, this did not increase clearing and settlement risk. However, the modification of the monetary policy instruments in August 2014 – that is, when the MNB's main policy instrument, the two-week MNB-bill, was removed

from the group of eligible central bank collateral – further enhanced the effect of FGS on payment liquidity and thus moderately increased the clearing and settlement risk. Consequently, the aggregate level of potential liquidity¹⁶ dropped to the level of VIBER turnover, as the two-week MNB-deposit portfolio cannot be used as collateral for payment transactions. In order to maintain the level of liquidity previously required for payment transactions, banks kept increasing their holdings of securities pledged to the MNB in 2014 (Chart 13). It is important to emphasise that banks can raise their promptly available potential liquidity on a weekly basis¹⁷ by means of their expiring two-week deposits if, instead of renewing the deposits, they place them in instruments classified as eligible collateral. This deposit portfolio, however, cannot cover an ad-hoc rise in intraday liquidity needs. If the aggregate level of MNB deposits is added to the participants' potential level of liquidity, we find that the level of potential liquidity increased even after August 2014 (Chart 12). The effect of liquidity contraction can be observed in the intraday clearing of the ICS as well: while until August 2014 the debit turnover accounted for 2–4 per cent of the liquidity available in the system at a given moment on average, from September 2014 this value rose to 4–5 per cent. This ratio tended to rise above the average primarily on tax payment days and during the traditional year-end spikes in turnover;¹⁸ in December it even exceeded 15 per cent.

The elimination of MNB bills affected the composition of pledged securities (Chart 14). Previously, the two-week MNB bills accounted for 43 per cent of pledged securities on average at the aggregate level, hence due to the modification, a part of the banking sector had to adapt. The adjustment had already started well before August when the modification took place, with substantial purchases of government securities (HUF 800 billion) intended, in part, to replace the instrument removed from the group of eligible collateral. While government securities previously comprised 20–30 per cent of the entire pledged security portfolio, this value

¹⁵ Under the FGS, the MNB provides secured loans to credit institutions. To cover these loans, in addition to collateral eligible for central bank operations, the MNB also accepts the credit institution's receivables from the loans extended to SMEs under the FGS as eligible collateral (at a collateral value reduced by haircut).

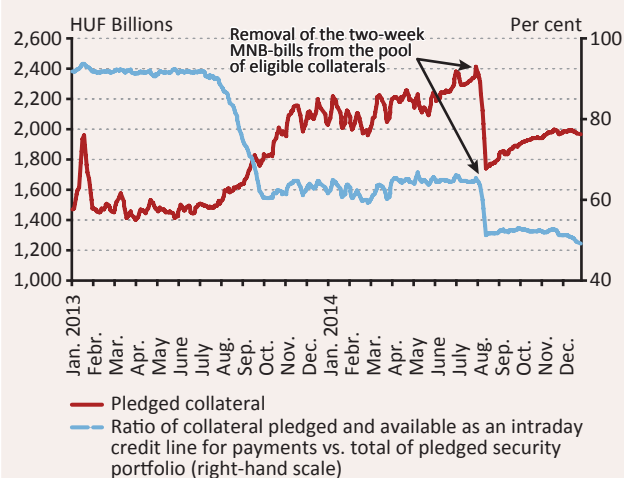
¹⁶ From the perspective of payment systems, potential liquidity is the sum of the account balance of the VIBER participant's payment account held with the MNB, the intraday credit line provided against the securities pledged by the participants to the central bank, and other, additionally available securities on the credit institution's balance sheet that may optionally be pledged.

¹⁷ Since the MNB announces the tenders of its main policy instrument once a week, banks may place their "excess" liquidity in the two-week MNB deposit on a weekly basis. Since the maturity of the main policy instrument is two weeks, there are always two series running simultaneously which means one of the series expires every week. This also implies that part of the fixed deposit portfolio may become available each week as collateral for payment transactions.

¹⁸ This is caused by increased household expenditures and the fewer number of ICS clearing days.

Chart 13
Impact of changes in the FGS and the monetary policy instruments on payments*

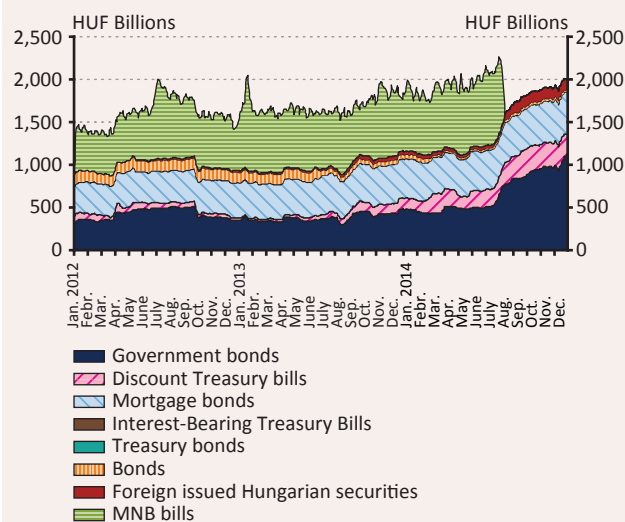
(2013–2014)



*The value of “pledged collateral” includes not only the collateral for monetary policy operations (i.e. securities), but also the collateral pledged to secure the loans granted under the FGS (securities + SME loans)

Chart 14
Pledged securities and their distribution by type

(2012–2014)

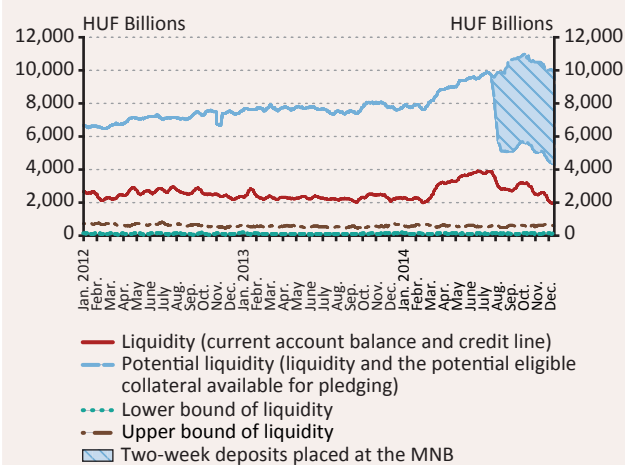


jumped to 50–55 per cent¹⁹ following the modification of the monetary policy instruments.

Liquidity in the banking system was sufficient in 2014 for the smooth execution of VIBER turnover both on the basis of lower and upper liquidity bounds (Chart 15). The upper bound of liquidity indicates the amount of liquidity required in the payment system for the settlement of transactions without queuing or delays. The lower bound of liquidity indicates the lowest value of systemic liquidity where transactions, although with delays, will be settled by the end of the day concerned (Box 3). In the period of 2012–2014 both the lower and the upper values of the liquidity bounds were below the amount of liquidity in the system. This indicates that the aggregate level of liquidity was sufficient; although its level was close to both thresholds until February 2014 (Chart 18). Subsequently, the level of liquidity increased until the middle of the year, reducing the probability of queues in the system. From August 2014 onwards, the level of liquidity approached the bounds again as a result of the contraction in actual and potential liquidity across the system, which could be explained primarily by the

Chart 15
Actual and potential levels of liquidity at systemic level, lower and upper bounds of liquidity, based on VIBER data

(2012–2014)



Note: Ten-day moving average.

elimination of the MNB bills from the group of eligible collateral.

¹⁹ In addition, the role of foreign issued Hungarian government securities increased as well, although the growth in this latter case was less notable, only 5 per cent.

Box 3**Calculation of the liquidity bounds**

The liquidity bounds can be calculated on the basis of actual daily net cumulated turnover. The upper bound can be defined as the minimum of the cumulative net positions of incoming and outgoing transactions, while the lower bound is based on the last of the cumulative net positions of incoming and outgoing transactions at the end of the day. If the cumulative net position is negative, then the threshold itself will be its absolute value; if it is positive, the given threshold will be zero. Systemic liquidity bound values are the sums of the bound values of the individual participants.

Table 6

Example for a bank's daily incoming and outgoing transactions on a specific settlement date, and the cumulative net position determined on this basis

	Value of transaction (HUF)	Cumulative net position of the turnover (HUF)
Transaction no. 1.	50	50
Transaction no. 2.	-100	-50
Transaction no. 3.	-500	-550 Ft (upper bound equals 550)
Transaction no. 4.	60	-490
Transaction no. 5.	1000	510
Last transaction:	-530	-20 (lower bound equals 20)

Based on the example above, the upper bound of liquidity equals HUF 550. This is the minimum level of liquidity a credit institution must have available in order to execute all the transactions without delay. In the example the lower bound of liquidity is HUF 20. If the bank has at least this much of liquidity, it can execute all of its payments, albeit with delays.

Liquidity management of VIBER and ICS members

Due to the changes in the factors affecting the liquidity of payments, adjustment was required at the participant level to reduce clearing and settlement risk. The extent to which members rely on their account balance and credit line in the execution of payment transactions depends on their individual liquidity management strategy and asset size, as well as the stock of securities in their balance sheets that can serve as eligible collateral. For liquidity management considerations, some members choose a higher reserve requirement ratio (typically 4–5 per cent) in the optional reserve requirement regime, thereby increasing their account balances. This option is generally taken by two types of participants: those who have large turnover compared to their balance sheet totals and those who do not or hardly ever use intraday credit lines. The increase in the number of banks opting for a higher

reserve ratio²⁰ in 2014 is indicative of the adjustment; however there were only minor changes in the use of the credit line. Although the maximum utilisation of intraday credit lines (MICL)²¹ is still considered low (8–18 per cent) at systemic level (Chart 14), it increased slightly (by 5 per cent) compared to the previous year, possibly reflecting the previously mentioned effect of the FGS. At the individual level, the MICL figures are still widely distributed; in general, banks with high turnover and a balance sheet total between HUF 600 billion and HUF 2,000 billion tend to have high MICL values. While the MICL values of the 3 participants with the largest turnover range between 34–68 per cent on average annually, more than half of the participants do not use intraday credit line at all. In addition to MICL, valuable information can be gained from analysing the extent to which members utilise their credit lines and the duration of this utilisation during the day. Participants with the largest turnover and those with high turnover relative to balance sheet totals use their credit lines

²⁰ In 2014, 13 per cent of VIBER members chose a higher reserve ratio compared to prior years, which partly reflects the adjustment pressure on banks. Of the banks opting for a higher reserve ratio, one bank belonged to the group of those with the highest turnover; the turnover of the remaining 5 participants was only high in comparison to their respective balance sheet totals.

²¹ Credit line utilisation shows what portion of the total available intraday credit line a bank has used on a given business day. The lowest intraday current account balance is compared to the available credit line and as such, is considered to be a snapshot.

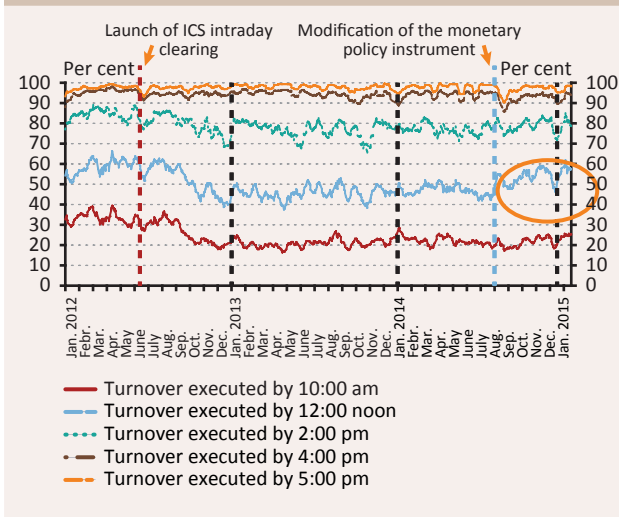
actively during 10–36 per cent of the operating hours of VIBER. On average, participants use 30 per cent of the credit line available every day for the execution of their payment transactions, for a duration of 1–1.5 hours. Partly as a result of the transformation of the monetary policy instruments, credit line utilisation in excess of 60 per cent moderately increased. Banks actively using their credit lines had a 90 per cent credit line utilisation rate – showing overstretched liquidity management and thus higher clearing and settlement risk – for a maximum of 12 minutes on average during the day.

The number of cases when banks were forced to use overnight collateralised loans declined in 2014, but the value of loans increased. VIBER participants must consider whether they wish to maintain their overdraft facility after the closure of VIBER. If they do, they are granted a collateralised overnight loan by the MNB. This could either be a conscious decision, or the result of pressure when the bank is unable to repay the overdraft used during the day despite its best intention. In 2014, the number of collateralised overnight loans declined by 28 per cent compared to 2013. Two thirds of the borrowing took place toward the end of the month, which is consistent with previous trends and the exogenous effects materialising in the ICS (in conjunction with tax payment days). Based on the data of all VIBER participants, the average loan value rose by 26 per cent compared to previous year. The average loan value increased by 52 per cent in 2014 among the participants with the largest turnover, partly as a result of the loans given to one single member. On four occasions in 2014, four members had no available liquidity at all during the ICS overnight clearing process, thus were unable to settle their positions during normal operating hours. Consequently, these banks had to settle their queuing transactions in VIBER the following day when the required liquidity was available.

In 2014, there were minor, temporary realignments in the timing of transactions in all time periods under review. The transaction timing behaviour of the participants regularly adjusts to the most significant changes affecting liquidity management (such as the introduction of intraday clearing in the ICS). As a result of their adjustment to the changes, banks are generally more cautious in timing their transactions, shifting their daily payment turnover to a later part of the day. In August and September, 90–95 per cent of

the transactions were executed by the closing of the operating hours for customer payment transactions (5:00 pm); while this ratio was 96–98 per cent of the VIBER turnover during the rest of the year. At the same time, from the second half of 2014 the timing of transactions shifted: the number of transactions executed by participants by 12 pm rose by 5–10 per cent compared to the first half of the year. Execution habits did not change in respect of the remaining periods of the day; accordingly, on an annual level 70–85 per cent of the transactions were still completed by 2:00 pm (Chart 16).

Chart 16
Timing of turnover in VIBER
(2012–2014)



Queuing in VIBER, roll-over of transactions between intraday clearing cycles in the ICS due to insufficient liquidity

The annual distribution of queuing in VIBER was steady throughout 2014, with the exception of the second half of the year, when the number of queuing transactions increased temporarily. There was no queuing in VIBER due to gridlocks. Transactions initiated by a bank will be placed in a queue until sufficient funds become available for the execution as a result of the financing effect of the crediting of incoming transactions, an increase in the credit line or queue rearrangements. The monitoring of queuing is particularly important as queuing may easily give rise to a gridlock, which, in turn, may exacerbate clearing and settlement risk: the delayed settlement of a transaction may leave another VIBER participant (beneficiary bank) with insufficient liquidity to settle

its own payment transactions.²² Partly reflecting the different liquidity management practices²³ of banks, there are significant differences among VIBER participants regarding the duration for which their transactions remain in the queue. In the first half of 2014, the number of queuing transactions per month was around 50 on average. This number, however, rose sharply (by 31 per cent) from the second half of the year, reaching 90 in September. Queuing affected nearly 60 per cent of operating days in VIBER, with transactions remaining in the queue for 1 hour on average. Of the banks with a high monthly queuing frequency, the transactions of those with higher credit line utilisation figures – and an active liquidity management policy – tended to spend less time in the queue, 20–30 minutes per day on average. By contrast, queuing took longer – 1–3.5 hours – for participants with less active liquidity management – these members typically have lower MICL values or execute their transactions without recourse to the credit line available. On some settlement days in 2014, queuing took as long as 8 hours in some cases, partly as a result of participants' inadequate liquidity management and partly because of insufficient knowledge about the operating rules of VIBER. The frequency of gridlocks did not increase as a result of queuing in 2014; there were only 8 cases on 2 settlement days when gridlocks had to be resolved.

In 2014, the need to roll over transactions between intraday clearing cycles due to liquidity shortages arose more often than in previous years. In overnight clearing, queuing occurred far less frequently and affected fewer participants than in the previous year. These cases primarily involved participants with smaller turnover. It is an extremely negative development compared to the previous year that, in half of these cases, the banks concerned had no additional liquidity – i.e. securities – available to pledge. The number of transactions rolled over²⁴ between intraday clearing cycles increased

considerably compared to the previous year, but in most cases the roll-overs were not caused by liquidity problems: they resulted from the individual errors of the banks concerned and could have been avoided with due care. If system participants monitor their liquidity in VIBER and their turnover in the ICS on a continuous basis, they can detect potential liquidity shortages and increase their liquidity by pledging additional collateral during the day, provided that they have sufficient securities in their balance sheets to pledge. Only six of the 32 rolled-over transactions were attributable to actual liquidity shortage in 2014. In some cases the rolled-over transactions affected two consecutive cycles, but each case could have been avoided as the members concerned had additional securities to pledge. It is very likely that some of these cases involved transactions where the 4-hour rule was violated. These roll-overs would have occurred even if the affected participants had opted for the net funds parameter,²⁵ the optional liquidity improvement tool provided by the ICS.

Clearing and settlement risk in KELER

The increase in the number of Free of Payment (FoP) transactions in line with the trends of recent years increases the settlement risk in the system, as the delivery of the security and the related payment are separated in time. The number of FoP transactions has been increasing continuously since 2011,²⁶ and in 2014 these transactions accounted for 47.8 per cent of all transactions recorded in the depository, compared to 43.8 per cent in 2011. There was a continuous, parallel decline in the ratio of transactions settled on delivery versus payment (DVP)²⁷ basis: while the ratio of DVP transactions recorded in the depository was 44 per cent in 2011, by 2014 this value fell to 38 per cent. While banks continue to settle accounts with each other on a DVP basis, foreign clients in particular prefer credit transfers between their own foreign bank accounts.

²² In order to reduce this risk, an algorithm is in place in VIBER designed to unlock gridlocks automatically every 10 minutes.

²³ Based on its individual decision, a bank may pledge additional securities, may rely more heavily on the financing role of incoming items, may choose a higher reserve ratio (since credit institutions can change the reserve ratio only twice a year, this is a less flexible liquidity management tool than the previous two, which can be selected any time during the day), or it may resort to placing the item in a queue, postponing the execution of the transaction.

²⁴ If a participant has insufficient funds to settle a transaction during a specific clearing cycle – i.e. it does not have sufficient liquidity for the booking of the transaction – the transaction is automatically transferred to the next clearing cycle for repeated execution. This process is commonly known as the roll-over of a transaction.

²⁵ For details about the funds parameters, see the 2014 Payment Systems Report.

²⁶ In these cases KELER does not participate in the settlement of the cash leg of the transaction.

²⁷ In the case of DVP type transactions, the two legs of the securities transaction are settled simultaneously (provided that collateral is available both for the cash leg and the securities leg), while in the case of FoP type transactions only the securities leg is settled in the central securities depository, while the settlement of the cash leg takes place through another channel (outside of the central securities depository).

It reduced the settlement risk of KELER that, as of 6 October 2014, transactions involving domestic transferable securities must be settled no later than the second business day (T+2) following the trading day. In accordance with the T+2 rule, the settlement of securities must be completed within two working days of the trade date. KELER adopted this rule three months earlier than the deadline defined in the CSDR.²⁸ The migration to the T+2 settlement period accelerated the settlement of securities transactions which reduced the settlement risk in the system and enabled buyers and sellers to obtain their securities and money earlier. The application of the T+2 rule in Hungary is in line with international trends and meets the relevant requirements and guidelines. The migration has been completed smoothly, and the Hungarian procedure complies with the provisions of the EU regulation.

Clearing and settlement risk in KELER CCP

KELER CCP has initiated the transformation of the methodology of guarantee fund formation in view of the decline in the collective guarantee funds²⁹ due to the downturn in capital market turnover, which increases clearing and settlement risk. With a view to reducing its clearing and settlement risk, KELER CCP operates a multi-step guarantee system based on the equity of the central counterparty, as well as the other guarantees and collective contributions of clearing members and non-clearing members.³⁰ Due to the downturn in spot market and derivative market turnover, the size of guarantee funds³¹ gradually decreased in 2014. Notwithstanding the fact that the size of the guarantee funds provided sufficient protection throughout the period, in order to halt the trend KELER CCP proposed the incorporation of a new, procyclicality factor into the formation methodology of guarantee funds, which is designed to mitigate the procyclical fluctuations in the size of guarantee funds and at the same time, stabilise the size of the funds.

Based on the stress tests, except on five occasions, the size of the collective guarantee funds under review³² provided sufficient coverage in all cases. The adequacy of the size of guarantee funds set up in accordance with EMIR³³ is checked by stress tests. If the size of the guarantee fund proves to be insufficient based on the stress test results, the central counterparty will collect supplementary margin from the clearing member whose position caused the insufficiency of the fund. Supplementary margin has been imposed on five occasions in 2014, and all relevant clearing members provided the funds; thus, the size of the guarantee funds set up by KELER CCP was sufficient in 2014 to withstand, in accordance with European regulation, extreme but plausible market conditions.

In 2014, there was no need for intra-day clearing in case of any market cleared by KELER CCP. A substantial part of the clearing and settlement risk of KELER CCP arises from the institutional nature of the central counterparty, i.e. from the fact that it guarantees settlement for the clearing members in the case of a default of one or both of the participants of the guaranteed transaction. In the case of volatile market price movements, KELER CCP may order an extraordinary recalculation of positions; thus, by collecting the negative variation margin accumulated during the day, it reduces the risk of defaults. There was no need for an intra-day clearing in 2014; however, after the announcement of the Swiss National Bank's decision to abandon the exchange rate cap at the beginning of 2015, in response to the ensuing, intense market turmoil, KELER CCP had to order intra-day clearing twice within a single day in order to reduce the risk of default for Swiss franc-based financial products.

In 2014, both the number of defaults and the total value of defaults in the markets cleared by KELER CCP were lower than in previous years; there was no need for the mobilisation of collateral or for emergency measures. Default arises when a clearing member,

²⁸ Regulation (EU) No. 909/2014 of the European Parliament and of the Council of 23 July 2014 on improving securities settlement in the European Union and on central securities depositories and amending Directives 98/26/EC and 2014/65/EU and Regulation (EU) No. 236/2012.

²⁹ Exchange Settlement Fund; Collective Guarantee Fund; CEEGEX Collective Guarantee Fund; EP Collective Guarantee Fund. Considering that KELER CCP is not only responsible for capital market settlements but also for electricity and gas market settlements, shocks materialising in individual markets may have a pass-through effect. To minimise the probability of this, the guarantee systems of individual markets are separated from each other.

³⁰ Payment Systems Report 2013, Box 4.

³¹ Exchange Settlement Fund and Collective Guarantee Fund.

³² Exchange Settlement Fund, Collective Guarantee Fund and CEEGEX Collective Guarantee Fund. The size of the EP Collective Guarantee Fund is calculated on the basis of turnover; its adequacy, however, is not verified by stress tests, as trades cannot be made in the market without sufficient margin in any case.

³³ Regulation (EU) No. 648/2012 of the European Parliament and of the Council of 4 July 2012 on OTC derivatives, central counterparties and trade repositories.

Box 4**The risk management framework of KELER CCP performed well during the broker defaults**

The risk management framework of KELER CCP measured up to the required standards and prevented the emergence of mass default in the capital market upon the licence suspension of the brokerage firms in the first half of 2015. From the perspective of the financial infrastructure, the suspension of the license of a brokerage firm carries substantial clearing and settlement risks, partly due to the broker's obligations in respect of spot market transactions,³⁴ and partly arising from its open positions in the derivative market. In accordance with its core function, in the case of the suspension of a member's license KELER CCP, as guarantor, must ensure the settlement of any previous contracts or transactions still open or due, and the closure of open positions. This may simultaneously involve cash leg and securities leg debit and credit transactions, to be executed at different times and in respect of different securities. If the given brokerage firm has insufficient funds on its account held with KELER to settle its previous transactions, KELER CCP will commence the application of the protocol defined for default events in its business terms and conditions. In the context of emergency measures necessitated by the default and the lack of coverage, KELER CCP collects the brokerage firm's available financial assets held at KELER, and it retains sufficient funds from the amounts credited to the firm's securities account on the given day to ensure that the assets collected and the proceeds from the sale of the broker's securities can together cover the broker's financial obligations on the given day. These steps are necessary in order to contain the default of the brokerage firm and to prevent it from spreading to the rest of the financial system. The suspension of the licenses of a number of brokerage firms at the beginning of 2015 resulted in massive open positions both in the spot market and in the derivative market. Thanks to the risk management rules of KELER CCP, the suspension of licenses, the related emergency measures and the closure of positions were manageable without causing substantial capital market turmoil or a spillover effect on other market participants.

for some reason, does not have sufficient funds or securities for the settlement of its transactions as they become due – this may involve both the cash leg or the securities leg of the transaction. The seven defaults observed in 2014 all involved securities leg settlement, i.e. the required securities were unavailable at clearing members to cover the transaction. In the case of default, KELER CCP begins to mobilise the collateral of the defaulting member. In 2014, however, there was no need to utilise the collateral as the seven clearing members concerned were able to close their positions, albeit past the deadline, by the following morning at the latest; in other words, the clearing members were able to obtain the securities required. There was no default in the gas and electricity markets.

2.2.3.3 SYSTEM OPERATIONAL INTERDEPENDENCY RISK

Owing to the stable and reliable operation of the systems, system operational interdependency risks remained at a low level throughout 2014. System operational interdependency risk may arise from the fact that the various interdependent steps in the clearing

and settlement process are sometimes performed by different financial market infrastructures. In addition, the liquidity of participants relies on the same collateral in the systems (account balance and credit line), while the pledged security collateral is managed by KELER Central Securities Depository. Assessing system operational interdependence risks is important because fundamental liquidity-related interdependencies between the systems may give rise to contagion. On one occasion³⁵ in 2014, there was a disruption lasting several hours in the operation of both the ICS and the KELER Group due to a VIBER incident. As a result, neither system was able to complete clearing in accordance with their respective business terms and conditions. In 2014, system operational interdependency risk decreased on the side of the ICS; GIRO requested the extension of VIBER's operating hours³⁶ on fewer occasions, upon the request of ICS participants. System operational interdependency risk materialised on one occasion in 2014, due to a technical problem at KELER: KELER's link to SWIFT was not functioning for 46 minutes after the start-of-day opening. Consequently, KELER was unable to send DVP transactions and credit line modification messages during this period.

³⁴ In accordance with the T+2 rule, spot market contracts must be settled by no later than the second day following the trade date.

³⁵ During the 163-minute incident on 7 July 2014 referred to above.

³⁶ GIRO requested the extension of the operating hours by 1 hour on each of two occasions, and by 15 minutes on one occasion.

2.3 Findings of payment inspections

The provisions of the Act on Payment Services widened the scope of the payment inspections performed in 2014³⁷ significantly; in addition, the number of the inspections conducted by the MNB continued to increase. In 2014, compliance with the provisions of the Act on Payment Services and of the MNB Decree³⁸ was inspected at 19 credit institutions in the framework of scheduled inspections, and at 3 credit institutions and 1 payment institution in the framework of unscheduled inspections (Table 7). Unscheduled inspections were conducted upon external request in two cases – on the ground of suspected large-value fraud and unauthorised account management – and in two cases based on other information available to the MNB concerning a liquidity shortage observed during the intraday clearing of GIRO, and in relation to the interchange fees charged on card payments. Before 2014, the Hungarian Financial Supervisory Authority (HFSA) was responsible for the inspection of compliance with the provisions of the Act on Payment Services. However, after the integration of supervisory duties into the

MNB and the elimination of the HFSA, as of 1 January 2014, the MNB verifies compliance both with the Act on Payment Services and the MNB Decree based on a uniform framework. This contributed significantly to improving the depth and the efficiency of payment inspections. During the payment inspections in 2014, among the provisions of the Act on Payment Services compliance was inspected in particular with respect to the rules pertaining to the provision of information requirements to the customers, contracting, contract amendments, payment account opening, liability and loss allocation, the level of interchange fees, and the free cash withdrawal option linked to the financial utility price reduction.

According to the on-site inspections conducted in 2014, compliance was generally observed at the credit institutions inspected, but some legal violations were detected that affected a broad range of customers. Among the inspections conducted in 2014, the inspections concluded with a call for measures at 22 credit institution and one inspection

Table 7
Inspections conducted by the MNB in numbers
2010–2014

		2010	2011	2012	2013	2014
Number of payment inspections	Bank	8	9	8	11	9
	Cooperative credit institution	4	6	9	8	13
	Payment institution	—	—	—	—	1
Number of findings*		113	134	125	118	174
Number of measures*		67	78	113	107	122
Number of fines	Bank	2	2	—	2	2
	Cooperative credit institution	2	5	4	4	6
	Payment institution	—	—	—	—	0
	Total:	4	7	4	6	8
Amount of fines (in million HUF)	Bank	14	17	—	3,2	35
	Cooperative credit institution	1	4,4	3,2	20,4	27,5
	Payment institution	—	—	—	—	0
	Total:	15	21,4	3,2	23,6	62,5

* The row 'Number of findings' refers to deficiencies described in the inspection reports; whereas the 'Number of measures' indicate actions prescribed for addressing these deficiencies.

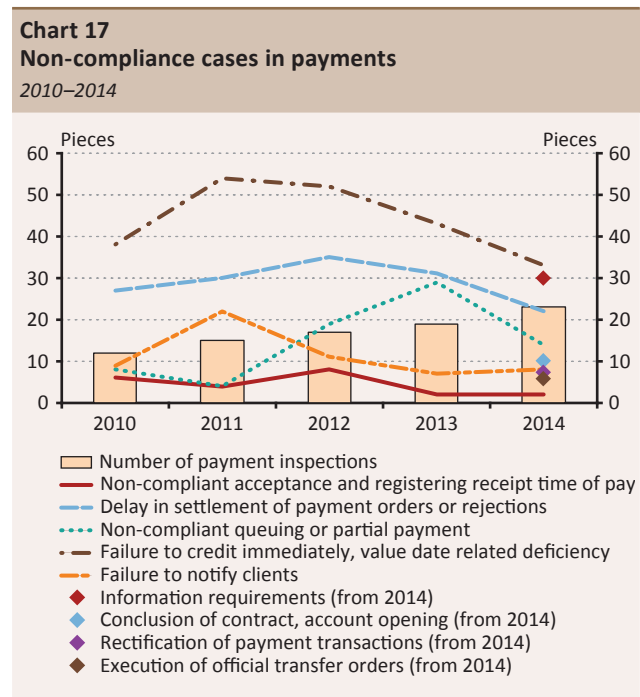
³⁷ Act LXXXV of 2009 on the Pursuit of the Business of Payment Services.

³⁸ MNB Decree No. 18/2009 (VIII. 6.) on executing payments and the technical tasks related to MNB resolution.

was concluded without the application of further measures. In general, the inspections found that all inspected credit institutions had committed violations, and the MNB established this fact in its reports on 127 occasions. In consideration of the severity of the violations identified, the MNB imposed fines amounting to a total of HUF 62.5 million in addition to the measures prescribed. Since the scope of payment inspections has been extended to cover the provisions of the Act on Payment Services, and in consideration of the related increase in auditing resources and the nature of the infringements explored, the number of payment inspections with fines imposed increased compared to 2013. This also reflects the recently tightened sanctioning methodology of the MNB.

During the inspections aimed at examining compliance with the Act on Payment Services, it was found that most violations occurred in relation to the provision of prior and subsequent information to customers and the extra fees charged for these services. According to the Act on Payment Services, customers qualifying as consumers and microenterprises must receive subsequent information on the execution of their payment transactions at least once a month, free of charge. The inspections found that several credit institutions charged a fee for the preparation and mailing of the account statements; in addition, the framework contract had no provisions on or was not obvious about how the credit institution was to ensure that the service was provided free of charge as required by law. Failure to comply with the obligation to the information requirements qualifies as a key violation, as in most cases, it causes – either directly or indirectly – financial losses to customers and it is suitable for misleading customers. It was another key violation that several credit institutions

charged customers, to different degrees, for the blocking of bank cards. Despite the fact that the number of cases involving not immediately crediting and the application of incorrect value dates declined significantly by 2014, these cases remain the most frequent violations in respect of the MNB Decree (Chart 17). Since the relevant provisions have been in effect for a long period of time, the MNB imposes tighter sanctions in the case of such violations. Other frequent deficiencies included the delayed execution of submitted payment orders and rejections, non-compliance with the agreement concluded with the customer regarding the queuing of payment orders and their execution in case of lack of sufficient funds, or non-compliance with partial payment due to the lack of sufficient funds.



2.4 Developments in Hungarian and international regulation affecting payments and financial infrastructures in Hungary

Effective as of 2015, the modified financial transaction tax supports a more intensive use of payment cards for purchases, and creates a possibility for card issuers to promote card use more actively.

Under the former rules, payment service providers issuing cards paid 0.3 per cent of the value of card purchases in financial transaction tax. Although this was limited to HUF 6,000 per transaction, in practice, due to the typically low amount of card purchases, for the vast majority of transactions the limitation did not reduce the tax liability. Consequently, as the volume of card purchases increased, issuers also incurred a higher tax liability. This reduced issuers' incentives to promote card use despite the fact that, as the MNB's previous analyses have found, in the majority of cases the transaction tax was passed on by payment service providers to consumers in annual card fees.³⁹ However, the amount passed on mostly covered the tax liability arising in respect of the average annual volume of card purchases. This solution increased cross-pricing between services and customers, while it failed to provide coverage for the higher tax liability on the volume of purchases increasing at a higher rate than previously estimated. As a result, issuers were less interested in an increased volume of purchases, since that would have led to a higher ratio, within their tax liability, of taxes which are not passed on. The amended legislation effective as of 2015 addresses the above problem by imposing a single lump-sum transaction tax on payment card purchases without regard to the intensity of card use. Accordingly, where in the year preceding the year concerned a payment card was used for payment on at least one occasion, then a lump-sum transaction tax of HUF 800 is payable on the total volume of purchases made with the card. The regulation therefore supports issuers' incentives to promote card use, since as the volume of card purchases increases as a result of such incentives, the tax charged per transaction will decrease. Additionally, the regulation gives priority to the

issuance of modern cards using contactless technology by imposing a lower lump-sum tax liability of HUF 500 on such cards. The modified transaction tax may therefore revive issuers' interest in promoting card use more intensively, and the MNB indeed expects market participants to contribute more actively to the increased use of payment cards.

Hungarian legislation to be amended pursuant to the Payment Accounts Directive could, as early as in the second half of 2016, enable the creation of the first payment account schemes with basic features, simpler process of bank switching, and a more transparent pricing of payment services. The Directive primarily aims to make the payments market of the European Union standardised and more transparent for consumers. The transposition of the provisions of the Payment Accounts Directive into Hungarian law opens up new possibilities for consumers in the field of access to payment services, which could contribute to the more widespread use of electronic payment solutions. Consumers who currently do not hold payment accounts will gain access, under transparent terms, to the payment services that are essential for the execution of electronic payments at low cost. In this regard, legislation should consider the need for payment account with basic features to support the financial inclusion of consumers excluded from the use of electronic payment services, and to facilitate the more intensive use of such services for consumers who currently hold accounts but, for various reasons, make no or only limited use of them. Payment services with basic features and their volume to be provided at low cost need to be determined following a thorough survey of retail payment habits in order to ensure alignment with the payment habits of the target customer group, and to encourage customers to use socially efficient electronic payment solutions. The payment account with basic features must be available nationwide. In order to ensure interoperability in the

³⁹ Tamás Ilyés, Kristóf Takács, Lóránt Varga: Changes in the fees on payment services and the structure of payments following the introduction of the financial transaction tax. MNB Bulletin, March 2014.

payment services market, the establishment of clear rules on bank switching will provide a single framework wherein switching between payment service providers becomes simpler. The new rules will make it possible to address the current problem that customers do not have sufficient information on bank switching on the one hand, while on the other they choose not to initiate switching due to the perceived complexity of the process. The new rules for payment accounts also significantly improve transparency in the pricing of payment services, and provide for the comparability of the terms of their use. The fees associated with the most frequently used services and those linked to payment accounts resulting in the highest costs will be required to be indicated in a standardised form in terms and conditions and in account statements, while definition of services will have to be standardised at the EU level. Therefore, to ensure comparability, the fees and conditions applicable to payment accounts will be presented in a standardised form in both ex-ante and ex-post information. Account selector programs helping customer orientation also play an important role since, owing to standard definitions and the rules concerning their operation, they may provide much more efficient support for consumer information than what is currently available.

This spring's adoption of an EU regulation on the interchange fees charged in the payment card business and on the business rules of the card market enables the establishment of a more efficient single European card market. Under the Regulation, with both domestic and cross-border card-based payment transactions, interchange fees are limited to 0.2% and 0.3%, the levels applied in Hungary since the beginning of 2014. Additionally, the Regulation adjusts a number of business rules concerning the card business, which are required to be used uniformly throughout the EU. Under the new rules, both Member States and the organisations involved in the operation of card schemes are prohibited from applying rules that impose territorial restrictions on the activities of payment service providers participating in the card scheme as issuers and acquirers. Card schemes and the organisations processing transactions must be independent of one another in their operations, and hereinafter they are prohibited from the use of cross-pricing between their services, and the services of

the companies processing transactions must be made technically interoperable. In order to improve the information of merchants accepting card payments, payment service providers must offer merchant fees specified individually for each card brand and category, and provide detailed information to merchants about card transactions and the fees charged in connection with such transactions. The conditions for merchants' card acceptance is further improved by the fact that the honour-all-cards rule may only be applied to cards subject to regulated interchange fees, enabling cards subject to higher fees to be refused. Additionally, in the future merchants may not be forbidden to influence the payer's choice of payment method so that in the course of payment they may prefer payment cards that provide higher benefits to merchants.

Through the short- and longer-term regulatory regime outlined in the opinion of the European Banking Authority (EBA) on virtual currencies (such as Bitcoin), the risks identified may be managed adequately. EBA carried out a detailed analysis of the characteristics of virtual currencies and the operation of their systems,⁴⁰ taking into account the potential risks arising from the use, purchase and holding of such instruments. More than 70 risks were identified, primarily to users and other market participants, the integrity of the financial intermediary system, payment systems, and regulatory authorities. Based on the possible impacts and the risks outlined, the EBA proposes, as an immediate response, the prevention of any interaction between regulated financial services and virtual currencies through the avoidance of virtual currencies being purchased, held and sold by credit institutions and financial institutions. Over the longer term, a comprehensive regulatory approach may need to be adopted with detailed provisions for the governance and operation of virtual currencies.

By 31 October 2016, both payment service providers operating in Hungary and payment service users must comply with the common EU requirements for credit transfers and direct debits in euro. The requirements set out in the SEPA⁴¹ End Date Regulation⁴² aim to enable customers of payment service providers to execute euro payment transactions from a single payment account with the greatest possible efficiency and subject to the same terms and conditions.

⁴⁰ At the time of the publication of the EBA's opinion, over 200 different virtual currencies were known.

⁴¹ Single Euro Payments Area.

⁴² Regulation (EU) No 260/2012 establishing technical and business requirements for credit transfers and direct debits in euro and amending Regulation (EC) No 924/2009.

SEPA is based on common technical standards and payment schemes, of which SEPA credit transfer (SCT) was introduced in 2008 and SEPA direct debit (SDD) in 2009. In euro area countries, the migration to common payment schemes progressed slower than necessary, as a result of which the end date of migration had to be postponed by six months until August 2014. Non-euro area countries are required to complete migration by the end of October 2016. The experiences of euro-area countries showed that preparations for the application of SEPA payment methods require a long period of time. Importantly, the full migration to common European payment schemes requires action not only on the part of payment service providers; consequently, payment service users, and in particular corporate customers generating the highest euro turnover, should be involved in the effort at the earliest possible time. This is because euro payment transactions carried out within the EU must be transmitted from end to

end in SEPA format, the preparations for which could be time consuming even for large corporations. In addition to the automated end-to-end processing of euro credit transfers and direct debits to common standards, preparations must also be made in view of the fact that payment service providers shall not require payment service users to indicate the bank identifier code (BIC) of the sending or receiving payment service provider, because it should be possible to process payment transactions based solely on international account numbers (IBAN). Taking into account the experiences with the migration to SEPA payment schemes in euro-area countries, in order to ensure implementation within the time limit set, the MNB continuously monitors the level of preparation in the domestic market as well as the progress of the tasks required for the migration. Currently, more than 71 per cent of euro credit transfers by Hungarian banks are carried out using the SEPA standard.

2.5 Transformation of KELER pursuant to CSDR

In 2014, the EU Regulation on Central Securities Depositories (CSDR) came into effect, and the development of regulatory technical standards (RTSs) setting out specific rules is also in progress, the provisions of which must be complied with in the future by KELER as a central securities depository. In developing CSDR and the associated RTSs, legislators considered the lessons learned in connection with regulations on central counterparties (EMIR). Consequently, CSDR is expected to be a more practicable regulation, which in several aspects is based on industry best practices. To promote the safe, efficient and smooth settlement of financial instruments in the Union, the Regulation and the related rules lay down uniform requirements for central securities depositories. The second level legislation of CSDR comprises a total of six RTSs, five of which were prepared by the European Securities Markets Authority (ESMA) and one by the European Banking Authority (EBA). These specify detailed rules, among other aspects, for the settlement process, default, the maintenance of records, risk assessment, as well as the authorisation processes and investment policy of central securities depositories. In addition to the foregoing, four implementing technical standards (ITSs) and two other technical recommendations are being developed in connection with the RTSs. As both EBA and ESMA are required to submit draft secondary-level legislation to the Commission by 18 June 2015, the second-level, detailed rules of CSDR are expected to become effective by the end of 2015. Central securities depositories, including KELER in Hungary, are required to submit their applications for authorisation within six months of the RTSs being issued. Preparations within KELER are

being coordinated by a working group set up for this purpose, enabling the authorisation of KELER under CSDR in 2016.⁴³

The regulations for central securities depositories prescribe tighter rules in respect of the continuous monitoring of defaults and securities reconciliation.

Although in order to promote financial stability, international regulators have been making efforts to ensure that most financial transactions are cleared through central counterparties so that the clearing and settlement risk associated with the transactions is reduced, this is not always possible. In such cases, securities leg settlement, and occasionally also cash leg settlement, continues to take place directly in the central securities depository – such transactions outside the regulated or guaranteed markets are referred to as OTC transactions, the volume and value of which is significant in Hungary today⁴⁴ (Chart 1). In the case of OTC transactions, orders for debits and credits involving securities accounts held with the central securities depository are initiated by account holders on behalf of their own or their customers. Having regard to the significant clearing and settlement risk associated with OTC transactions, CSDR requires central securities depositories to continuously monitor defaults and impose fines on defaulting parties. As another new element of regulation, central securities depositories are required to match with credit institutions and investment firms, at least once a day, the transactions booked by the depository on the day concerned, and at least on a weekly basis in respect of all holdings recorded on securities accounts.⁴⁵ Last but not least, as part of the new regulation, internalised securities settlements will also be monitored.

⁴³ As KELER is both a central securities depository and a specialised credit institution, it remains subject to local and EU level regulations on credit institutions. As opposed to EMIR, authorisation under CSDR does not require convention of a CCP college, leaving authorisation within the powers of Member States.

⁴⁴ The volume of the OTC market is more than 35 times that of the guaranteed market.

⁴⁵ Currently KELER issues unilateral account statements on a daily basis.

Box 5**Authorisation of KELER CCP under EMIR and regular reviews**

In addition to standardising the sector, the regulation of central counterparties at EU level (EMIR) aims to facilitate the appropriate detection, measurement and management of systemic risks. In order to ensure compliance with EMIR, central counterparties within the EU are required to complete an authorisation process, which is carried out by a college comprised of international members. The international college is needed to ensure standard assessment across the Union. In addition to the MNB and the European Securities Markets Authority (ESMA), the college of KELER CCP also included authorities of countries from which KELER CCP has participants, including representatives of the financial supervisory authorities of Ireland, Belgium and the UK. As part of the authorisation process, college members examined compliance with the EMIR rules, and following a prolonged procedure, on 4 July 2014 KELER CCP, as the ninth central counterparty in Europe, was granted an operating license under EMIR in accordance with college members' opinion; thus its operations, including risk management tools and procedures, are now officially compliant with EU requirements. Under EMIR requirements, KELER CCP must comply with the requirements on a continuous basis, which is to be reviewed by the college at least once a year in addition to receiving continuous information about any material changes and events concerning the central counterparty that are relevant to risk.

3 Ongoing and upcoming developments of the financial infrastructure

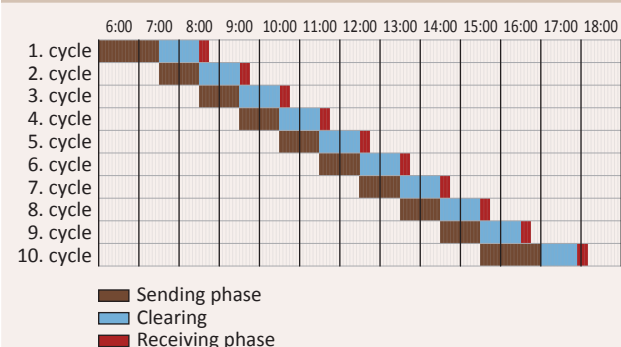
3.1 Increased frequency of intraday clearing cycles and extended operating hours

Doubling the frequency of the intraday clearing cycles of the ICS this year will further accelerate the execution of domestic credit transfers. GIRO's strategy adopted in autumn 2014 also sets out the objective of increasing the number of intraday clearing cycles in the ICS in order to accelerate payments and to meet recently arising market needs. Accordingly, the number of clearing cycles is set to increase as of September 2015 from five to ten, and credit transfers will be cleared at hourly intervals with the exception of the last clearing cycle in the system operated by GIRO (Chart 18). This development will increase the number of payments that can be executed within the day out of the credits received, which may further improve the efficiency of the financial management of the business sector, while it may also reduce waiting time in the case of transactions where delivery may only take place following payment. Faster credit transfers allow the amounts transferred to be used up to several times within the same day, thereby improving liquidity management, which primarily benefits enterprises.

Additionally, credit transfers may also provide an alternative to cash payments in the future in cases where electronic payment has so far been prevented by the time required for the execution of transfers. These benefits may also contribute to an increase in the number of electronic payments, improving the efficiency of the payment system and reducing the significant social costs involved in the execution of payments.

The extended operating hours of the ICS enable both households and businesses to make fast, low-cost credit transfers over a wider time interval. The development therefore provides significant benefits to participants in the real economy. Based on market needs, the first clearing cycle is to be moved earlier from its current time, while responding primarily to the needs of businesses, the last clearing cycle is to be executed later. Under the new arrangements, from September 2015 credit transfers will be cleared by the ICS first at 7:30 a.m. and last at 5:00 p.m. The first cycle starting earlier carries benefits primarily for households, allowing credit transfers initiated after the end of the previous business day (typically after 4 p.m. or at weekends) to reach payees earlier on the next day. Conversely, the last cycle shifted later offers benefits to businesses, allowing them to submit credit transfers until a later cut-off time to be executed on the same day. To that end, in parallel with the extension of operating hours and in accordance with the MNB's requirements, payment service providers will apply later cut-off times until which customers may submit payment orders for execution on the same day. With longer operating hours, the ICS processing credit transfers will be better suited to the payment habits of households and businesses and may thus

Chart 18
Schedule of the ten intraday clearing cycles in the ICS from September 2015



improve the efficiency of their financial management. In alignment with the extension of operating hours of the ICS and other developments, the operating hours of VIBER, which settles the net positions calculated by the ICS, will also become longer, as a result of which the system will open at 7 a.m. instead of 8 a.m. from mid-2015.

More frequent cycles and extended operating hours will not lead to any major changes in banks' business operations and the development will require only a low level of resources on payment service providers' part. This is due to the fact that at the time of introducing intraday credit transfers in 2012, the MNB also set the requirement for payment

service providers to design their systems by taking into account a potential subsequent increase in cycle frequency. The development enables the services provided by GIRO to better support compliance with the statutory obligation for payment service providers. The MNB does not foresee any changes to the 4-hour settlement time defined in legislation; therefore, should payment service providers encounter problems following the development, the statutory time limit can still be observed by rolling over items to be cleared to a later cycle. Importantly, even if regulations were not to change, for a major part of credit transfers the actual execution time is expected to be reduced, and with adequate operations, the amounts transferred could reach payees in one hour on average.

3.2 Discontinued overnight clearing of credit transfers

As of 2016, the credit transfers currently cleared in the overnight clearing system of the ICS are also set to be transferred into the intraday clearing system.

In parallel with the enhancement of intraday clearing, the overnight clearing platform of ICS is to be phased out gradually, initially affecting the credit transfers initiated by the Hungarian State Treasury and those submitted on paper by customers. After re-channelling such transactions, the overnight clearing system will process only transactions of core direct debits and other debit-type payment methods. The 4-hour time limit specified in payment legislation is currently applicable only to orders submitted electronically. In the case of paper-based transfer orders submitted by customers to payment service providers, the previous rules allowing execution within one day remained in effect at the launch of the intraday system, making it possible to continue sending such orders to the overnight clearing system. Nevertheless, a major part of payment service providers already send paper-based payment orders to the intraday system. The execution deadline for paper-based credit transfers is not set to change from 2016; however, service providers currently using the overnight system are required to re-channel their credit transfers to the intraday system by the beginning of next year.

In order to channel credit transfers out of the overnight clearing system, a solution is needed to manage the crediting of large volumes of transactions initiated by the Hungarian State Treasury on peak days on payment service providers' part.

In order to ensure smooth execution, large volumes of credit transfers initiated simultaneously on specific days must be scheduled so that they do not cause disruptions to the management of other transactions on the payment service providers' side. For the purpose of payments by the Hungarian State Treasury, peak days include the days on which pensions and other pension-type benefits are paid, when about 1.5 million items need to be delivered to payees by credit transfer. This means that payment service providers with a larger number of pensioners in their customer base are at times required to receive and credit to the payment accounts held with them several times the average volume of credit transfers. Set to be implemented as of autumn 2015, higher cycle frequency and extended operating hours in the intraday clearing system enable payments to be scheduled and processed more flexibly. In order to ensure smooth transition, the MNB has started consultations with the Hungarian State Treasury and market participants.

3.3 Opportunities for enhancements of card clearing

Similarly to the development of intraday credit transfers, opportunities to process transactions faster need to be assessed in the field of executing domestic payment card transactions as well. The developments implemented in 2012 in the field of domestic credit transfers significantly accelerated transaction clearing, but did not affect any other electronic payment methods. As a result, in the case of card payments, which are the electronic payment method most frequently used by households, payees, i.e. merchants continue to receive the consideration of the transactions one or two business days following payment. Since in recent years the volume of purchases made with payment cards has grown at a fast rate – owing in part to a more intensive use of the existing acquirer infrastructure apart from the growing network of acquirers – merchants accepting cards experience an increase in the volume of transactions where they do not receive the consideration of the purchases

immediately, only some days afterwards. In order that the differences between payments made with payment cards and cash are further reduced for merchants, similarly to credit transfers, it may be appropriate to accelerate the clearing of domestic card payments and the delivery of consideration to merchants. With a view to the faster clearing of payment card transactions and improved efficiency, it may be appropriate to modify the process of card clearing so that it can be implemented using the least possible amount of additional resources. Similarly to credit transfers, transactions should be cleared several times a day. In the course of the assessment, a detailed examination should be carried out on the possible role of already existing financial infrastructures, the effects of joint processing with other payment methods, and the questions arising in connection with the management of the different standards and execution rules of card schemes.

3.4 Promotion of card use by merchants

Due to card acceptance costs falling as a result of the reduction of interchange fees, for merchants generating higher volumes of transactions card acceptance may become cheaper than processing cash payments. As a result of the 2014 reduction of the interchange fees applied in payment card purchases, the cost of card acceptance has become significantly lower for domestic merchants as the interchange fee is incorporated into the fee paid by merchants for card acceptance. For retailers with the highest turnover, this significantly reduced the difference between the costs of cash and card transactions, the latter potentially becoming even lower in certain cases. It is important that a comparison of the costs of the two payment methods should take into account all costs associated with each payment method and not only the costs arising directly. With card payments, a majority of the costs are incurred directly in connection with the processing of payment transactions, whereas the cost of processing cash payments is only partly incorporated in the payment fees of cash services, while some of those costs are incurred as costs of other services and in the form of higher labour costs. Therefore, an accurate assessment of the effects of the cost reduction requires a comprehensive cost analysis of executing payment transactions, which should take into account the resources required for all activities associated with payment transactions. If the share of card payments increases within the total turnover for retailers with the highest turnover, as a result of the reduction in interchange fees – due to the different cost structures of the cash and card payment methods – in the future the cost of processing card payments may become lower relative to cash payments on an increasingly large scale.

Promotion of card use via merchants at the time of purchase may effectively support an increase in the volume of card payments. Since in the stores of merchants with the highest turnover card payment is already available, and a vast majority of consumers hold a payment card and receive their regular income to payment accounts, the conditions for much more intensive card use are in place even today. To ensure that a greater number of card payments are actually made, consumers' interest must be raised in the use of payment cards, i.e. consumers must be encouraged

to use their cards on the one hand, while on the other hand they need to be given adequate information on the process and benefits of card use. With previous promotions for card use, provided typically by card issuers, the provision of information, purchases and the application of benefits occurred at three different points in time, which may have reduced the effectiveness of incentive programmes. By contrast, in the case of incentives provided with the active participation of merchants, information and benefits may both be provided at the time of the purchase.

The MNB definitely expects that a part of the savings on operating costs resulting from reduced interchange fees be used by retailers with the highest turnover on incentives to promote card use. Owing to acceptance costs falling as a result of reduced interchange fees, retailers with the highest turnover may have generated significant annual savings up to several hundred million HUF. Over the past six months, the MNB has contacted thirty high-turnover retailers and service providers in order to create programmes providing incentives for card use to a wide range of consumers based on the cooperation of market participants. Incentives for card use are provided with the coordination of the MNB and contributions from the international card companies operating in Hungary and payment service providers. However, the successful implementation of the programme primarily requires active merchant participation. As part of that, the MNB expects that participants develop a system to provide incentives for and information on card use across their own networks that ensures that consumers who already hold cards at the time of their purchase are given adequate information on the process of card payments and also have an interest in paying with their cards.

In order to improve the effectiveness of the incentive programme, solutions tailored to needs of each merchant must be developed on the basis of a framework defined jointly by the MNB and market participants. In order to simplify execution, reduce costs and accelerate implementation, it is expedient not to create an incentive programme that is highly standardised. While standardising the basic framework of incentives for card use, market participants must

be given sufficient room to tailor the programme to their operational specificities and needs. Based on the key element of the incentive programme, merchants should offer consumers the option of card payment at the time of or immediately preceding the payment, and provide them with information on the process of card payments, while using some means to raise cardholders' interest in paying with their cards. This may be done by granting benefits, or through the frequent buyer programs already operated by most major retail chains, or in any other way that puts

consumers paying with their cards at an advantage over cash payments. As part of incentive programmes, participating merchants may also create an interest for their own employees in increasing the rate of card use. As a key element of the incentive programme, through their own information channels merchants publicly disclose information about the incentive programme which they operate, making such information available to a wider audience. Additionally, in cases where a merchant has units in which card payment is not yet available, arrangements should be made to provide it.

3.5 Developments relating to electronic bill payment

The developments launched by the Hungarian Post in the field of payment services may make electronic payment of bills available on a large scale. In Hungary, most utility and other bills are still paid via postal payment services using postal inpayment money orders (yellow cheques) and postal bill inpayment orders (white cheques). In the vast majority of cases, such bills are paid via postal payment services using cash. Previously, in the course of making card payments at post offices, customers in fact used their cards to withdraw cash from their payment accounts, and could only pay their cheques with the cash withdrawn without actually receiving it. However, the typically high fees of this transaction hindered its widespread use. By the second half of 2014, legislative amendments⁴⁶ adopted in recent years eliminated all legal obstacles to postal card payments actually qualifying as card purchases. As a result, from the first half of 2015, it will be possible to use the vast majority of payment cards to settle regular bills at post offices without the payment of any additional fee. Importantly, however, recent developments have also enabled the inpayment of yellow and white cheques outside of post offices without the use of cash. Since the end of last year, a mobile payment application installed on smart phones has been available for the inpayment of yellow and white cheques bearing QR codes. In this case, the bills are paid with a bankcard suitable for internet purchases following the reading of the QR code found on the cheque. As a further innovation, 20 bill payment machines were deployed nationwide in early 2015, which also enable the inpayment of cheques with payment cards independently of postal opening hours. The machines can be used for the inpayment of both pre-printed and manually completed cheques. Since cheque inpayments via both the mobile application and machines qualify as electronic orders, the amounts paid in are credited to the payment account of the

service provider issuing the cheque on the business day following the business day of receiving, i.e. a day earlier than with inpayments made at post offices.

In addition to postal services, payments for utility and other services can now also be made with other providers using bankcards via machines. Apart from postal payment services, among the options for the payment of bills several solutions have been introduced over the past year that facilitate the more widespread use of electronic payment instruments. Such providers typically do not offer bill inpayment possibility as payment service providers but are connected with the providers issuing bills and their customers in the capacity of fee collection providers. With these services, customers may make their payments via machines (typically using their bankcards) in a way that the amount owed to the bill issuer is considered to be settled at the time of payment. In this case, the amount paid is considered as the funds of the bill issuer from the time of payment. With such solutions, the machines may also provide access to the bill issuer's other customer services, further improving the utilisation rate of the machines and the efficiency of customer service.

In order to ensure that electronic bill payment is adopted into general use, utility and other regular bills must be available and payable on the largest possible scale via electronic bill presentment and payment systems. The development of electronic bill presentment and payment in Hungary may be facilitated by the Hungarian Post's acquisition of EBPP provider Díjnet Zrt. The adoption of electronic bill payment into general use requires the introduction of services that enable a wide range of bill issuers to offer EBPP services based on interoperable technical solutions. This would reduce bill issuers' development

⁴⁶ From 1 July 2012, a less strict specification of the payment methods available for payments between payment accounts as listed in MNB Decree No. 18/2009 (VIII. 6.) on executing payments has made it possible to execute payments between payment accounts in ways that are not specified. Additionally, under Act CLIX of 2012 on Postal Services, from 16 July 2014 the universal postal service provider has been authorised to settle payment transactions between payment accounts. The Hungarian Post was granted the relevant authorisation on 6 August 2014.

and administrative burdens as it may be sufficient for them to subscribe to a single EBPP service to reach a large number of consumers, while enabling consumers to access all electronically managed bills through a single registration. It is recommended that EBPP systems are constructed so that they allow access to the bills of providers that currently run their own EBPP systems. EBPP systems should

further enable bill issuers with a low turnover and few customers (such as condominiums) to subscribe to the EBPP system at low cost. In respect of the electronic payments part of the services, efforts must also be made to ensure interoperability through providers' shared use of technical solutions, and the emergence of a fragmented bill payment market must be avoided.

3.6 Developments in the rollout of the CLS system

The due diligence phase of the joint project initiated in early 2014 by the central bank and CLS Bank International was successfully completed in October 2014, following which the rollout of the system was started. This aims to complete the harmonisation tasks identified in the course of due diligence, and to develop the bank operation solution expected to go live in November 2015. In February 2014, the MNB and CLS launched a joint project to make the forint a settlement currency for users of the Continuous Linked Settlement service provided by CLS. Currently, the system enables credit institutions to offer multilateral net settlement for interbank currency transactions in 17 currencies. Bringing the Hungarian currency on board will provide for the settlement of transactions between HUF and other CLS-settled currencies free of foreign exchange settlement risk,⁴⁷ allowing participating resident and international banks to eliminate a type of risk the management of which has not been a priority to date. Therefore, by establishing internationally harmonised processes, the service provided by CLS contributes to improving the security of interbank cooperation both internationally and within each country concerned. Project members have set 16 November 2015 as the go-live date, as of which the forint will be one of the settlement currencies in the CLS system.

As part of the due diligence phase of the project, CLS gained an understanding of the local legal environment and analysed local foreign exchange turnover, and the design and development of joint operational processes with the central bank were started. Based on the information collected in the due diligence phase, the managements of CLS and the central bank adopted a decision allowing the project to enter the implementation phase in the absence of any legal, business or technical obstacles to make the service available in respect of the forint as well. The tasks to be completed during the one year of implementation

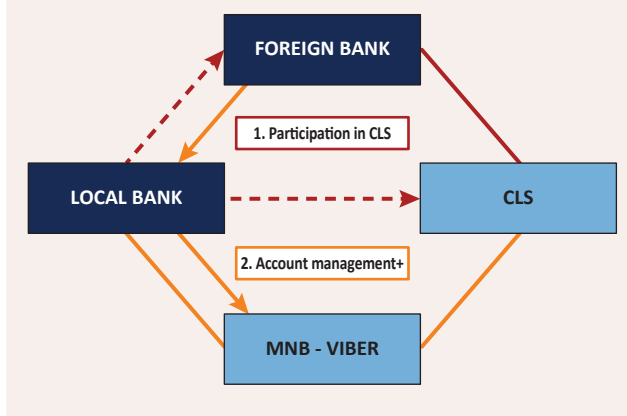
include amendments to clarify the provisions of the act on settlement finality in payment and securities settlement systems,⁴⁸ whereby the legal environment required internationally by the CLS will be created in Hungary as well. Additional tasks include the alignment of VIBER with the IT systems of CLS, the thorough testing of future operations with the participation of the banks intending to use the system, and the revision of the central bank's account management policy and business terms. One of the most important operational changes will involve the extension of VIBER operating hours, which will bring daily opening earlier to 7 a.m. from 3 August 2015. This is necessary because in the globally harmonised order of operations of CLS, the time window of 7:00 to 9:00 CET will be available for the settlement of HUF payments. Non-resident banks that are CLS settlement members need a resident HUF account holding bank that has sufficient liquidity in the payment schedule specified by CLS, i.e. the morning hours, allowing it to transfer to the HUF account of CLS held with the MNB the amount to be paid by the non-resident settlement member (Chart 19). Apart from creating competition among domestic account holding banks, this highlights the importance of the role played by the forint interbank market, since banks may also obtain funds to manage their morning liquidity from the interbank market. Prior to the launch on 16 November 2015, tests will be carried out in two phases, the scope of which will include all details of future operations. In addition to the account management service provided to non-resident banks, access to the CLS system by resident banks also needs to be developed. The CLS service is available through direct and indirect access, the differences of which are described in detail in the 2014 Payment Systems Report. The MNB gives priority to ensuring that resident banks settle the volume of their own transactions via the CLS system, which is how the integration of the forint into the CLS system can contribute to the stability of the domestic financial system.

⁴⁷ Foreign exchange settlement risk, also called Herstatt risk, is the risk that the consideration of a foreign exchange transaction fails to be delivered to the counterparty that has already met its liability. This is connected to the different opening hours applied by payment systems across the world, which essentially result from time zone differences.

⁴⁸ Act XXIII of 2003.

Chart 19

Relationships in CLS membership



CLS membership may require major changes in the liquidity management of account holding banks.

Whereas previously customers' HUF payments associated with foreign exchange transactions were more evenly distributed across the day, with the use of CLS these will be concentrated in the morning hours, although the total value for the day concerned will be decreased as a result of netting by CLS. As the vast majority of CLS settlement members are not VIBER participants, if they wish to use the CLS service for their HUF transactions as well, they need an account holding bank from among VIBER participants. Although

such contractual relationships currently exist, CLS use will bring about changes in the turnover generated by indirect customers as it will require the account holding bank to settle time-critical morning items. In the future, banks holding HUF accounts for multiple CLS members may face an additional challenge from the requirement to use VIBER, although in a lower value, for the settlement of credit transfers which could previously be settled in their internal systems. This may present difficulties for banks whose funds subject to a reserve requirement are limited, since in this way their required reserves, constituting a part of their liquidity within VIBER, are smaller in absolute value. Essentially, the specific liquidity strain arising in VIBER may be resolved in two ways: (i) the bank concerned pledges eligible securities, whereby it increases its intraday credit line available from the central bank; or (ii) the bank concerned enters a trade in the interbank market whereby it gains access to intraday forint liquidity. In the morning hours, the timeframe available to secure liquidity may be tight, as a result of which the provision of the account holding service requires additional preparations on the part of potential account holding banks. Since the liquidity available in VIBER at a systemic level is considered sufficient, the MNB expects that the role of the interbank market, allowing the reallocation of this liquidity, will gain prominence following CLS inclusion.

3.7 Possibility of creating a renminbi clearing centre in Hungary

Following other European central banks, as part of its Renminbi Programme,⁴⁹ the MNB provides support for increasing the weight of the renminbi (RMB) in international clearing. While the importance of China in international trade is continuously increasing, the value of trade transactions cleared in RMB was negligible before 2008. Over the past years, the increased international use of RMB has become a priority of Chinese economic policy. China has recently become one of the key foreign trade partners of the European Union, and Hungary plays a significant role in regional relationships with China. To ensure that RMB payment transactions between the market participants concerned are executed smoothly and efficiently, it is possible to develop RMB clearing solutions so as to support Chinese economic activity at a regional level through a centre in Hungary. Using the RMB outside China is contingent on the establishment of the infrastructure required for the clearing of payment transactions. This may be achieved through a Chinese commercial bank present in Hungary holding

RMB accounts for banks and businesses in the region, which would enable the intrabank execution of RMB payment orders; consequently, RMB payments would in fact be executed as intrabank credit transfers of a commercial bank. In this case, cross-border RMB payments would be executed through the bank's parent bank in China. The smooth execution of the service may require the Chinese central bank (People's Bank of China, PBoC) to designate the Hungarian subsidiary of the Chinese commercial bank as an official clearing bank. This may be needed because the liquidity options provided by PBoC are more readily available to official clearing banks, access to Chinese financial systems and markets can be provided to them more directly, which enables the provision of faster and cheaper clearing services that are also more convenient for customers. The designation of official clearing banks carries the additional benefit that they are also allocated a quota for the Chinese domestic foreign exchange market and bond market.

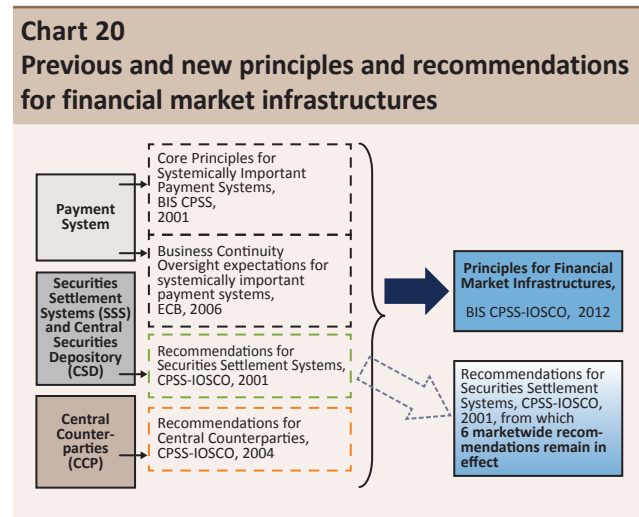
⁴⁹ http://english.mnb.hu/Root/ENMNB/mnben_pressroom/press_releases/mnben_pressreleases_2015/mnben_pressreleases_20150219

4 Renewed oversight framework and new oversight tasks

4.1 New international oversight principles and renewal of the domestic oversight framework

In order to ensure the reliable, efficient operation of the overseen systems, the requirements for such are set out in the form of international oversight principles and recommendations. Oversight has developed in a particular synergy with the payment and securities clearing and settlement systems, and is an integral part of central banks' operations. Due to interdependencies⁵⁰ and a low level of replaceability, payment and securities clearing and settlement systems may block financial and economic activities, and may also be sources of contagion. All of this could lead to credit and liquidity risk as well as financial shocks. To mitigate risks, decision makers construct frameworks including requirements and recommendations which are aligned with the prevailing economic processes and technical solutions, while also providing for a high degree of resilience. The first international recommendations and principles concerning oversight were elaborated separately for payment systems, securities settlement systems, central securities depositories and central counterparties, and were published between 2001 and 2006 by the Bank for International Settlements (BIS) and the International Organization of Securities Commissions (IOSCO).⁵¹ During the 2008 financial crisis, financial infrastructures operated without any major systemic risks arising and reliably supported the operation of financial markets. However, the crisis proved that the principles followed at the time did not sufficiently assess and manage the risks

associated with financial market infrastructures, and did not ensure the consistency of requirements for various types of institution. The crisis highlighted the fact that, due to a more volatile economic and money market environment, financial market infrastructures should expect a riskier operating environment. On the grounds of these experiences, international oversight requirements were revised and standardised. As a result of this effort, in 2012 BIS and IOSCO issued a publication (PFMI)⁵² setting out 24 principles, which provides uniform foundations for and thereby harmonises the requirements for financial market infrastructures in order to ensure that they are robust and resilient to shocks (Chart 20).



⁵⁰ In the event of an incident or temporary outage, for instance, the central securities depository will be prevented from carrying out the securities leg settlement of securities transactions and from transferring the securities deposited with it, while as a result of its interdependency, it may prevent the execution of payment orders in payment systems due to its inability, for the duration of the temporary disruption, to handle the collateral (securities) securing the credit line.

⁵¹ Core Principles for Systemically Important Payment Systems, BIS CPSS [CPSIPS], 2001.; Recommendations for Securities Settlement Systems [RSSS], CPSS-IOSCO, 2001.; Recommendations for Central Counterparties [RCCP], CPSS-IOSCO, 2004.; Business Continuity Oversight expectations for systemically important payment systems [BCOE], EKB, 2006.

⁵² Principles for Financial Market Infrastructures, BIS CPSS-IOSCO, April 2012.

The new international principles (PFMI) set stricter requirements in a number of areas, and also concern areas which were not or not fully covered by former recommendations.

The new principles are harmonised, provide more comprehensive and detailed guidelines, are more extensive in scope, yet continue to allow flexible oversight. Compared with the earlier principles, the PFMI introduces new requirements concerning the management of general business risk, the plan for recovery and orderly wind-down. Following the crisis, the mitigation of the risks inherent in the interdependencies resulting from tiered participation arrangements received more attention; accordingly, the new principles include provisions for tiered (direct, indirect) participation and specific tiers. Similarly, greater emphasis has been given to the assessment of the relationships and interdependencies between financial market infrastructures, as these may enable the spill-over of operational and financial risks to markets and participants. The crisis highlighted the weaknesses in the management of defaults and liquidity risk; therefore, among other provisions, in order to protect the interests of participants and customers, requirements have been introduced for the segregation and portability of securities, while risk management procedures for financial resources have also been extended.

The risk-based oversight framework was essentially renewed based on the publication of the new international oversight principles for financial market infrastructures and their implementation in Hungarian oversight practice.

As the incorporation of the PFMI into respective national practice falls within the competence of individual countries, the risk-based oversight framework has been revised in view of the specific characteristic of domestic financial market infrastructures. With this, the MNB follows a forward-looking, exemplary oversight practice. The

revision of the framework relied on the currently used risk-based approach. The new principles were fully incorporated into the revised regulatory framework, except for the principle concerning uniquely to trade repositories, since there is no such institution in Hungary.⁵³ The risk exposures of overseen systems continue to be monitored through the assessment of integrated risk categories such as risk of service continuity, clearing and settlement risk, system operational interdependency risk, and the analysis of other criteria affecting efficient operations; however, the contents of these integrated risk categories have been revised and enhanced based on the principles. In the definition of integrated risk categories, in certain cases overseers deliberately use other risk categories than those considered by international standards (such as operational risk, liquidity risk, credit risk), ensuring that risk types are defined that are fully and consistently applicable to all four overseen systems in Hungary. The renewal work also had to take into account the major changes occurring in recent years in domestic payment and settlement systems, including the introduction of intraday clearing with retail payments and the extension of KELER CCP's activities. Accordingly, the focus of oversight has broadened, while certain focal points have been shifted. The adoption of relevant EU regulation (EMIR, CSDR) required the rethinking of the scope and the tasks of oversight and supervision, as well as their responsibilities concerning the KELER Group. The new international principles primarily resulted in changes to the methodology of the biannual comprehensive oversight assessment, and in the harmonisation of the methodology in respect of the overseen systems. In 2015, the biannual comprehensive oversight assessment, which is designed to assess the overseen systems' compliance with international principles and recommendations, will already be performed on the basis of the renewed framework.

⁵³ However, the methodology of domestic oversight cannot completely ignore the monitoring of operations of trade repositories (TR) due to the connection of the KELER to European TRs. Currently, KELER reports OTC transactions, the reporting of which to a central repository is required under EMIR, to REGIS-TR. REGIS-TR is domiciled in Luxembourg and is subject to cooperative oversight. The scope of domestic oversight does not include non-resident financial infrastructures in foreign ownership, in respect of which oversight is the responsibility of the central bank of their domicile, which also monitors KELER's relationship with and reporting to the trade repository as part of its oversight.

4.2 Transposition of recommendations for the security of Internet payments and compliance assessment as part of the oversight of payment instruments

The purpose of payment instruments oversight is to manage the risks of modern and novel technical solutions applied in payments and payment systems, and to maintain the trust in payment methods.

Although payment instruments oversight has not yet emerged as a separate activity in Hungary, some of its elements have already been incorporated into the oversight of payment systems, legislation concerning the execution of payments, and payment inspections. In order to ensure that the use of innovative technical solutions in payments does not pose any risk to the efficient and secure operations of payment services and payment and settlement systems, oversight must be adjusted to such solutions. In the oversight of payment instruments, the MNB plans to use a standardised framework to assess the execution rules of payment methods and the infrastructure used for the submission and execution of transactions, including the IT tools and communication channels used. Once payment instruments oversight is integrated into the domestic oversight framework, payment inspections and oversight will cover the entire execution process of payments, including access to payment methods, the methods and channels of the submission of orders, as well as clearing and settlement.

Due to the rapid development of the payment solutions available on the Internet, it is essential that the relevant security requirements are established, regulated and controlled as part of payment instruments oversight. To that end, the SecuRe Pay forum⁵⁴ on the security of retail payments established in 2011 at the initiative of the European Central Bank

has established recommendations for the security of Internet payments and criteria for the assessment of compliance with the recommendations. As a result of the efforts of the forum, the ECB and the European Banking Authority (EBA) cooperated to develop specific control and security measures for Internet payments, as well as standard recommendations and guidelines on customer information and communication with customers (Box 6).⁵⁵ The recommendations and guidelines are based on the provisions of the Payment Services Directive on information requirements and obligations relating to the provision of payment services. The guidelines cover credit transfers and card payment transactions on the Internet, the issuance and amendment of direct debit electronic mandates on the Internet, as well as transfers of electronic money between e-money accounts via the Internet. As a central theme of the guidelines, strong customer authentication will also be regulated by PSD2, which is currently being developed.

As of 1 August 2015, domestic payment methods and payment service providers operating in Member States are required to meet the new guidelines. As a competent authority, in early May the MNB was required to submit a report to the EBA on whether it intends to comply with the guidelines. In fulfilment of its reporting obligation, the MNB indicated its intention to comply with the guidelines. In order to prepare the implementation of the guidelines, it carried out a survey on the current level of compliance in the sector. For the purpose of the survey, the MNB sent self-assessment questionnaires to all stakeholders concerned, requesting their statements on whether they complied with the

⁵⁴ European Forum on the Security of Retail Payments.

⁵⁵ Recommendations for the security of Internet payments:

<https://www.ecb.europa.eu/pub/pdf/other/recommendationssecurityinternetpaymentsoutcomeofpcfinalversionafterpc201301en.pdf>

Assessment guide for the security of internet payments:

<http://www.ecb.europa.eu/pub/pdf/other/assessmentguidesecurityinternetpayments201402en.pdf>

Final guidelines on the security of internet payments:

<http://www.eba.europa.eu/documents/10180/934179/EBA-GL-2014-12+%28Guidelines+on+the+security+of+internet+payments%29.pdf>

recommendations, and if not, when they were planning to become fully compliant. The current guidelines established as part of the cooperation between the ECB and the EBA are valid for a temporary period up to the effective date of PSD2, which is currently being developed; however, the guidelines are expected to be amended by the end of next year. To benefit from

that, some countries such as the UK wish to ensure compliance with the guidelines but are planning to do so as of the effective date of PSD2. Additionally, at an international level recommendations and an evaluation system for the security of mobile payments are also being developed, which Member States are expected to implement in 2017.

Box 6

Recommendations and guidelines on the security of Internet payments

The main purpose of the minimum requirements for the security of Internet payments is to prevent fraud and abuse related to such payments. The guidelines set out minimum requirements for the general control and security environment, the specific control and security measures on Internet payment transactions, customer information, as well as communication with customers. Apart from the fourteen minimum requirements, the guidelines include a number of best practices, which payment service providers and the market participants concerned are recommended but not required to follow. The minimum requirements are divided into chapters in the categories of regulation, risk management, incident management, customer identification and authentication, security settings and protection, customer awareness, communication and customer access.

One of the most important and most controversial elements of the minimum requirements is strong customer authentication, which should be designed in such a way as to protect the confidentiality of the authentication data. Consequently, strong customer authentication needs to rely on the use of at least two of the following elements:

- I. knowledge: something only the user knows, e.g. static password, code, personal identification number;
- II. ownership: something only the user possesses, e.g. token, smart card, mobile phone;
- III. inherence: something the user is, e.g. biometric characteristic, such as a fingerprint.

In addition, the elements selected must be mutually independent, i.e. the breach of one does not compromise the other(s). At least one of the elements should be non-reusable and non-replicable (except for inherence), and not capable of being surreptitiously stolen via the Internet. In practice, strong customer authentication is typically based on a user name and a static password specified by the customer, complemented by a one-time password that may be delivered to the customer via a variety of channels such as being sent in a text message to their mobile phone or generated themselves using a token provided by their bank.

4.3 Oversight tasks related to LEI codes

The identification of participants in financial markets is one of the key prerequisites for the stability of financial markets, which is supported by the use of the LEI codes generated in a framework of international cooperation. In the aftermath of the 2008 global financial crisis, regulatory efforts were launched on a large scale, with one of their primary objectives being the mitigation of the risks of transactions in specific financial products. As part of such efforts, pursuant to the powers conferred by the G-20 countries, in June 2012 the Financial Stability Board (FSB) issued a document entitled *Global Legal Entity Identifier for Financial Markets*,⁵⁶ which sets out the requirement that participants in financial markets should be assigned unique identifiers that enable the unambiguous identification of parties to any transaction.⁵⁷

Among the criteria for the design of the LEI code, priority was given to wide applicability, flexibility and fast implementation. In the design of the LEI code, efforts were made to ensure that the code provides an adequate degree of flexibility. This was necessary to enable the issuance of LEI codes anywhere in

the world; for instance, differences between the character sets specific to each country also needed to be addressed. Additionally, LEI codes may also be used by certain national organisations and authorities to identify participants of the local financial market, thereby supplementing or replacing local-level identifiers. The LEI code has been designed primarily to suit the purposes of the institutions responsible for the stability of the financial system; however, due to its nature, the applicability of the LEI code is not limited to the public sector (Table 8).

Oversight of LEI code issuance operates in international cooperation, with the MNB contributing since October 2014. LEI codes are issued locally,⁵⁸ usually by an institution that is part of the financial infrastructure. The coordination of LEI issuance, the specification of requirements for organisations issuing LEI codes, and licensing are the responsibilities of an international organisation (GLEIF).⁵⁹ The work of GLEIF is overseen in international cooperation as part of the LEI Regulatory Oversight Committee,⁶⁰ to which the MNB has been contributing as a full member since 27 October 2014.

Public sector	Private sector
1) Improvement in reported data management and in quality of analysis based on it. LEI code contributes the identifying and managing micro and macroprudential risks.	1) Better risk management at corporate level especially as for credit risk.
2) LEI code makes it easier to handle risks concerning crossborder transactions both for authorities and corporations.	2) Operating efficiency through accelerating data processing and information gathering.
3) Employing LEI codes contributes to better estimations of risk level emerging from winding down or resolution of a company.	3) Uniforming reports towards authorities.
4) LEI code fosters transparency of the markets and reduces the risks and frequency of frauds.	

⁵⁶ http://www.leiroc.org/publications/gls/roc_20120608.pdf

⁵⁷ This makes it possible to identify not only parties to financial transactions but also their affiliated companies and company groups, thereby facilitating without limitation the assessment of the risk of financial contagion as well as the combating of money laundering and terrorism.

⁵⁸ By Local Operating Units (LOU), of which there may be more than one in a single country, each LOU being authorised to issue LEI codes for more countries.

⁵⁹ Global Legal Entity Identifier Foundation.

⁶⁰ LEI Regulatory Oversight Committee (LEI ROC).

Box 7**Brief description of LEI codes and the international administrative system**

The structure of the LEI code is specified by international standard ISO 17442:2012. The code is a series of 20 characters that may contain both numerical and alphabetical characters. The LEI code is structured as follows:

- Characters 1-4: identifier of the issuing Local Operating Unit (e.g. 5299)
- Characters 5-6: reserved characters set to zero (i.e. 00)
- Characters 7-18: unique reference data generated according to pre-defined policies. The reference data consisting of 12 characters include information such as the name, address, set and legal form of the entity associated with the LEI code, and the expiry of the LEI code (e.g. MPT6BHOJRRB7)
- Characters 19-20: check digits (e.g. 46)

Using the above example, the full LEI code is 529900MPT6BHOJRRB746

Each entity may be allocated only one LEI code and the code issued will not change even in the event, for example, of changes in ownership. It is also important that LEI codes used previously but inactivated for some reason may not be issued to another entity.

4.4 Cooperative oversight on CLS and TS2

In the near future, the MNB's oversight activities will be further extended by participating in the international oversight cooperation on CLS and TS2.

A number of financial market infrastructures provide their services across several countries and thus under several jurisdictions. Their efficient and safe operations are therefore in the interest of several national authorities, as a result of which it is essential that they cooperate on the oversight of the financial market infrastructure concerned. The CLS multi-currency settlement system and the TS2 securities settlement system, both providing international services, are overseen cooperatively by the central banks of the

countries concerned, and this oversight committee is chaired by the central bank of the domicile of the system. For CLS, the primary overseer is the Federal Reserve Bank of New York, and for TS2, the European Central Bank. The tools and tasks of cooperative oversight are the same as those of oversight on national financial market infrastructures. As the HUF is expected to be introduced into the CLS settlement mechanism in 2015 and KELER is to become a TS2 member in 2016, the MNB will also participate in the cooperative oversight of these systems. This will set new directions for Hungarian oversight, since the MNB has not participated in cooperative oversight so far.

4.5 Oversight tasks relating to recovery and resolution and their impact on payment systems

The operation of financial infrastructures is an essential factor in the stability of the financial system. Accordingly, international recommendations propose the development of recovery⁶¹ and resolution plans as a new line of defence in respect of the institutions comprising each financial infrastructure.

The institutions operating the systems comprising the financial infrastructure provide services to other participants of the market which are critical in terms of systemic risk. Due to their significance, such institutions must apply risk management methods and procedures that minimise the probability of disruptions occurring, and ensure the availability of critical functions in all circumstances. Consequently, the aim in this regard is not to provide the full range of services on a continuous basis, only critical functions. While it is obviously not possible to eliminate risk completely from the system, preparations can be made for the management of specific disruptive incidents. For these reasons, IOSCO and the Committee on Payments and Market Infrastructures (CPMI) operating under BIS auspices issued their recommendations on the recovery and resolution of financial market infrastructures in October 2014. The recommendation is in fact both a guide and a toolkit on the principles and tools for developing recovery and resolution plans. The tools employed must always be used in alignment with the financial market infrastructure concerned, in order to ensure transparency. Accordingly, the institutions comprising the financial infrastructure must have recovery and resolution plans in place. In terms of content, the two plans are similar as both are

intended to ensure the provision of critical services. The difference is that the recovery plan is prepared by the financial infrastructure itself, whereas the resolution plan is prepared by the resolution authority, i.e. the MNB in Hungary.⁶² Accordingly, the recovery plan is implemented by the institution that enters into a critical situation, and the resolution plan is by the resolution authority. The related risks are assessed and evaluated by overseers in both recovery and resolution planning.

In Hungary, the KELER Group, which operates the securities clearing and settlement system, started to develop its recovery plan in 2014. As a result, in November 2014 the Board of KELER approved the company's recovery plan, and in 2014 Q3, as part of KELER CCP's recovery plan, it developed its final loss allocation concept. In the latter, KELER CCP specified the tools and procedures which the central counterparty may use in the event of a clearing member's default of such an extent that depletes both the defaulting party's individual collateral and the collective collateral allocated to the market concerned,⁶³ i.e. the guarantee fund allocated to defaults, as well as KELER CCP's capital available under EMIR to cover default losses.⁶⁴ In recovery planning, the recovering party must be given an adequate degree of flexibility, and therefore it is essential that a preliminary assessment and evaluation of the risks specified in recovery plans is carried out by financial infrastructure overseers as well.

⁶¹ This refers to the financial recovery of systems and is introduced as a new element in addition to the existing business continuity plan (BCP) and disaster recovery plan (DRP).

⁶² The scope of the Hungarian resolution framework includes credit institutions and investment firms. Consequently, of the financial infrastructures, the MNB is required to prepare resolution plans only for those operating in either of these forms (e.g. KELER, which operates as a credit institution).

⁶³ The reserves allocated by non-defaulting parties and KELER CCP's limited contribution against its equity.

⁶⁴ As part of a forum for clearing members, KELER CCP presented the concept to market participants, which made no objections to the concept.

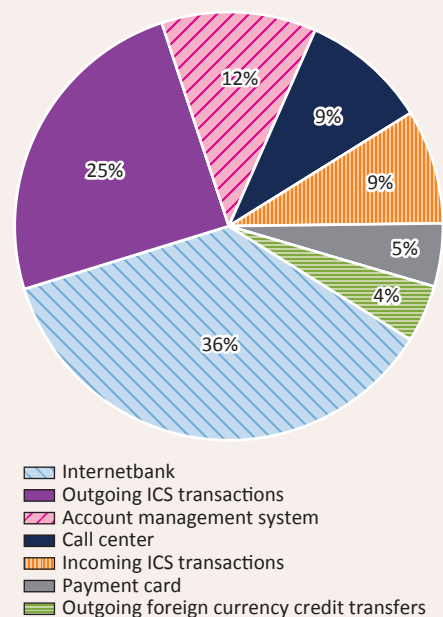
4.6 Closer monitoring of malfunctions affecting payment services, initial analysis results

In order that the operational risks of payment services are more accurately mapped, the MNB monitors the malfunctions experienced by payment service providers. The MNB has issued a decree requiring banks, specialised credit institutions and branch offices to submit detailed text reports on payment malfunctions on an ad-hoc basis and at quarterly intervals. For the purposes of the reporting obligation, malfunctions include any disruptions or outages affecting payment services. In the past year, 26 credit institutions reported a total of 169 payment malfunctions, close to 60% of which were reported by five banks. Based on the aggregation of the reports submitted in 2014, most payment malfunctions affected Internet banking services, the handling of outgoing payment orders sent to the ICS, and the operation of internal account management systems (Chart 21). According to the data reported to the MNB, a monitoring system for the automatic detection of payment malfunctions was not in place in all credit institutions: in some cases, malfunctions were only detected on the basis of customer complaints made in person or through call centres. In most cases, incidents affecting Internet banking were detected within half an hour of their occurrence, but persisted for an average 3 hours and 57 minutes. Such payment incidents could generally be attributed to some technical failure, mostly short circuits, system failures, insufficient memory or overload. These failures prevented customers from accessing the bank's Internet interface, or even if login was successful, prevented or limited their use of the services available. Depending on the type of the failure, the malfunction may have affected only some customers. The second most frequent problem was experienced in connection with the execution of outgoing payment orders to be sent to the ICS. In the event of malfunctions affecting ICS intraday clearing, the amounts transferred were sent out only one or two clearing cycles later, occasionally violating the 4-hour rule. In such cases, the root cause of the malfunction was again mostly a failure of a technical

nature such as a version upgrade, downtime, system update or a slowdown in the background database. Malfunctions affecting internal account management systems were also relatively frequent. Such incidents generally occurred when the connection between the account management system and another subsystem linked to it was broken or malfunctioning, or a disruption was caused by system maintenance. Malfunctions between the account management system and its supporting systems were a recurring problem with several banks (Chart 21).

In order to avoid reoccurrence of the payment malfunctions experienced, credit institutions responded with a variety of measures to find a temporary or final solution to the problems. These included rescheduling the updates of various system programs to periods outside opening hours or non-peak hours, the reengineering of daily closing processes, adjustments to the band width required

Chart 21
Payment malfunctions by failure type



for the operation of the systems, and, in order to accelerate and facilitate troubleshooting, adjustments to the registration of error files and log entries. Some banks introduced immediate customer notification via the main page of their Internet banking interface, and scheduled improvements or amendments to their

SMS service to customers. In addition to the above measures, responses included the modification of the required IT infrastructure, the addition of new control points, or, in order to avoid system slowdowns, the review of the memory used and actually required by the systems.

Glossary

4-hour rule	Pursuant to MNB Decree 15/2010. (X. 12.), starting from 1 July 2012, the payment service provider of the payer must ensure 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 chips	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).
CGF	Collective Guarantee Fund.
Chip migration	The equipping of payment cards bearing only a magnetic stripe with chips, and simultaneously the enabling of devices handling payment cards to accept chip cards.
CIFE Act	Act CCXXXVII of 2013 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 which 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, which 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 securities leg settlement occurs only after the cash leg settlement has been completed, or conversely, the cash leg settlement 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 Bank's Operations in Hungarian Forint and Foreign Exchange Markets'.
EMIR	Regulation on OTC derivative transactions, central counterparties and trade repositories.
ESMA	European Securities and Markets Authority.
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.
Execution	See under Settlement.
FGS	Funding for Growth Scheme.
FoP	Free of Payment, a transaction that does not involve any payment at the time of the settlement of a securities transaction.
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 clearing	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 managing settlement fails, if 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, an 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.
ICS	Interbank Clearing System, a deferred time gross clearing system operated by GIRO, 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 than 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 a 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.).
KID system	A system that ensures electronic communication between KELER and its clients.
LEI	Legal Entity Identifier, which enables the unambiguous and unique identification of actors in financial markets, making it possible to identify not only parties to financial transactions but also their affiliated companies and company groups, thereby facilitating without limitation the assessment of the risk of financial contagion as well as the combating of money laundering and terrorism.
Liquidity	The totality of financial instruments that can be used to settle orders in payment and settlement systems.
Liquidity bound	The upper bound of liquidity indicates the amount of liquidity required in the payment system for the settlement of items without queuing or delays, whereas the lower bound of liquidity indicates the lowest value of systemic liquidity where items, although with delays, will be settled by the end of the day concerned.
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 on a given business day for the settlement of orders.
MiFID, MiFIR	Markets in Financial Instruments Directive and Regulation.
MNB	Magyar Nemzeti Bank.
MTF	Multilateral (alternative) Trading Facility.
MTS	The multilateral trading facility operated by EuroMTS.
Net clearing	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.
PFMI	Principles for Financial Market Infrastructures, a publication issued in 2012 by BIS and IOSCO setting out 24 principles that provide uniform foundations for and thereby harmonise the requirements for financial market infrastructures in order to ensure that they are robust and resilient to shocks.
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.
Potential liquidity	From the perspective of payments, potential liquidity is the sum of the account balance of the VIBER member's payment account with MNB, the intraday credit line provided against the securities pledged to the central bank, and other securities on the credit institution's balance sheet that may optionally be pledged.
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 customers 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.
SecuRe Pay Forum	European Forum on the Security of Retail Payments. A Forum established in 2011 at the initiative of the European Central Bank on the security of retail payments.
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.

King Louis I ('the Great')

(5 March 1326, Visegrád – 10 September 1382, Nagyszombat)

King of Hungary (1342–1382) and Poland (1370–1382) from the House of Anjou.

His reign is considered to be one of the golden eras in the history of the Medieval Hungarian Kingdom: peace at home and dynastic relationships abroad facilitated social, economic and cultural development and narrowed the gap between Hungary and Western Europe. Louis' active diplomacy and military campaigns also elevated Hungary to become one of the great European powers. The personal qualities and victorious battles of the 'knight king' inspired even the poets of 19th century Hungarian romanticism.

Louis was the son of Charles I of Hungary and Princess Elizabeth Łokietek of Poland. His versatile education matched his status as crown prince. In addition to law, history and politics, his tutors from the ranks of the clergy also introduced him to theology and the seven liberal arts (grammar, dialectic, rhetoric, arithmetic, geometry, astronomy and music) as well as knightly skills. Following his father's death, he was crowned at Székesfehérvár on 21 July 1342, with uniform approval of the aristocracy.

Louis inherited a healthy state treasury, a stable and seamlessly operating state administration and also enjoyed the backing of talented and loyal aristocrats, who were ready to help the young monarch realise the foreign policy objectives he set out in his pledge made at Nagyvárad. He was deeply religious and a fine example of a knight, and he used an iron hand to govern his empire. He was a devout Christian and a champion of the Church even though the clergy did not always serve the king's interests.

Basically, Louis ruled the land in harmony with the aristocracy; yet, he also tried to win the support of the lesser nobility. His laws codified in 1351 remained in force until 1848 and served as the backbone of the nobility-based constitutional system. One of such laws was the confirmation of the Golden Bull of 1222, which, one and a half centuries after it was issued, had become a fundamental law of noble privileges. Among others, this piece of legislation declared that all nobles enjoyed 'one and the same liberty' (in Latin: 'unus eademque libertas'), thereby granting equal rights to all members of the noble class. Another key piece of legislation was the Law of Entail, which, among other provisions, ruled that if the family line died out completely, the estate reverted to the Crown. (Even though the Golden Bull permitted free inheritance, it never became general practice; thus, the king only documented the status quo.) In the latter years of his reign, King Louis implemented a number of reforms in the state administrative and the judicial systems.

At the request of the pope, Louis often led his army 'to protect the one true faith' against pagan Lithuanians, heretics (the Bogumil) or orthodox Christian South Slavs. His reign was also marked by a number of campaigns to Italy, Dalmatia, Lithuania and the Balkans. These wars took a heavy toll on the country's political, financial and military capacities but the state government stabilised by Louis' father successfully passed all these tests. The Kingdom of Hungary had become a true European great power ('Magyar Archiregnum') during Louis' reign. In addition to his immediate interests, Louis the Great's diplomatic efforts also targeted a number of European states; no Hungarian ruler before or after him had ever practised such an active foreign policy. Spared from domestic struggles and foreign attacks, Louis' reign enabled the country's development both in terms of politics and economics.

PAYMENT SYSTEMS REPORT

June 2015

Print: Prospektus–SPL consortium

H-8200 Veszprém, Tartu u. 6.

