

REPORT ON PAYMENT SYSTEMS 2012



MAGYAR NEMZETI BANK

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

2012 is the first year that the MNB has prepared its 'Report on Payment Systems', which it plans to publish annually to provide a comprehensive review of trends in the field of payments and the functioning of the overseen payment and securities settlement systems in Hungary, the main risks and the measures taken by the MNB to fulfil its above-mentioned responsibility as required. Depending on the current domestic and international issues, the priorities of the MNB's activities in relation to the execution of payments and the payment and securities settlement systems may change year from year, and this may be reflected in the structure and focus of the reports.

In publishing this report, the MNB endeavours to contribute to enhancing the transparency of the central bank's activities in relation to the execution of payments, payment and securities settlement systems and to raising the awareness of payment-related issues.

The study was compiled by the staff of the Payments and Securities Settlements Department of the MNB under the direction of Director Lajos Bartha. Contributors to the Report included: Miklós Fenyvesi, Brigitta Gábrriel-Lajos, Miklós Luspay, Henrietta Olasz, Cecília Pintér, Kristóf Takács, Eszter Tanai, Anikó Turján, Lóránt Varga and Gergely Végvári. At its meetings on 11 June 2012 and 10 July 2012 the Monetary Council discussed the key messages of the study as well as the Report, and gave valuable advice on finalisation of the document. The publication was approved by the Executive Board of the Magyar Nemzeti Bank. The conclusions of the Report express the views of staff of the Department and do not necessarily reflect the official position of the Monetary Council or of the MNB.

The MNB staff relied primarily on the relevant information for 2011, although the Report looks forward and analyses the developments observed in 2012 as well.

Contents

Key messages	7
1 Introduction	12
2 Trends in the development of payment methods and instruments	15
2.1 Efficiency of payments	16
2.1.1 Access to payment accounts and to basic payment services	18
2.1.2 The role of payment cards in improving payments	20
2.1.3 Regular payments by households	24
2.1.4 The launch of intraday clearing	26
2.1.5 Structure of the market of payment services	26
2.1.6 Compliance with the rules of the MNB Decree on the execution of payments	28
2.2 Security of payments	31
2.2.1 Prevention of fraud in electronic payments	31
2.2.2 Absence of regulation on the Hungarian voucher market and the related risks	32
3 Operation and oversight of the Hungarian payment and settlement systems	34
3.1 Risk of service continuity	36
3.1.1 Operating problems in the central infrastructure	36
3.1.2 Complex risk caused by market fluctuations and financing risk	38
3.2 Clearing and settlement risk	41
3.3 System operational interdependency risk	47
3.4 Efficiency: development projects	48
Glossary	49

Key messages

One of MNB's main responsibilities is to promote the reliable, efficient functioning of execution of payments as well as payment and settlement systems

The smooth functioning of the economy requires the efficient, reliable operation of financial infrastructure, including execution of payments as well as payment and securities clearing systems. This assures that if other conditions are met, real economic and financial transactions are executed as expected, in a timely, cost-effective manner. In respect of payments, efficiency primarily refers to the use of cashless payment methods, which helps to curb the shadow economy and thus increases tax revenues for the state. However, higher efficiency must not jeopardise the security of payments, as only continuous and reliable functioning can build up the trust necessary for the more wide-spread use of electronic payment instruments.

More intensive use of cashless payment methods would result in substantial savings in resources

The MNB surveys of payment habits, including public sector payments, found that cash continues to play a significant role in the Hungarian payment landscape. Based on an MNB study conducted in 2009 and published in 2011, in Hungary 3.7 billion payment transactions were executed (excluding credit transfers in VIBER), of which 84.4 per cent occurred in cash. Hungarian society could save some HUF 106 billion annually (HUF 24 billion of which relating to public sector payments) if cash and paper based payments were replaced by electronic transactions and similar usage ratios of payment methods were reached as in the Northern European countries.

Access to payment accounts and to account-based electronic payment instruments needs to be improved

The number of payment accounts and debit cards has been increasing slowly but steadily in recent years; nevertheless, there is still room for improvement. There are two main factors hindering the spread of efficient electronic means of payment. One of them is insufficient access to basic payment services (such as payment accounts, payment cards) in some regions of the country or for certain groups of society. The other typical reason is that the choice between payment methods is not based on their relative efficiency, because the real social costs are hidden from customers. The MNB urges the introduction of a low cost, basic payment account facility, which would gradually make it possible to improve the efficiency of public sector payments as well (e.g. cashless payment of pensions and other social transfers). Access to basic payment services may also be improved by the entry of new service providers (e.g. new payment institutions, Magyar Posta Ltd.), and the spread of the internet and mobile technology may result in the increased use of account-based electronic payment instruments.

Measures needed to expand the card acquiring network

The card acquiring network has expanded fairly dynamically in recent years, but in a European comparison it is still less developed than the issuer side. While in the EU there are 17,561 POS terminals per one million inhabitants on average, in Hungary the corresponding number is 7,844. The MNB considers it important to significantly increase the payment card acquiring network because today card payment is available in only 30 per cent of retail outlets. With the active participation of the sectoral ministries responsible, a large

number of POS terminals could be installed making use of EU funds. Furthermore, even though its impact would not be quite as massive, a commercially financed POS installation programme could also have a beneficial effect on the structure of the payment card market.

In order to change payment habits, the MNB recommends the introduction of step-by-step mandatory card acceptance, gradual limitation of the use of cash and the transparent and separate pricing of payment methods

If appropriate market signals are given, the pricing of payment methods itself steers payment habits towards greater efficiency. In the case of cashless payment this mechanism generally does not work, and thus measures to overwrite distorted price signals are necessary. Simultaneously with easing the aforementioned infrastructure constraints, the MNB also recommends the transfer of regular incomes and revenues to payment accounts, the introduction of step-by-step mandatory card acceptance and gradual limitation of the use of cash. Naturally, these initiatives would also have an impact on incoming and outgoing public sector payments, and thus the dominance of cash would be eliminated in paying for public services (e.g. fees for administrative procedures) and the purchases of goods and services by the public sector. As indicated by the MNB survey of 2009, every third incoming or outgoing public sector payment is in cash. Another problem with the pricing of payment methods is their incorporation in the prices of underlying services. This hides the real cost of the payment method from customers. For example, the costs of the various payment methods are generally built into the price of the underlying service without any differentiation. Thus clients using less costly electronic transfers also pay for higher-cost postal inpayment money orders. The MNB favours the transparent pricing of payment methods separate from the price of the underlying service, where prices may be different for each payment method based on their costs. However, the implementation of such a pricing practice must not lead to a one-off price increase.

The level of the payment card interchange fee hinders the expansion of the acquiring network; thus regulatory intervention is required for its reduction

Considering that some of the proposals explained above (e.g. paying public sector transfers to accounts, step-by-step mandatory acceptance of cards) shape payment habits without necessarily giving an option to users, it is important that once these regulatory measures are introduced, the users of such payment methods are not faced with unreasonably high costs. Merchants pay a charge to the acquiring payment service provider (merchant fee). This covers, inter alia, the costs of acceptance, most of the time also the rental of the POS terminal and the interchange fee. The latter is passed on by the acquiring payment service provider to the card issuing payment service provider. The interchange fee represents a large part of the merchant fee. The reduction in the interchange fee could substantially lower the costs incurred by merchants in accepting cards and eventually encourage the acceptance and use of payment cards. Consequently, the MNB has made a recommendation to the Ministry for National Economy concerning the regulation of the payment card interchange fee in Hungary.

In 2010, the MNB, after observing the inefficiency of self-regulation, issued a decree requiring the launch of intraday clearing

In a modern economy, the efficiency of payments depends not only on cost but also on the speed of the execution of payments. The launch of intraday clearing on 2 July 2012 substantially accelerated the clearing of domestic electronic credit transfers in the Interbank Clearing System (ICS). This change primarily offers benefits to companies and other institutional participants, but in the longer term it may also have favourable effects on household payments. The execution time of electronic payment orders has become one business day shorter, thus payers need not forego one day's interest income

due to the overnight clearing and are able to use the received amounts on the same day. Furthermore, under the new clearing arrangement there is space for more detailed information, thus a broader range of data on the economic transaction underlying the payment can be transmitted.

The regulatory and supervisory activities of the Bank play a significant role in assuring that domestic payments occur in a predictable, efficient manner

The MNB decree lays down not only the requirement of intraday clearing, but also the rules of execution of domestic payments. Compliance with the requirements must be monitored because on an individual level the circumvention of rules may be rational. Market mechanisms are unable to discover and correct non-compliance due to information asymmetry. The credit institutions examined in 2011 were broadly observed as functioning according to the law, but the MNB ordered measures to be taken to address the deficiencies identified. In 2011, the Bank audited 16 credit institutions. Based on the findings, the MNB required 78 measures to be taken and a total of HUF 21.4 million of fines were also imposed on seven credit institutions.

Last year there were no major fraud events relating to electronic payment transactions, partially because of the spread of chip technology

In 2011, 11,595 fraud events were registered with payment cards issued in Hungary, in the total value of HUF 568.4 million, corresponding to 0.007 per cent of the total card turnover in value terms. This is low by international standards. In recent years, the use of chip technology on payment cards has enhanced the security of card payments. The chip migration of the domestic acquiring network (POS terminals and ATMs) accelerated in 2007, that of cards in the last quarter of 2010. Statistics on card fraud clearly show the beneficial effects of the application of chips.

The risks identified in the issuance of vouchers require regulatory intervention

Some estimate the annual turnover of the Hungarian voucher market to be several hundreds of billions of forints. The operation of the voucher market has its risks, but at present there is no law in Hungary to regulate the issuance and redemption of vouchers or the safeguarding requirements for the protection of client funds relating to vouchers. There are two main risks associated with vouchers. First, whether the voucher is widely accepted as a cashless means of payment. Second, when the voucher is redeemed, there is a risk as to whether its issuer will be able to pay in accordance with the predefined rules, that is, if it has the funds necessary for redemption. In light of the above risks, the MNB has come to the conclusion that there is a need for regulation of the domestic voucher issuance so that this market can work in a transparent, safe and reliable way.

In 2011 the risk of service continuity was low in all three overseen systems (VIBER, ICS and the securities clearing and settlement system); the system operational interdependency risk has also been reduced

The MNB promotes the efficient, reliable operation of payment and securities settlement systems in the framework of its oversight activities. The monthly availability ratio of the core settlement service of VIBER was below the required 99.7 per cent in one month only. The ICS demonstrated a high level of operational reliability. The availability of the key securities clearing and settlement services showed the decline of operational risk. The three overseen systems are linked at a number of points to assure the smooth clearing and settlement of payments and securities transactions. Furthermore, there are interdependencies between the VIBER and other systems within the MNB as well. Both inter and intra-system operational interdependency risk has declined since the previous year. At KELER, business risk is an important factor in the risk of service continuity, determined primarily by the central counterparty model based on a guarantee provided by the KELER to the KELER CCP and callable on first demand. According to the oversight recommendations addressed by the MNB to the KELER Group, this model is

expected to be phased out, and subsequently the KELER CCP is to be recapitalised. The EU legislation (EMIR) to be published officially shortly supports this direction.

Clearing and settlement risk was low in VIBER; several participants with high turnover made use of the optional reserve requirement ratio regime

VIBER participants continued to maintain their intraday credit lines, which have been substantially increased since 2008; as a result, intraday liquidity has remained ample both at the aggregate and individual levels. The sufficiency of liquidity was also promoted by the optional reserve requirement ratio regime introduced in November 2010. Several of the 10 VIBER members with the largest turnover made use of the option to freely vary the reserve requirement ratio from time to time. In general, VIBER members with relatively high turnover compared to the low reserve balances resulting from the former fixed ratio increased their reserve ratios above the minimum 2 per cent in one step or gradually. Some participants did utilise a high percentage of their intraday credit line on particularly high-turnover days. However, this did not result in crystallisation of clearing and settlement risk in the system.

Liquidity remained abundant in the Interbank Clearing System; the occasional queues were not caused by liquidity problems

Considering that clearing members essentially use the same liquidity for clearing in the ICS as in the VIBER, liquidity in the ICS has also been sufficient. Unfunded queues in the ICS have become less frequent than in previous years, and no gridlock has emerged. The ratio of uncovered amount of queued batches to total turnover remained insignificant. Liquidity occasionally proved to be insufficient in the ICS due to the maturity of securities pledged as collateral backing up the central bank intraday credit line, the optimisation of current account balances following the regular behaviour to fulfil the reserve requirement or sometimes their intention to avoid reserve surpluses at the end of the reserve requirement period. In other instances, the outgoing ICS transactions of clearing members included items that the member was unable to take into account due to their unexpected nature or their arrival and acceptance in the late hours. Members would have been able to fill in the liquidity gaps from eligible and not yet pledged collateral available in their balance sheets. After the introduction of intraday clearing, the liquidity link between the ICS and VIBER will become more complex. If the clearing members adapt their intraday transaction and liquidity management and strengthen their coordination with one another, the launch of intraday clearing is expected to cause no major changes in the clearing and settlement risk of the ICS.

The frequency and value of settlement fails in the cash market guaranteed by KELER CCP has increased; this indicated increasing clearing and settlement risk over the previous year level, but fails were finally settled on the intended settlement date (ISD) or one day after the ISD

In the securities clearing and settlement system no clearing or settlement risk crystallised due to the insolvency of participants. However, in the guaranteed capital markets additional financial collateral requirements had to be imposed more frequently. Furthermore, the frequency and value of settlement fails in the guaranteed cash market showed an increase over the previous year's levels. Almost half of the settlement fails extended beyond the intended settlement day. Settlement fails occurred in the guaranteed cash market on 22 occasions with a total value of HUF 5.2 billion; in each case, the reason was the lack of the security. Settlement fails were highly concentrated both in terms of frequency and value. Settlement fails may indicate that the relatively early settlement deadline of the cash markets (11:30 a.m.) leaves little time for arranging the OTC transaction which would provide the coverage. As of 4

June 2012, the settlement deadline of the cash market was moved to 2:00 p.m., which is expected to reduce the probability of settlement fails.

The clearing and settlement risk in the energy markets increased temporarily; a non-performing gas market clearing member finally settled its obligation, although with a significant delay

Since mid-2010 the KELER CCP has been guaranteeing transactions concluded in the gas and power markets as well. At the end of 2010, EMFESZ Kft., a clearing member of the gas market, repeatedly failed to meet its collateral and financial obligations. To manage the settlement fails, first the collateral of EMFESZ, and then the collective guarantee funds were used several times. The case ended with the institution meeting its obligations with a significant delay, but in full; its clearing membership was terminated and its operating license was suspended by the Hungarian Energy Office. Because the KELER CCP simultaneously guarantees the capital and energy markets, the securities clearing and settlement system is also exposed to the spillover risk of the energy market. Consequently, it is vital that the KELER CCP prevents the pass-through of the risk of the energy market to the clearing and settlement of the guaranteed capital market. In connection with the aforementioned settlement failure, the MNB put forth recommendations to the KELER CCP respecting the clearing arrangement in the gas market. One of the key recommendations was that the CCP should look for solutions ensuring the (legal) separation of the central counterparty of the energy market, that is, the separation of the financial resources backing the CCP clearing of various guaranteed markets.

1 Introduction

One of the MNB's main responsibilities is to promote the reliable, efficient functioning of the execution of payments as well as payment and securities settlement systems in Hungary. The MNB encourages economic agents to use electronic payment methods which are fast, secure and cost efficient (based on social costs) as well. This requires, however, Hungarian payment and securities settlement systems to provide high quality services in executing the real economic and financial transactions initiated by economic agents. Consequently, oversight of the payment and securities settlement systems is a key responsibility of the central bank. The MNB has a variety of tools to achieve the aforementioned objectives, ranging from soft methods (e.g. publications, recommendations to the financial sector, promotion of self-regulation) to measures taken as a competent authority (regulatory and supervisory activities).

One of the most important functions of payment and securities settlement systems is to create the conditions for the secure and efficient execution of payments and securities transactions. Payments can be made in cash or via accounts using various payment instruments. Account-based payments and securities transactions require centralised systems for their clearing and settlement and to ensure the necessary information exchange. The payment system for large-value HUF credit transfers is the Hungarian Real-Time Gross Settlement System (called VIBER). Small-value HUF credit transfers and direct debits are cleared in the Interbank Clearing System (ICS). Clearing of card transactions is performed on a net basis in the systems of international card companies (Visa, MasterCard), while postal payment instruments (most importantly, postal inpayment money orders, postal outpayment money orders for social benefits and other purposes and money orders for pensions) are cleared in the Postal Clearing Centre, mostly on a net basis. Of the various types of direct debit, the Report focuses on core direct debits, and in respect of postal payment instruments it discusses postal inpayment

money orders (commonly referred to as 'yellow cheques'). If the clearing and the settlement of payments and securities transactions are carried out separately, settlement generally occurs in¹ central bank money, on accounts kept in the MNB (in the proprietary home account system of the MNB or in VIBER) (Chart 1).

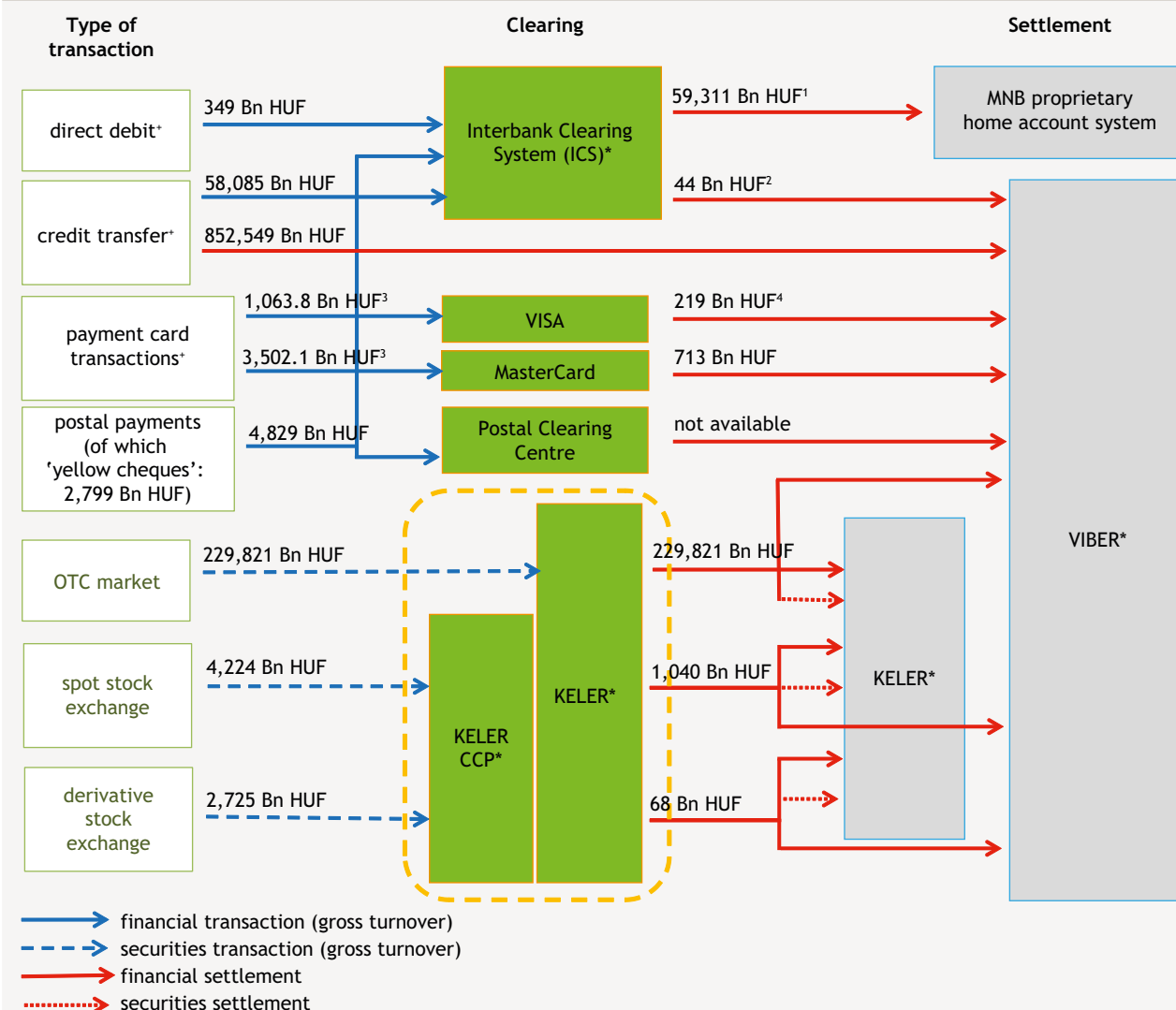
VIBER is the real time gross settlement system operated by the MNB primarily for the purpose of settling large-value and time critical economic transactions. The system is used for the settlement of the HUF cash leg of money and capital market transactions and other urgent customer payments. Due to its real time operation mode, transactions are settled with finality and irrevocably, in central bank money, if sufficient funds are available (gross settlement principle). The liquidity available in the system consists of the current account balances of system participants and the intraday credit lines provided by the central bank in exchange for (part of) the collateral pledged by participants.

ICS is the batch-based, deferred gross payment system operated by the GIRO Zrt. (GIRO), mostly for small-value HUF transactions. GIRO performs the clearing of payment orders, while settlement is the responsibility of the MNB as the settlement agent. In the normal course of business, there is one overnight clearing cycle (with two clearing phases), the settlement of which occurs in the morning in the proprietary home account system of the MNB. In the event of queuing due to insufficient funds or late submission by participants, there is a second clearing cycle, but this is settled in VIBER. On 2 July 2012, intraday clearing was launched in ICS alongside the overnight cycle. VIBER is the settlement system for the intraday clearing platform.

The **securities clearing and settlement system** operated by KELER Zrt. (KELER) clears cash stock exchange transactions concluded on the trading platforms run by the Budapest Stock Exchange Zrt. (BSE) and the MTS Group (MTS) as well as transactions concluded on the MTF platform

¹ After clearing in the systems of international card companies, settlement used to occur in commercial bank money. At the initiative of the MNB, the results of both clearings are settled now in central bank money on accounts kept by the MNB (since 2009 for MasterCard cards and since 2011 for Visa). The result of the clearing of GBC card system also used to be settled in the MNB, but that system was closed down in 2011. As we explain later, the cash leg of some securities transactions are settled in the books of KELER Zrt.

Chart 1
Overview of the Hungarian financial infrastructure



¹ Transactions settled in the first overnight clearing cycle (2011), in which transactions differ from direct debit and credit transfer are also settled.

² Transactions settled in the second overnight clearing cycle (due to queuing or late submission) (2011).

³ Estimated value.

⁴ Second half of 2011, the settlement of the first half of 2011 occurred in ICS and VIBER as well.

+ Without on-us transactions.

* Overseen systems.

of the BSE (BÉTa) for securities issued abroad, on a multilateral net (hereinafter: multinet) basis. Variation margins are settled daily for derivative stock exchange transactions. On the OTC market, KELER settles the transactions one by one on a gross basis in accordance with the 'delivery versus payment' (DvP) principle. The cash leg of net positions based on the clearing and of the gross liabilities is settled on the payment accounts kept by the settlement agent, i.e. KELER for brokers and the MNB for credit institutions. The securities side is booked on the securities accounts kept by KELER.

In Hungary, the central counterparty function is an integral part of the securities clearing and settlement system: the clearing of cash and derivative stock exchange transactions and of BÉTa transactions is guaranteed by the central counterparty. Since 2009, the function of the central counterparty has been carried out by KELER KSZF Zrt. (KELER CCP). Since July 2010, KELER and KELER CCP have also been responsible for clearing, guaranteeing and settling the cash side of transactions on the energy market (gas and power). KELER performs clearing and settlement, while KELER CCP operates the clearing membership and

Table 1
General characteristics of the overseen systems

Overseen systems	Volume (thousands)		Value (HUF thousand billion)		GDP %		Typical transactions	Settlement agent	Clearing house	Central securities depository	Central counterparty	Participants	
	2010	2011	2010	2011	2010	2011						Direct participant	Indirect participant
VIBER	1,098	1,293	1,042.9	1,247	40.3	44.3	<ul style="list-style-type: none"> - bank to bank items: financial market transactions (i.e. HUF leg of HUF FX transactions, DvP settlement of HUF leg of securities transactions) - central bank operations (i.e. cash and monetary policy operations like deposit transactions) - customer transactions: large value urgent household payments (i.e. house purchases) or corporate payments 	MNB	MNB	-	-	54	141
ICS	289,647	289,589	57.6	59.3	2.2	2.1	retail payments, mostly real economic transactions (i.e. credit transfers: salary or pension payments, direct debits: bill payments)	MNB	GIRO	-	-	54	135
KELER/ KELER CCP	647.9	691.9	177.9	230.9	6.8	8.2	spot and derivative stock exchange and OTC market settlement (including margin settlement and default fund contributions*, the delivery of the underlying product, settlement of financial leg and performance of contribution to guarantee funds, too)	credit institution: MNB, brokers: KELER	KELER	KELER	KELER CCP	74	✓

■ = Operator.

✓ = There are indirect participants, however their number is not available.

* = The volumes do not contain these items.

guarantee systems. Our Report touches upon the energy markets only briefly, regarding their relationship with the securities clearing and settlement system.

This Report consists of the following main parts:

- Trends in the development of Hungarian payment methods, the MNB's related position, the regulation and supervision of the execution of payments. The logic of the chapter is determined by the payment methods and two analytical criteria: efficiency (accessibility of the infrastructure, cost efficiency/pricing, speed) and security. The most important non-compliance cases encountered during supervising payment execution are also described under efficiency.
- Operation and oversight of the Hungarian payment and securities settlement systems. The analytical framework of the chapter is provided by the risks monitored (clearing and settlement risk, risk of service continuity and system operational interdependency risk) and efficiency considerations (developments, transparency, etc.).

2 Trends in the development of payment methods and instruments

The MNB study on the social costs of payment methods indicates that increasing the use of electronic payment methods could result in considerable savings of resources. Even though the number of payment accounts and debit cards has been rising in recent years, cash still plays a key role in the execution of the domestic payments of both public and private sector entities. At present there are two main obstacles to the faster spread of efficient electronic payments in Hungary. On the one hand, access to basic payment services is insufficient in some regions of the country and for certain groups of society. A substantial number of people still have no payment accounts and related payment cards or are unable to initiate payments from their accounts because the retail units they visit do not accept cards. On the other hand, the choice between payment methods is often not made based on their real social cost because the cost of cash-based payment methods remains hidden. For instance, use of the postal inpayment money order is free for customers, but as its fee paid by the utility service provider, they pay its cost in the utility bill. In the end, it is much more expensive for society than electronic arrangements for the payment of utility

bills and other regular payments (e.g. core direct debit).

The MNB's goal is to overcome the above obstacles and to promote the increased efficiency of payments. It has two main instruments to achieve this. On the one hand, based on the monitoring of market trends in payment methods and instruments, it makes recommendations to financial intermediaries and, where required, to the government. The MNB is also the regulator of the execution of payments, and thus it can also influence the market of payment services through requirements laid down in decrees of the MNB Governor. Compliance with the requirements set out in decrees is monitored by the MNB. In the case of payments, it is particularly true that increasing efficiency should go hand in hand with safeguarding security. That is because only the continuous and reliable functioning of systems can develop the trust that is vital for the spread of electronic payment methods. In this chapter we discuss current issues related to the execution of domestic payments from the aspects of efficiency and security.

2.1 Efficiency of payments

Widespread use of electronic payments could result in savings of resources up to HUF 106 billion (approx. EUR 380 million) per year at the level of society. This would also reduce the size of the shadow economy, which in turn may have a beneficial impact on tax revenues. To achieve these objectives, it is important that the broadest

possible groups of society have access to state-of-the-art cashless payment methods at reasonable costs. Simultaneously with providing access, infrastructure development and the promotion of usage are also necessary, as Hungary lags significantly behind other countries in terms of the use of cashless payment methods.

Box 1

Study on the social costs of payment methods and the payment habits of the government,² and key findings

In 2010, the MNB conducted a comprehensive survey to assess the social costs of the main payment methods in Hungary, and also simultaneously surveyed the payment habits of the Hungarian government (including the central budget, the local government sector and their institutions).³

In 2009, 3.7 billion payment transaction (with a value of HUF 421,716 billion) were executed in Hungary (excluding large-value VIBER credit transfers). Of these 3.7 billion payment transactions, 84.4 per cent were executed using cash. Cash is present not only in the purchases of households and wage payments but also in the payment of bills, intercompany payments and government payments. Every third incoming or outgoing government payment (in total 100 million transactions) occurs in cash. Cash is also needed when paying with postal inpayment money orders and disbursing postal outpayment money orders for social benefits or for pensions.

The MNB estimates that in 2009, within total domestic payments, the value of incoming government payments was approximately HUF 7,000 billion,⁴ and the number of transactions 150 million. Of this, cash transactions represented some 7 per cent (approximately HUF 1,000 billion) in terms of value and about one third (about 45 million items) in terms of the number of transactions. Within this, the local government sector was the most extensive cash user. The MNB survey shows that approximately HUF 500 billion worth of payments are made to local governments in cash. Some 60 per cent of this goes to local government maintained institutions that manage their payments independently.

Public actors execute some 55 million outgoing cash payments (which is one third of the 150 million payments made by the government). In value terms, close to 15 per cent of outgoing public payments are in cash. The highest number of transactions relate to pension payments. In 2009, 51 per cent of pension benefits by number of transactions (18 million items) were made through postal outpayment orders for pension payments. In value terms, this represented HUF 1,500 billion. Some of the cash transactions of the other subsystems consisted of the 10 million postal outpayment money orders for social benefits used by public entities to disburse social benefits, aid payments and family support.

² The figures used in the box come from the MNB survey of 2010 and relate to 2009.

³ TURJÁN, ANIKÓ, ÉVA DIVÉKI, ÉVA KESZY-HARMATH, GERGELY KÓCZÁN AND KRISTÓF TAKÁCS (2011), 'Nothing is free: A survey of the social cost of the main payment instruments in Hungary', *MNB Occasional Papers*, 93. and GÁBRIEL-LAJOS, BRIGITTA, ÉVA DIVÉKI AND MIKLÓS LUSPAY (2012), 'Állami fizetési szokások, az állami pénzforgalom hatékonysága, lehetséges fejlődési irányok', [Payment habits of the government, efficiency of public payments, potential directions of development], manuscript, MNB.

⁴ In its calculations, the MNB only considered the internal payments within the government, i.e. payments between and within the various subsystems of the government (central government, social security funds, extra-budgetary funds, local government) to a limited extent, and disregarded financing items (e.g. issuance of government securities). Thus, their values are not included in these figures.

For the 3.7 billion payment transactions, the Hungarian society (businesses, government, households in total) expended time, effort, materials and other resources corresponding to HUF 390 billion⁵ (or 1.5 per cent of GDP). This figure does not include payments of fees between members of the payment chain as they cancel each other out at the level of society.

Based on the 2009 figures, Hungarian society could save HUF 106 billion annually if cash and paper-based payments were replaced by electronic transactions, as in Northern European countries (the assumptions made for the estimate are set out in line 4–5 of Table 2). Some HUF 24 billion of that presumed saving comes from the streamlining of public sector payments. The savings are based on the fact that the cost structures of the various payment methods are drastically different: the social cost of an additional electronic payment transaction is substantially lower than that of a cash or paper-based payment.

Table 2
Total social savings resulting from the change of payment habits

	Cash transactions	Debit card transactions	Electronic credit transfers	Direct debits	Postal inpayment money orders	Paper based credit transfers	Postal outpayment money orders for pensions, social benefits and other purposes
1. Social costs (HUF billion)	209	30	40	8	39	35	9
2. Number of transactions (million)	2,835	150	230	77	271	47	34
3. Value of transactions (HUF billion)	51,454	1,050	301,101	640	2,990	61,671	1,943
4. Assumed change in number of transactions (in millions)	-950	+850	+300	+140	-271	-47	-34
5. Assumed change in value of transactions (HUF billion)	-36,132	+10,000	+90,845	+1,661	-2,990	-61,671	-1,943
6. Total social costs in assumed scenario (HUF billion)	166	46	43	10	0	0	0
7. Total social savings (HUF billion)	106						
8. Of it: at public sector payments (HUF billion)	24						

Source: MNB.

The potentially substantial savings resulting from the assessment of the social costs of payment methods (Box 1) motivated the MNB to look for means to improve efficiency. A number of public policy recommendations have been formulated and a social dialogue was started in 2011 on the potential instruments; in that context, market participants as well as government agencies have been consulted on possible measures.

In the following parts of the chapter, we present the current trends in the use of various payment services and

payment methods as well as the measures deemed necessary by the MNB, based on the assessment of the social costs and the payment habits of the state, to improve the efficiency of payments in Hungary. The purpose of the recommendations is to provide broad access to fundamental electronic payment services, to improve the cashless payment infrastructure required for their use and to make the real costs of the various payment methods transparent to users. We place special emphasis on the role of payment cards in the promotion of cashless methods of payments, the possibilities of re-routing regular bill payments into

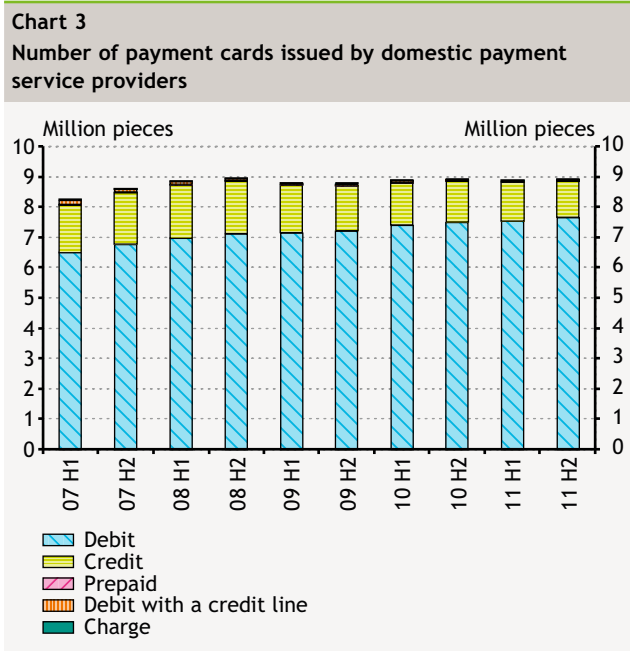
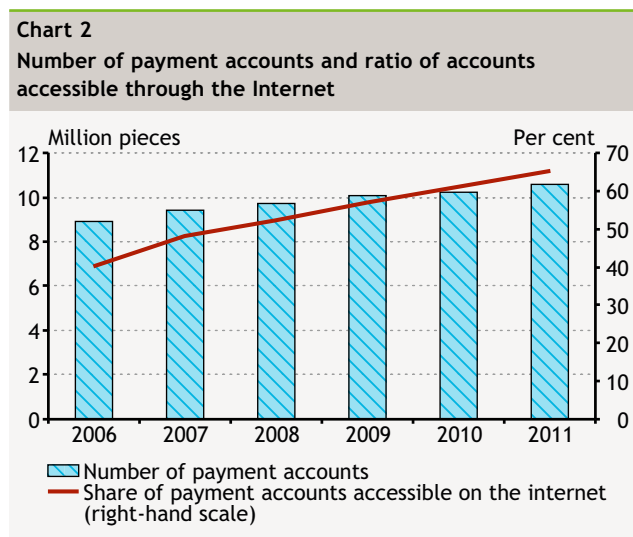
⁵ Including the social costs of the use of postal outpayment money orders by public entities.

electronic channels, the creation of the possibility for intraday credit transfers and the structure of the market of payment services.

2.1.1 ACCESS TO PAYMENT ACCOUNTS AND TO BASIC PAYMENT SERVICES

In recent years, the number of payment accounts and debit cards has increased steadily; in addition, the number of payment accounts accessible through the Internet as well as the range of services available through them have expanded dynamically. At the end of 2011, Hungarian payment service providers maintained 10.58 million payment accounts in total, 90.7 per cent of which were owned by natural persons (Chart 2). 65.4 per cent of all accounts were accessible through the Internet. The number of accounts with Internet access increased by 10.8 per cent in 2011, and in the past five years this figure has almost doubled. Payment cards issued in Hungary numbered 8.9 million at the end of 2011. The share of debit cards continued to increase, with 86 per cent of all cards being of this type (Chart 3).

Despite this welcome tendency, the possession of payment accounts and of payment cards – the currently most widespread electronic payment instruments – still remains below the desirable level in certain social groups. These groups mostly include inhabitants of small settlements, persons with low qualifications, the elderly and persons with below-average income. Due to their circumstances, they tend to be unable to make use of cashless services, and thus they are effectively forced to execute their payment transactions in cash or with cash-intensive methods. The improvement of social efficiency requires the inclusion of these groups in the state-of-the-art payments procedures over the medium term.



Under the right conditions, a gradually implemented, compulsory transfer of regular household incomes and government payments to payment accounts would make a substantial contribution to the spread of electronic payments, while it would also increase the efficiency of the distribution of government transfers. Regular incomes paid to an account would facilitate the use of cashless payment methods, because the most frequently used methods (payment card transactions, credit transfers, direct debits) are connected to accounts. The mandatory transfer of income to payment accounts must not be limited to labour income. The use of cash should also be reduced in the field of government transfers and the majority of pension payments. In this respect, the MNB has made recommendations to the relevant government entities. The electronic payment of targeted subsidies would reduce the costs of the government and make their use easier to monitor and control, which would increase the efficiency of the execution of payments as well as of the distribution of transfers. In the case of pension payments, the adoption of electronic payment methods would represent a disproportionate burden in the absence of the required infrastructure, but electronic payments could be made compulsory at least for newly retired persons. The regulation can be introduced gradually, thus initially payment into accounts would be compulsory only for persons who previously received their regular income on payment accounts. If only half of the pensions currently paid in cash were to be redirected into electronic channels, the government could save HUF 3 billion annually.

To promote the fast and efficient resolution of the above problems, the MNB has made a proposal to the Ministry

for National Economy (MNE) for the establishment of a low-cost basic payment account facility. The government can offer high-volume benefits with cashless methods only if every person eligible for government transfers has a payment account. For retirement benefits, social transfers in kind by local governments and the central government this would mean that persons not having a payment account or refusing to open one to receive government transfers would be compelled to receive their pensions or social benefits on a basic account. Basic accounts would be available only to persons who do not have payment accounts and are eligible for government transfers. Similarly to examples seen in other countries, there would need to be exemptions from the compulsory remittance of government payments to payment accounts (special circumstances, health condition of the beneficiary, payment infrastructure of the place of residence). The basic account facility would be a low-cost payment account giving access to a limited scope of basic payment services. The account would not be accompanied by any credit facility, but payments should be allowed to be made into the account from other sources; thus larger amounts of scriptural money could be moved to the cashless sphere. The basic services offered with the basic account and their pricing must be defined to promote the spread of cashless payment methods in the economy.

The introduction of the basic account facility requires guidance at the EU or Member State level. Even though Hungarian credit institutions have devised a national recommendation in response to the recommendation of the European Commission concerning the basic account, there are several issues relating to its implementation. Not every credit institution embraced the recommendation, and a number of those who did merely renamed an existing account package as a basic account. However, further analysis is needed to determine whether the basic accounts offered by Hungarian credit institutions fulfil their mission, i.e. whether they can offer to the groups excluded from basic payment services a state-of-the-art alternative to the cash payment methods they have been using. This March, the Commission started a consultation process on the issue of payment accounts. One of the main topics of the consultation was access to basic level payment accounts. The initiative looked into the question whether access to the basic account was easy in Member States. In its response, the MNB explained, inter alia, that the range of services available through the basic account should be expanded and a rate structure should be established to make the arrangement effective. Guidance or intervention at the EU or Member State level would be required for the definition of the range of service offered with the basic account and their pricing.

The effective use of payment accounts in the broadest circle will be realistic if all retail clients either have local access to their account keeping payment service provider or can manage their account-related finances through the Internet, and if cash can be withdrawn from the account everywhere. Even though the basic account facility is a prerequisite for the spread of electronic payment transactions, it is not sufficient in itself. Most persons currently holding no payment accounts live in communities where large retail banks have no branches, no ATMs are available for cash withdrawal and payment by payment card is typically not an option. The solution to this problem may be promoted by three different factors. First, savings cooperatives are present in smaller communities, and thus they can often reach social groups whose access to payment methods is most limited more easily than large payment service providers. Consequently, savings cooperatives must be involved in the introduction of the basic account facility. Secondly, the branch network of the Magyar Posta Ltd. must also be involved in electronic payments, under competitive terms, as the Magyar Posta Ltd. reaches practically all small settlements, a large number of consumers and businesses, and thus they can play a crucial role in expanding the cashless execution of payments. At present, the Magyar Posta Ltd. offers no cashless payment services and its extensive branch network is mostly unequipped to offer electronic services. The position of the cashless infrastructure would be improved substantially if payment account keeping, payment card issuance and acceptance were to become possible at the Magyar Posta Ltd. Thirdly, accessing accounts through the Internet could also have a major impact. This would considerably facilitate the use of various payment services and would also raise the awareness of and trust in electronic payments. Widespread use of Internet-based services would require the expansion of Internet coverage and the development and lower cost of Internet banking arrangements offered by payment service providers.

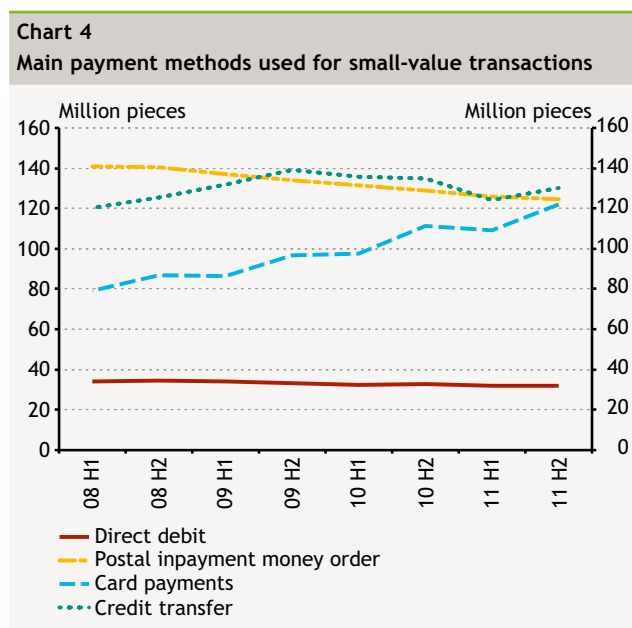
The number of electronic payments relating to payment accounts can increase considerably if payment cards can be used more extensively in retail outlets and if the cost of arrangements for the execution of regular retail payments (utility bills, telecommunication charges, insurance premiums, etc.) is made more transparent. Access to payment accounts and the related basic services is the basis of electronic payments, but in and of itself it does not guarantee the actual use of electronic payment methods. The latter requires that electronic payment methods are realistic options in the majority of basic payment situations. Based on the most important payment situations, the MNB would like to achieve two main

objectives in this area: that payment cards can be used as widely as possible in retail trade transactions, and that the costs of payment methods for regular bill payments are made transparent so that use of core direct debits and systems facilitating electronic bill presentment and payment (EBPP) becomes more common.

2.1.2 THE ROLE OF PAYMENT CARDS IN IMPROVING PAYMENTS

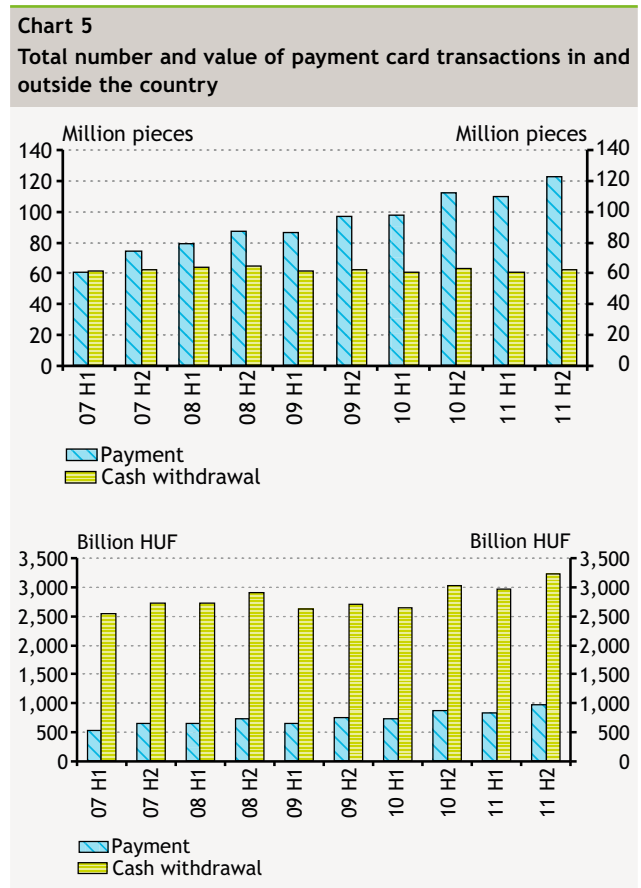
The number of purchases with payment cards has been rising, but the majority of payments are still made in cash. At present, in addition to cash, there are four payment methods which are mainly used by economic agents to execute small-value transactions. Credit transfers are used mostly by businesses for B2B and B2C payments. To a lesser extent, this payment method is also used for payments between natural persons and payments to and from the government. Core direct debits are used both by households and companies to make regular payments; the number of such transactions has not changed significantly in recent years. The most frequently used payment method by households to make regular payments is still the postal inpayment money order. The number of transactions involving this payment method has been declining steadily in recent years, but was still above 250 million in 2011. Purchases with payment cards relate mostly to households. The number of such transactions has been growing year from year, exceeding 230 million in 2011 (Chart 4).

Purchases represent a growing part of payment card transactions, and the number of purchases was twice as high as the number of cash withdrawals in the second



half of 2011. Card use has also been increasing in retail transactions year by year, but a significant part of purchases is still paid in cash by households. In 2011, the number of payments by card increased by 10.5 per cent and their value by 13 per cent, whereas the number of cash withdrawals was down by 1 per cent and the aggregate value of transactions increased by 8.9 per cent (Chart 5). As another indication of the intensive use of cash, the value of cash withdrawals with payment cards is still more than three times the value of purchases. Based on the findings of the survey of social costs, it continues to be necessary to promote purchases by cards and to reduce the ratio of cash withdrawals.

In the area of small-value payments, cash transactions could be replaced en mass mainly by payment cards. By payment cards, mostly the underlying payment systems and the entirety of the relating services should be understood (Box 2). Over the longer term, there may actually be no need for physical payment cards as technological progress will allow payment instruments to take a number of other forms, such as applications on smart phones. This does not affect the payment method itself as the transaction continues to be executed in the payment card system, only the form of the instrument changes.



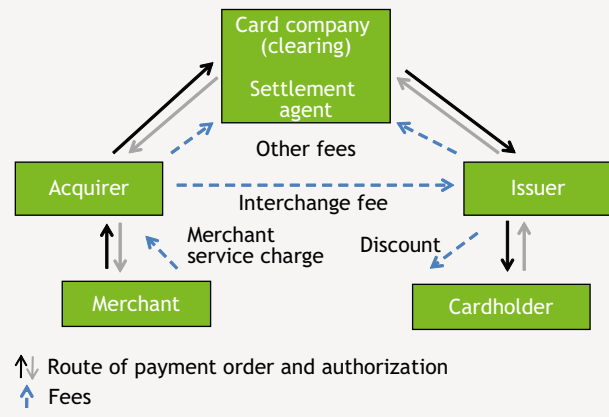
Box 2

Operation of payment card systems

The operation of payment card systems requires the cooperation of four parties (Chart 6). These are the cardholder, the merchant, the payment service provider of the cardholder (issuer) and the payment service provider of the merchant (acquirer).⁶ The cardholder is provided with a payment card by the issuer, he uses it for payment to the merchant, who verifies with the issuer if there are sufficient funds on the underlying account. If the payment is completed, the merchant sends the data of the transaction to the acquirer, who in turn sends it on for clearing to the clearing system typically operated by card companies. Following interbank clearing and settlement, the acquirer credits the amount of the purchase on the merchant's account.

Merchants pay a charge to the acquiring payment service provider (merchant service charge) for the acceptance of payment cards. This covers, inter alia, the costs of acceptance, and most of the time also the rental of the POS terminal and the interchange fee. The interchange fee is defined as a percentage of the value of the purchase. The interchange fee is paid by the acquiring payment service provider to the issuer of the card used for the payment and the acquirer incorporates it into the merchant service charge.

Chart 6
Operation of the four-party payment card system



In order to stimulate more rapid growth of the payment card acquiring network, the MNB formulated a package of three recommendations: reducing the rate of the interchange fee, supporting smaller retail units in installing POS terminals under favourable terms and making electronic payment facilities mandatory and gradually limiting cash usage in certain commercial sectors. The MNB recently conducted a number of studies of the operation of the Hungarian market of payment cards – the factors identified as restraining the growth of the market can be redressed most effectively by implementation of the above mentioned package. These recommendations are also present in the economic policy programme 'Széll Kálmán Plan 2.0', which shows that the Government also considers the spread of electronic payments important and thus the increased efficiency of tax collection.

The size of the Hungarian payment card acquiring network is significantly underdeveloped both relative to the issuer side of the sector and to other European countries. It is important to facilitate the use of electronic

payment instruments in the most locations and payment situations possible. One major problem is that electronic payment instruments are often not a real alternative for inhabitants of small settlements because their acquirer network (POS terminals for card payments) is not present in the area. While in the EU there are 17,561 POS terminals per million inhabitant on average, in Hungary the corresponding number is 7,844 (Chart 7). Furthermore, the comparison of the number of card accepting locations with the number of retail outlets and catering units in Hungary shows that only 30 per cent of retail units accept payment cards (Chart 8). The number of card accepting POS terminals increased by 10.3 per cent to 73,136 in 2011, but given the present coverage of the acquirer network, this growth rate is insufficient. In addition to the underdeveloped acquirer network, the geographical asymmetry of the infrastructure is also a major problem. While in large cities and popular tourist destinations the accepting network of cashless payments is significantly wider, coverage is significantly below average in small settlements or, for that matter, in the outer districts of Budapest.

⁶ In the case of three-party card schemes, the issuer and the acquiring payment service provider are the same.

Chart 7
Number of POS terminals per million inhabitant in EU Member States in 2010

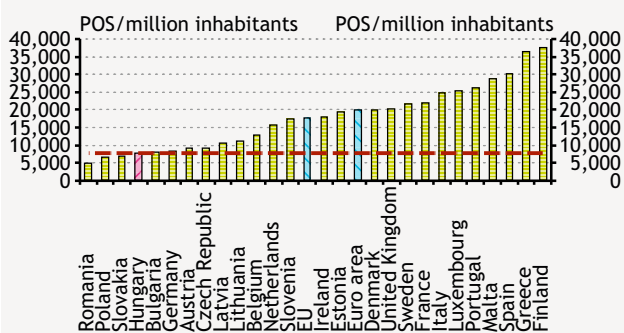
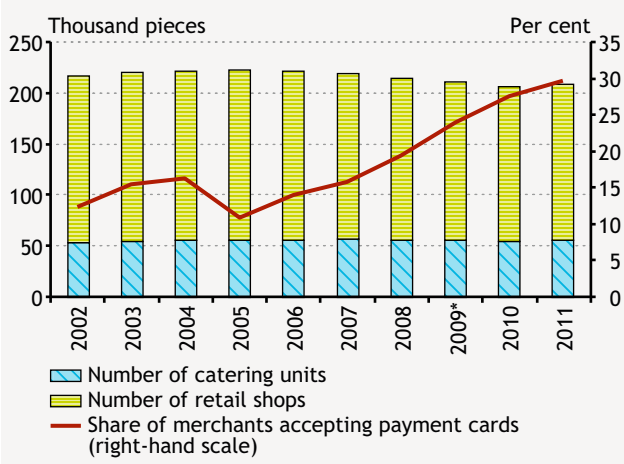


Chart 8
Number of retail outlets and the percentage of those accepting payment cards



The high level of interchange fee paid from the value of purchases to the card issuing payment service provider hinders significant expansion of the acquirer network, as it keeps the costs of merchants related to card acceptance high. The amount of the interchange fee (Chart 6) is determined by the card companies. In Hungary, this is typically between 0.2-1 per cent of the purchase value, depending on the type of card. Issuers and the card companies competing for them have an interest in keeping the interchange fee high, which is detrimental to merchants. The interchange fee represents a large part of the merchant service charge; lowering that fee could result in the significant drop in the cost incurred by merchants when accepting cards.

At the current level of development of the Hungarian payment card market it is no longer justified to support card issuance through high interchange fees. There is

disagreement in the international literature as to whether such a fee is necessary to maximise the network and if so, what the optimal level of the fee is. The joint study of the MNB and the Hungarian Competition Office published in 2011, which reviewed the 25-year history of the Hungarian payment card market, concluded that Hungary's lag was much greater in respect of the acquirer network than in terms of the number of the cards issued.⁷ Even if in the past two decades the incentivisation of card issuance through the redistribution mechanism of the interchange fee was justified, now it only hinders the expansion of the network. Consequently, in the forthcoming period the expansion of the acquirer network must be supported by reducing the level of the interchange fee.

Another problem relating to the interchange fee is that it limits competition between payment service providers on the acquirer side by determining the minimum level of the merchant service charge. In theory, acquirers are unable to offer services to merchants below that level, because the interchange fee is an element in their costs that they cannot control. If, however, an acquirer also has a significant market share on the issuer side, and thus a sufficiently large part of the transactions executed in its acquirer network is done with cards they issued themselves, they can reduce the cost to merchants. In this case it does not need to pay any interchange fee on some of the transactions, which provides it with a competitive edge due to the high interchange fees. If the interchange fee was to be significantly lower, it would not only reduce the costs of merchants, but also promote competition because it would represent a smaller portion of the merchant service charge, and large players would have a smaller advantage in respect of transactions executed within their own network.

Incentives for the installation of POS terminals would also facilitate the further reduction of merchant costs. At present, most of the terminals are not owned by the merchants; instead, they are rented from the acquiring payment service provider. The rental fee is built into the merchant service charge, raising its level. However, in the case of small merchants it is not necessarily worth it for the payment service provider to rent out the terminal because the associated cost is not recovered within the required time frame due to the low turnover. If the terminal were owned by the merchant, the problem of the payment service provider relating to recovering its investment would be resolved and the costs of the merchant relating to the operation of the terminal would also be lower as they would not need to pay any rent. Smaller merchants, however,

⁷ KESZY-HARMATH, ÉVA, GERGELY KÓCZÁN, SURD KOVÁTS, BORIS MARTINOVIC AND KRISTÓF TAKÁCS (2011), 'The role of the interchange fee in card payment systems', MNB Occasional Papers, 96.

would be unable to purchase the terminal from their own funds due to its high cost. The MNB and market players agree that subsidisation would be needed to allow small merchants to directly own POS terminals. The subsidisation could be used towards purchasing the terminal or even to fund some of the operating expenditures. There are several possible arrangements for raising the funds necessary for the grants; the MNB looked into two of them in detail. The MNB is in the advanced stage of negotiations with government and business entities in respect of both arrangements. On the one hand, EU funds could be used for the development of the payment infrastructure. The National Development Agency could establish a facility and a relatively broad range of merchants without card acceptance would be eligible to apply. Even development programme of a few billion forints could significantly expand the acquirer network. The other solution would be a support programme financed jointly by market actors and potentially by public entities, which would, however, probably facilitate the acquisition of a smaller number of POS terminals. In this case, a smaller scope of merchants would be eligible, making the programme more targeted to support merchants operating in the regions or sectors most underdeveloped in terms of card acceptance. The two arrangements could also be implemented simultaneously. In addition, this would also stimulate the expansion of the network for the acceptance of the SZÉP card issued by the government (and of the Erzsébet voucher, to be issued in the form of cards at a later date).

For certain commercial activities merchants should be required to gradually ensure electronic payment facilities, with the application of a value limit. At present, this effectively means the mandatory acceptance of payment cards. Because of the significant size of the shadow economy, the reduction of the cost of card acceptance may not always be sufficient because in itself it does not provide enough motivation to establish card acceptance facilities. Due to the tax avoidance prevalent in the retail sector, the introduction of card acceptance imposes not only its direct costs on businesses but also the resulting tax liability because they are forced to pay taxes on such receipts. Consequently, the mandatory requirement of card acceptance would be necessary in some retail sectors. This regulation can be fine-tuned if card acceptance were to be mandatory only above a certain threshold. It is important to make the implementation of the regulation gradual, specifying the sectors and thresholds concerned, and to leave enough time for preparation.

In addition to the obligation to provide electronic payment facilities, careful and gradual limitation of cash usage is also necessary. The regulation could be implemented in a similar manner as described above, with the gradual involvement of the relevant sectors and the lowering of the value threshold at a predefined rate. This can be done simultaneously or independently in respect of the payments of businesses and households. Pursuant to Act XCII of 2003 on the Rules of Taxation, from 1 January 2013 on the amount of cash transactions per month paid under a single contract may not exceed five million HUF in case of B2B payments. There is a forward-looking proposal to reduce this ceiling to HUF 1.5 million from 2013. However, in international comparison this limit is still relatively high: in several EU Member States limits of EUR 1,500-2,500 have been introduced recently.⁸ Over the medium term, the ceiling should be reduced gradually, according to a predefined timetable. In the household sector, however, the prohibition should first be introduced for certain transactions, combined with a value limit as explained above in some cases, which could later be lowered and the range of affected transactions broadened.

The government can most efficiently support the above objectives by striving to use cashless arrangements for the services it provides. Efficiency could be improved considerably by the installation of card payment facilities and the mandatory offering of payment by card for services in the various offices and local government customer service centres. At present, the fees for such services can often be paid only through postal inpayment money orders. In addition, payment for a number of central or local government services should be possible through credit transfers or core direct debit, or potentially by card payment through the Internet. Examples may include services where the use of the service and the payment are not simultaneous: for example, payments relating to various school services or catering. In such cases electronic payments could be introduced without any need for major investment. Efficiency can be improved further if cashless means of payment are made mandatory in government purchases and transactions among public actors, which could have significant impacts on other economic agents as well. The limitation, then gradual termination, of payments from petty cash could be part of this process. Another direction of development in the public sector would be the streamlining of the payments and liquidity management of local governments. This could reduce the cost of the execution of payments in the public sector and increase its

⁸ For instance, in Spain, Greece, Italy, Bulgaria, France and Denmark.

efficiency, and thus the government's liquidity management could also be simplified.

The widespread use of electronic payments would have a beneficial effect on central tax revenues and on reducing the size of the shadow economy. Electronic transactions are more difficult to hide than cash payments, the beneficiaries of payments are more likely to report their revenues on their tax returns when electronic transactions are involved, therefore they pay more in taxes.

Tax revenues can be increased by decreasing the size of the shadow economy and whitening the economy. Another important factor relates to the transaction tax to be introduced in 2013, which projects a significant amount of tax on payments relating to payment accounts (Box 3). In this case, there is direct connection between the volume of electronic transactions and the tax revenues of the state; as a result, the government has even more incentives to reduce the use of cash in this area.

Box 3

Expected impact of the introduction of the transaction tax on cashless payments and on payment and settlement systems

Based on the Act adopted on 9 July 2012, we expect that the transaction tax proposed to be introduced by the Government in 2013 will have no major effect on payments and on the turnover of payment and settlement systems.

International experience shows that one of the major risks in taxing payment transactions is the incentive it gives to economic agents to adapt. For businesses that have large volumes of payment transactions or that are more active in financial transactions, it may be worthwhile to move some of their payments abroad, due to the increased cost of payments. In the household and SME sectors, such a tax may have a noticeable effect in increasing the share of cash payments. In addition to slowing down the spread of cashless payments and worsening the efficiency of the execution of payments, this has a negative impact on the government's tax revenues both directly and indirectly, though the growing size of the shadow economy.

Pursuant to the Act on the Tax on Financial Transactions, the tax will be introduced with a relatively low cap of HUF 6,000 while high-value interbank and intercompany payment transactions are exempted. These measures are expected to be sufficient to significantly reduce the potential negative effect of the tax on payments.

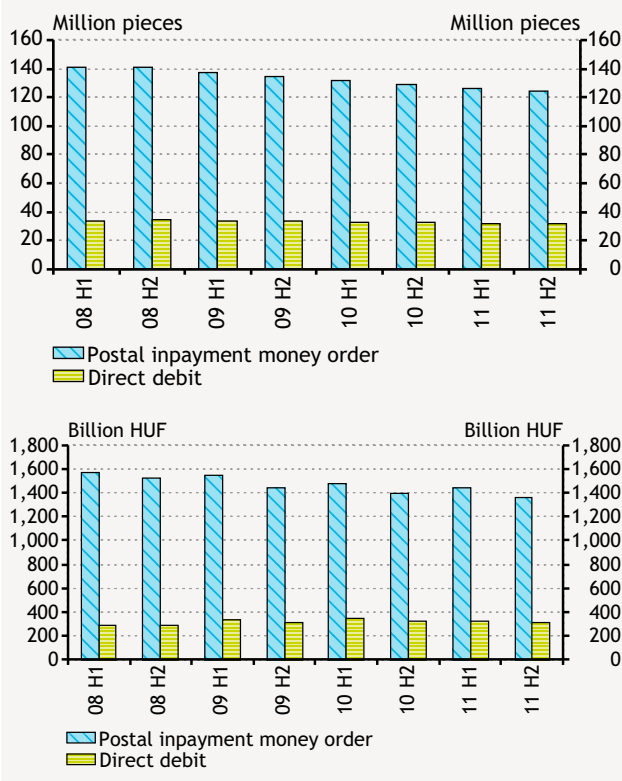
However, even with the low cap, clients of payment service provider may adapt, in particular by the more intensive use of cash. In this respect it is favourable that pursuant to the enacted legislation, both cash withdrawals and postal inpayment money orders are taxable, while cash can be deposited into one's own account tax free. Furthermore, the MNB is in favour of additional measures to promote cashless payments that arose in connection with the introduction of the transaction tax, such as the taxation of intercompany cash payments or their limitation to HUF 1.5 million.

2.1.3 REGULAR PAYMENTS BY HOUSEHOLDS

The overwhelming majority of regular payments by households are still executed through postal inpayment money orders, the most expensive means of payment at the level of society, even though there are efficient electronic payment methods available. Regular payments (utility bills, telecommunication charges, insurance premiums, etc.) can be made with a number of payment methods. The most popular one is still the postal inpayment money order, whilst core direct debit can also be used and an increasing number of service providers are offering electronic bill presentment and payment facilities, through which additional payment methods can be selected (payment card, credit transfer). The use of postal inpayment

money orders has been declining steadily since 2009, but still amounted over 250 million items per year in 2011 (Chart 9), which is almost four times the number of core direct debit transactions (64.2 million). In 2011, the value of transactions executed through postal inpayment money orders was HUF 2,799 billion, the value of core direct debit transactions was HUF 633 billion. While the use of postal inpayment money orders has been declining steadily, the number and value of core direct debits have not changed significantly. Last year, it declined somewhat below the levels of prior years. This means that for regular payments, there is not necessarily a shift from postal inpayment money orders to core direct debit, although the declining use of both payment methods may have been partly due to the crisis of recent years. Based on social costs, postal inpayment money orders are less efficient payment

Chart 9
Use of postal inpayment money orders and core direct debits



instruments than core direct debits. In 2009, the social cost per transaction was HUF 143.5 for postal inpayment money orders and HUF 100.4 for core direct debits. This cost advantage for society would increase with the growth of the number of core direct debits as the fixed costs associated with the payment method are considerably lower than those for postal inpayment money orders.

In respect of regular payments, it is generally the user of the service that decides on the payment instrument to use but they are not confronted with the real cost of each payment method; therefore the transparent and separate pricing of each payment method is needed. The use of postal inpayment money orders appears to be free but its cost is incorporated in the price of the underlying service. The MNB started to work on a proposal to change this situation and make costs transparent, the idea being that all consumers pay the real cost of their selected payment instrument, and that this is transparently indicated in the invoices issued by service providers. The Act on Consumer Protection, effective from 29 July 2012, however, prohibits public utility companies to charge a separate fee

for the payment of bills through postal inpayment money orders. The Consumer Protection Act only allows payees to give discounts to clients who choose an instrument for paying their bills that is less costly for the payee. On the whole, payers opting for postal inpayment money orders pay less for the underlying service because the extra cost of the postal inpayment money order is shared with clients opting for less costly payment instruments. It is likely, however, that in the near future more payees will attempt to direct their clients to some other payment instruments, even offering discounts depending on the choice of payment instrument (as we already see in some examples). For the time being, there is little chance for the rapid replacement of postal inpayment money orders by other payment methods due to consumer preferences.

Core direct debit could be an efficient and convenient mode for regular payments, but the sense of limitation of control over financial liquidity, the absence of trust and of regular income credited to the payment account significantly hinder its widespread use. The more extensive use of core direct debit is hindered by the advantage of postal inpayment money orders resulting from their seemingly free use and by other factors.⁹ One such factor is the absence of income regularly credited to the payment account, or of the payment account itself.¹⁰ Another common problem is the lack of the necessary consumer trust. Mistrust affects both payment service providers and payee companies. One cause of mistrust may be the fact that many of the customers fail to understand the operation of the payment method, while another one is the disproportionate public perception of a few adverse incidents. Payment service providers and payees could both play important roles in providing better information to customers. Another problem preventing widespread use is the automatic debiting of the user's account with the payable amount at a predefined time when this payment instrument is used. Thus the user loses his ability to decide on the payment of bills at the time most suitable for his own liquidity management, even though he has the option to block payment in advance and subsequent refunds are also possible.

The spread of electronic payments among households may speed up if, with technological progress, simple personal liquidity management becomes possible for customers using electronic payment methods, just like in the case of postal inpayment money orders. One example could be the electronic bill presentment and payment

⁹ The factors hindering the spread of core direct debit are described based on the relevant study: HELMECZI, ISTVÁN AND HENRIETTA OLASZ (2011), 'A csoportos beszedés és az elterjedését gátló tényezők', [Direct debit and factors impeding its penetration in Hungary], *MNB-tanulmányok*, 97.

¹⁰ A detailed description of these problems and discussion of potential solutions are provided in Section 2.1.1.

(EBPP) system. At present, there are two such systems operating in Hungary. These services can make not only payments but also billing more efficient. In the course of bill presentment through EBPP systems, the service provider electronically sends the bill to users in the system, where its management and subsequent storage also occurs. In addition, bills can also be paid through the systems and users can choose from several payment instruments, thus everyone can find an appropriate one for their own payment habits. The extensive use of the service may be hindered at present by the absence of common standards. If uniform standards are adopted both by the issuers of bills and payment service providers, EBPP service providers could offer services that can be used more extensively.

2.1.4 THE LAUNCH OF INTRADAY CLEARING

On 2 July 2012, intraday clearing was launched in ICS. Since that date, electronic credit transfers arrive to the payment service provider of the payee within 4 hours. The system has 5 clearing cycles daily at two-hour intervals starting at 8:30 a.m. Thus, the majority of credit transfers typically arrives much sooner (within 1-2 hours) than the maximum of 4 hours. An objective for the future is to increase the number of clearing cycles and to facilitate the use of other payment instruments in addition to credit transfers in the intraday clearing system. The terms and conditions of payment service providers show that the higher service standard does not mean higher fees for users in the case of most service providers and the most common account packages.

The MNB as the regulator encouraged the introduction of intraday clearing to promote the common good. The legal basis of intraday clearing is the MNB decree on the execution of payments. In that decree, the MNB set 4 hours as the maximum for the time it may take for amounts submitted on an electronic order before the time specified for same day execution (cut-off time) to arrive at the payment service provider of the payee. In the case of payment service providers indirectly connected to the clearing system, the time limit for execution is extended by 2 hours. The MNB decree also requires immediate crediting to the customer's account, thus the law assures that the transferred amount reaches the payee client on the same day. Hungarian payment service providers, the GIRO Zrt. and the MNB implemented the project by the coordinated development of their IT systems and the modernisation of their internal procedures and processes. The cooperation of

stakeholders was assisted by the Project Steering Committee set up for the implementation of the national project, with the participation of the GIRO Zrt. and the MNB as well as the Banking Association and the Hungarian SEPA Association.

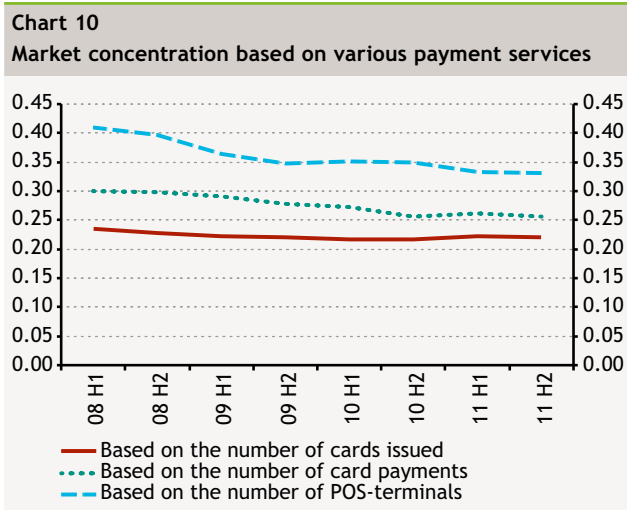
This change offers benefits primarily to corporations and other institutional actors, but over the longer term it may also have favourable effects on retail payments. For customers opting for electronic submission, it is sufficient to initiate the credit transfer on the due date of payment. Thus, the execution of orders is accelerated by one day, and consequently the payer client wins 1 day's worth of current account interest income on the amount concerned. The funds received can be used for new payments on the same day. For businesses and institutional actors, the longer transfer information is an additional benefit. As a result, they can send and receive more data, which may simplify the management of their assets and receivables. Furthermore, the acceleration of the clearing of credit transfers allows for the introduction of new, credit transfer based payment services. Because of the speed of the service, electronic payments will be an option in such cases where because the time requirement of the transaction and the absence of trust between the parties only used to allow the execution of the transaction in cash. This may be useful not only in B2B transactions but also for high-value retail payments.

The requirement of settlement within 4 hours may reinforce the spread of the electronic channel as intraday clearing is compulsory only in respect of electronically generated HUF credit transfers. The penetration of the electronic channel will also bring substantial savings for society, as paper-based remittances require much greater expenditures due to their manual processing and the greater scope for errors.

2.1.5 STRUCTURE OF THE MARKET OF PAYMENT SERVICES

The market concentration of payment services in Hungary varies by service: it is low in respect of payment account keeping and high in the market of payment cards. Payment accounts are offered by numerous payment service providers, but the number of actors is inflated by savings cooperatives, which are responsible only for a small part of payment turnover. At end-2011, the HHI¹¹ was 0.163 (Chart 10), with the ten largest service providers maintaining 83.6 per cent of all payment accounts. Concentration is higher in the payment card sector, one of the reasons being

¹¹ Market concentration is measured with the Herfindahl-Hirschman-index (HHI), which is calculated by summing the squares of the percentage of market shares held by the various market participants. Its value can range from 0 to 1.



that mostly larger market participants interested in it. Based on the number of cards issued, the HHI was 0.221, with the ten largest actors issuing 93.3 per cent of the cards, while based on purchases made with cards, the value of the HHI was 0.257. The acquirer side of payment cards is even more concentrated. In this case, the market shares were defined based on the number of POS terminals installed at merchants. At end-2011, nine service providers worked on accepting payment cards through POS terminals, the HHI was 0.331. Based on purchases by cards and POS terminals, the market has become less concentrated in recent years, while the number of cards issued and of payment accounts shows no significant change in concentration.

However, the structure of the market of payment services may be changed significantly even in the short term by the proposed launch of the electronic payment services of the Magyar Posta Ltd., the entry of cross-border card acquirers or the trend-like change of the market shares of card companies present in Hungary.

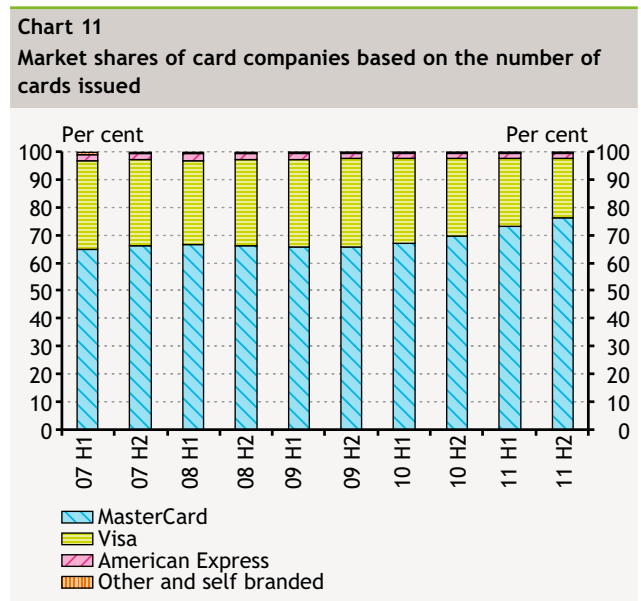
The Magyar Posta Ltd. may obtain a significant share on this market in a short time once it launches electronic payment services. As the post office is present in a number of geographic areas where other service providers have no branches, it may obtain significant market shares in a short time in certain electronic payment services (payment account management, payment card issuance, real card payment in post offices, etc.). Electronic services could also replace a significant part of postal inpayment money orders, and thus the efficiency of payments could increase.

Concentration on the acquirer side of the payment card business could be reduced mainly by the entry of cross-border acquirers, but in recent years several Hungarian

payment service providers have also started to establish acquirer networks. Because of the size of their networks, international acquirers can offer lower fees to merchants than their Hungarian peers as their cost per transaction may be lower. In the past, it was mostly large merchants that could negotiate lower fees from acquirers because they had the sufficient market power and, due to the large network size, they found it worthwhile to change acquirers even for small differences in service charges. The entry of new acquirers and the intensification of competition may change that situation, and the merchant service charge may be lowered for smaller merchants as well. In addition, in the future merchants may switch acquirers more frequently because of lower charges or higher level of service.

The structure of the market of payment services may be significantly affected if the market shares of card companies present in Hungary continue to change as a trend. At end-2011, 76.6 per cent of cards issued in Hungary were MasterCard, 21.4 Visa and 1.8 per cent American Express (Chart 11). Since the mid-2000s the market shares of card companies based on the number of cards issued were essentially constant, but major changes started in 2010. Unless this fast change comes to a halt within a short time, there is a good chance that a much more concentrated, essentially monopolistic market will emerge.

If the market of payment cards effectively becomes a single-party market with no or very little competition for issuers, both issuers and merchants would be unfavourably affected in the time frame of a few years. In the absence of competition, innovation could be stifled, which may in turn have a negative effect on the security of transactions



in the longer run. The fees to be paid by payment service providers may increase, while the ratio of funds reinvested on the local market may decline. It is difficult to assess the exact impact on the issuer side because the activities of international entities are not limited to a single country, and therefore international trends may play a significant role in innovation or security. Consequences may also be influenced by the ability of actors to re-enter the Hungarian market. On the merchant side, by contrast, the emergence of a monopoly would have noticeable effects in the short term already. At present, the average level of interchange fees is substantially higher for MasterCard cards than for Visa cards. Merchants pay an average charge to their acquirer bank (and through them, to the issuer), which is established based on the share of the cards in the turnover. If the system with the higher fee level stays on the market, at the moment of the exit of the other provider the average interchange fee increases substantially, and so does the merchant service charge.

2.1.6 COMPLIANCE WITH THE RULES OF THE MNB DECREE ON THE EXECUTION OF PAYMENTS

Regular auditing activity monitors and enforces compliance with the central bank requirements concerning the execution of payments, thereby promoting the achievement of the payment related objectives of the MNB. Since the implementation of Directive 2007/64/EC on payment services in the internal market (hereinafter: PSD), payments in Hungary have been regulated on two levels (see Box 4). The Payment services market needs to be regulated not only because the establishment of the framework of the multi-player market of payment services is much easier and faster through regulation, but also because sometimes conflicts of interest may hinder progress in the field of payments that would be optimal at the level of society (e.g. the introduction of intraday clearing in Hungary).

Box 4

The Directive on payment services in the internal market and its transposition into Hungarian legislation

The European Parliament and the Council adopted Directive 2007/64/EC on payment services in the internal market (PSD) on 13 November 2007, which was transposed into Hungarian law on 1 November 2009.

The fundamental objective of the Directive is to lay down the conditions for the market entry of a new category of payment service providers, payment institutions not engaged in taking deposits or issuing electronic money in order to intensify competition and to establish a coherent legal framework in the European Economic Area by bringing the fragmentation of national legal systems to an end.

The Directive has been transposed into Hungarian law on two levels: in a new Act on Payment Services¹² (hereinafter: PSA) and by the amendment of the relevant MNB decree¹³. PSA regulates the prudential and other requirements for payment institutions, the rules of their authorisation, registration and supervision, transparency of conditions and information requirements for payment services as well as the rules concerning liability, financial compensation and consumer protection. The MNB decree lays down the rules of the execution of payments.

The MNB decree existed before the transposition of the PSD, and thus an existing piece of regulation had to be amended. The new rules inserted pursuant to the transposition of the PSD relate to the prohibition of deductions from the amount transferred, the execution times and value date of certain payment transactions to a payment account. Furthermore, existing provisions have changed and rules concerning availability of funds, the cut-off times and the blocking by the payer of the execution of core direct debits have been added.

The Hungarian Financial Supervisory Authority (HFSA) is responsible for monitoring compliance with the PSA and the MNB for compliance with the MNB decree on execution of payments.

¹² Act LXXXV of 2009 on the Pursuit of the Business of Payment Services.

¹³ Decree No. 18/2009 (VIII. 6.) MNB on Payment Services Activities.

Compliance with the requirements must be monitored, because at an individual level the circumvention of rules may be rational (e.g. because of cost savings or additional interest income through the delay of investments). Market mechanisms are unable to discover and correct non-compliance due to information asymmetry. In such cases compliance is best monitored by a competent authority. Furthermore, the present level of financial literacy renders the enforcement of clients' rights more difficult even when the aforementioned information asymmetry is not present. If the regulation fails to achieve its objectives, there is a danger of loss of confidence and clients may turn from cashless payment methods to the use of cash.

The audited payment service providers were broadly observed as functioning according to the law, but the MNB ordered measures to be taken to address the deficiencies identified. In 2011, 16 payment service providers were subject to payments audits. The audit programme, which defines the scope of the audit, covered, among others, all the provision in the MNB decree that were incorporated in the context of the transposition of the PSD (see Box 4) as well as the ones referring to the execution of payment transactions. To eliminate the deficiencies identified during the audits, last year the MNB required 11 credit institutions to implement measures only, while fines of HUF 21.4 million in aggregate were imposed on 7 credit institutions¹⁴ as well, of which HUF 9.4 million were imposed in the follow-up audits of two institutions examined in the previous year (Table 3). On the basis of the audits, the MNB required a total of 78 measures to be taken.

At most credit institutions, the audits found non-compliance in connection with the execution of credit transfers, postal outpayment money orders and direct debits. The relevant rules in the MNB decree establish the framework for the efficient execution of payments. The audits revealed that credit institutions occasionally debited the payment account of the customer on the day of receipt of payment orders when the orders were accepted on non-business days, while other tasks relating to execution were performed only on the following business day. In addition, there were instances where the payment orders were not executed in the sequence of receipt, remittance summons and official credit transfer orders were placed later in the sequence, disregarding the required sequence of execution, and transactions that could not be credited on the payment account of the payee were rejected with a delay. These non-compliance cases are considered to be serious as their business impact was delayed execution and sometimes non-compliant execution caused loss of interest to customers. In connection with the non-compliance revealed, the MNB required 10 credit institutions to take a total of 17 measures. In 2011, these non-compliance cases were the top considerations when fines were imposed. The placement of remittance summons and official credit transfer orders later in sequence of execution also affected PSA compliance, and thus the MNB referred the case to the HFSA as well.

At almost each audited credit institution there were examples of delayed crediting of the sum of the payment transactions or crediting on the wrong value date. The

Table 3
Audits of the MNB on payment execution in figures
(2009–2011)

		2009	2010	2011
Number of audits	Banks	8	8	9
	Cooperative credit institutions	3	4	6
	Payee of core direct debit	7	–	–
Number of findings*		81	113	134
Number of measures*		48	67	78
Number of fines**	Bank	–	2	2
	Cooperative credit institutions	1	2	5
	Total	1	4	7
Amount of fines (thousand HUF)	Bank	–	14,000	17,000
	Cooperative credit institutions	500	1,000	4,400
	Total	500	15,000	21,400

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

** The MNB was given the power to independently impose penalties on 1 October 2009. Until that time, the MNB imposed fines through the HFSA.

¹⁴ http://www.mnb.hu/A_jegybank/kozerdeku_informaciok/tevekenysegre_mukodesre_adatok/teljesitmenyeskapacitas_20100115 (only in Hungarian).

usage of the wrong value date results in loss of interest for customers, while failure to credit immediately delays the time when the funds received are available for the customer. At cooperative credit institutions operating with an integrated model, the delayed crediting of postal inpayment money orders and payment transactions within the integration were typical problems. In addition, a number of credit institutions did not appropriately credit incoming payment transactions in EUR or HUF, with or without conversion. The MNB considered non-compliance with the requirements concerning the value date and availability of funds severe. This was a key consideration when justifying the fines imposed in 2011. In connection with the non-compliance cases found, the MNB required 15 credit institutions to take a total of 21 measures. In addition, the MNB conducted extensive negotiations with cooperative credit institutions operating with an integrated model and the settlement bank of the integration (Magyar Takarékszövetkezeti Bank Zrt.) to assure that projects necessary to eliminate typical errors are launched and realised as soon as possible. Development projects are expected to be completed by 30 June 2012. The MNB held consultations and published guidelines¹⁵ on the practice of crediting payment transactions requiring conversion. To implement the required measures, credit institutions

generally had to reconsider their workflows relating to exchange rate quotation as well.

The MNB experienced non-compliance in queuing and partial debiting of direct debit orders mostly due to lack of funds and in the non appropriate sending of required notifications. In the course of the execution of payment orders, it is expected that procedures due to insufficient funds (queuing, partial debits and rejection) function in a predictable, reliable way. The audits found that sometimes credit institutions rejected direct debit orders and remittance summons and official credit transfer orders late due to insufficiency of funds. Furthermore, when funds were insufficient standing orders, business to business direct debits and core direct debits occasionally were queued even in the absence of an agreement with the payer or for a time other than the duration specified in the agreement with the payer. In the case of partial debits, credit institutions sometimes failed to fulfil the terms of the agreement with the payer. When rejecting orders, the real cause of the rejection was not always stated. In connection with non-compliance cases revealed, the MNB required 12 credit institutions to take a total of 34 measures. This was a consideration of medium seriousness when justifying the fines imposed in 2011.¹⁶

¹⁵ Guidelines relating to the execution of payments are available on the MNB website (only in Hungarian):

http://www.mnb.hu/Penzforgalom/az-mnb-mint-penzforgalmi-hatosag/pe_szabalyozas/mnbhu_pe_allasfoglalasok.

¹⁶ In addition to the cases described above, the MNB also required 6 measures relating to the recording of the time of receipt of payment orders by credit institutions (year, month, day, hour, minute) and the specification of the deadline for the same-day execution of payment orders.

2.2 Security of payments

The secure operation of cashless payment services is indispensable for their penetration and thus the increased efficiency of the payments. For the development of any cashless service, the safe execution of transactions and the protection of the payment data of customers should be treated as priorities. These are necessary to create and maintain confidence in payment services and the systems of service providers, which is vital for the spread of electronic payments. In the context of current developments in the security of payments, we shall discuss fraud relating to electronic transactions, the chip migration ongoing in the Hungarian payment card sector and the risks inherent in the lack of regulation of the Hungarian voucher market.

2.2.1 PREVENTION OF FRAUD IN ELECTRONIC PAYMENTS

In recent years, there were no major fraud events relating to electronic payment transactions. In 2011, 11,595 fraud events were committed with payment cards issued in Hungary, with a total value of HUF 568.4 million, corresponding to a mere 0.003 per cent by number of transactions and 0.007 per cent in value terms. This is favourable in international comparison: a number of European countries report several times more fraud events. It is important to note, however, that this small number of fraud events received extensive media coverage, and thus negative news may have a disproportionate effect on the payment habits of users. We should highlight that in most cases cardholders suffer no damage as a result of fraud, because losses are borne by the payment service providers. Nevertheless, security solutions must be improved continuously as cross-border fraud events (which are several times the number of national ones) may have a severe impact on Hungarian customers and payment service providers. If card fraud is more difficult in countries with more advanced card markets, fraud events are likely to be diverted to neighbouring countries. This is why chip technology had to be implemented on Hungarian cards as well.

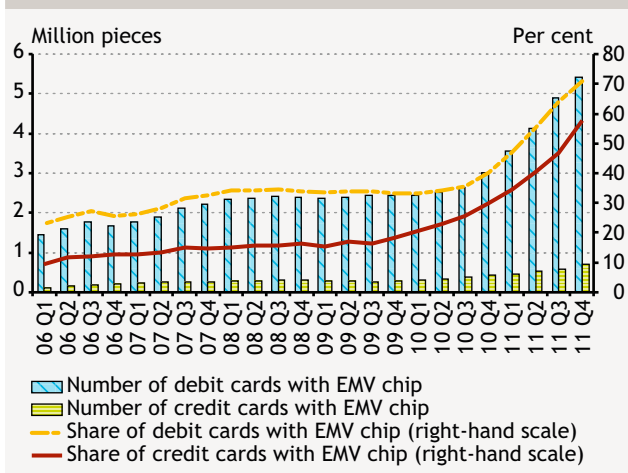
The use of chip technology in the payment card business has enhanced the security of card payments. In the case of payment cards and the accepting devices, the introduction

of chip technology started in the early 2000s, but proceeded at a rather slow pace for some time. This process accelerated in 2007 for POS terminals and ATMs, and in the last quarter of 2010 for cards. At the end of 2011, 70.8 per cent of debit cards and 57.5 of credit cards were equipped with chips. In 2011, more than 2.7 million chip cards were issued (Chart 12). Chip cards are difficult to copy, and thus the security of card transactions can be enhanced and the losses to payment service providers and to their customers can be reduced. Furthermore, payment cards become suitable to provide additional services as more than one application can be installed on the chip. Thus a single card can facilitate payment as well as other purchase-related services (e.g. loyalty card systems). Chip migration in Western Europe must have been a strong motivation in the case of terminals as the data stolen from the magnetic stripes of chip cards from those countries could be used only in other countries. The primary motivation for issuers was the change of the warranty rules applicable to card companies. As a result, it was profitable for issuers to replace cards bearing magnetic stripes with chip cards, which may have a number of positive effects.

Statistics on fraud clearly show the positive effects of chip migration. In addition to a decline in the overall level of fraud, its structure and location have also changed in

Chart 12

Number and percentage of payment cards equipped with chips



recent years. Most fraud events relate to international transactions both on the issuer and acquirer side. Data of Hungarian cards tend to be abused abroad, while fraud at Hungarian card acceptance facilities tends to involve foreign cards. 75.9 per cent of fraud incidents relating to cards issued in Hungary occurred in international transactions, while 73.5 per cent of fraud events encountered in Hungarian terminals relate to cards issued outside Hungary. While in the past years the number of fraud events committed with cards issued in Hungary has remained effectively level, abuses relating to Hungarian acceptance facilities have become much less frequent. There were 2,074 such incidents in 2011, while two years previously the corresponding figure was more than three times higher. This is mostly because the data of Hungarian cards tend to be obtained mainly by copying the magnetic stripe. However, this information can be abused in transactions requiring the presence of the card (POS terminal or ATM) only if the accepting device is unable to handle chip cards. As there are effectively no such devices remaining in Hungary, such fraud does not affect Hungarian acquirers. This is also why the misuse of the data of foreign cards has become less frequent in Hungary.

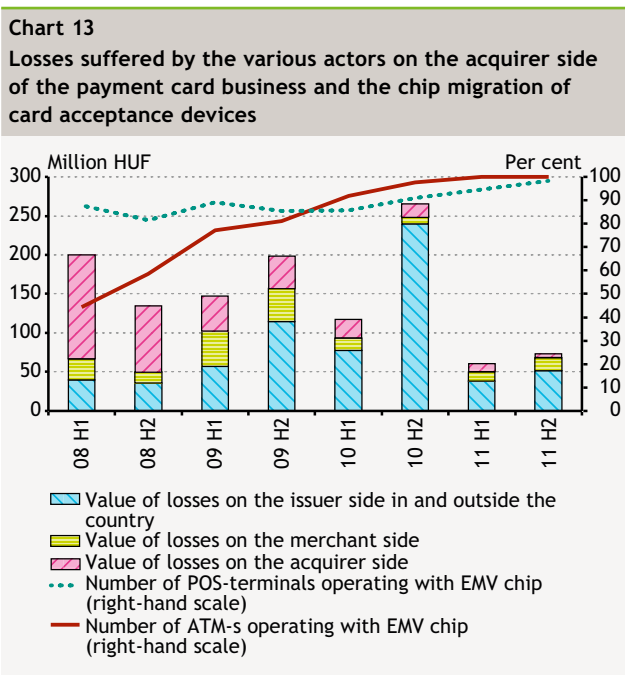
In line with the changing structure of fraud, the losses suffered by Hungarian acquirers have dropped to a fraction of their value in earlier years (Chart 13). This is not true for the issuer side, where most of the loss suffered from fraud is still borne by Hungarian issuers. This is mostly because the data of Hungarian cards is misused mostly in countries with different liability rules (e.g. the US), and thus despite

the cards being equipped with chips, Hungarian issuers must bear the loss.

It appears at this time that the chip technology offers sufficient protection in most cases whenever a transaction requires the physical presence of the card. However, the new uses of cards facilitate new types of fraud. New hazards may appear mainly in case of payment by card through the Internet, but the changing card usage as a result of contactless technology and the proliferation of smart phones may give rise to new types of fraud. When chip migration is completed, payment service providers will have to concentrate mainly on the security of such, currently less widespread payment solutions in the field of the security of card payments, even though the rate of fraud in Internet payments is not significant at present. There are existing identification procedures that facilitate secure card payments through the Internet. Essentially, the approval of the transaction requires not only the knowledge of information physically displayed on the card but also additional unique identifiers.

2.2.2 ABSENCE OF REGULATION ON THE HUNGARIAN VOUCHER MARKET AND THE RELATED RISKS

Non-cash payment instruments with limited scope of use (vouchers) account for an increasing share of payment transactions in Hungary. Vouchers come in a number of forms, with varying degrees of risk depending on their mode of issuance, redemption and use. Vouchers may be issued by different organisations, private or public enterprises. Accordingly, vouchers may also be redeemed at these entities. In most cases the issuer and redeemer are one and the same, but in between the holder of the voucher may change once or several times. Some vouchers may be used in a specific store or chain; these are mostly issued by the facilities that accept them. Some vouchers can be used for the purchase of certain goods or services at the participating businesses that have an agreement with the issuer. In this case the issuer and acceptor tend to be different, thus the voucher changes hands at least once. Vouchers may be single-use or multi-use. Single-use vouchers can be used by the holder of the voucher once after its issuance to make a payment. If the payment was made to the issuer, the payment also constituted the redemption of the voucher and if the voucher was used at a participating business, it will be redeemed by the acceptor after payment. The latter category includes the most common vouchers distributed as fringe benefits that can be used for food purchases or for domestic tourism expenses. Multi-use (negotiable) vouchers can be used for



payment repeatedly after their issuance without the acceptor redeeming them. Examples include vouchers also called 'local money', such as the 'Blue Frank' in Sopron or the 'Crown' at Lake Balaton. In terms of their format, vouchers may be paper-based or electronic. The issuance of carefully designed electronic vouchers is much more efficient than their paper-based counterparts. The issuer of vouchers may obtain profits mostly by issuing above face value or redeeming below face value or on the commissions applied.

The main risk relating to vouchers is whether at the time of redemption the issuer has the funds for the voucher issued. Voucher systems tend to entail two main types of risk, both related to the issuer. One is a risk to the user, the other to the acceptor or redeeming entity. Users of vouchers are often unaware of these risks and are not given sufficient information for an informed decision. The risk of the user is whether, having purchased the voucher, he will be able to use it. This assumes that there are merchants that will accept it as a payment instrument under the predefined rules. The risk of the acceptor or (in the case of negotiable vouchers) redeemer is whether it will be able to redeem the voucher under the predefined rules and receive the predefined amount within the predefined time. For the issuer to be able to pay to the redeemer the specified amount at the time of the redemption, it must have the funds necessary for the redemption of the vouchers. Negotiable vouchers entail greater risk than single-use ones because the time between issuance and redemption may be much longer.¹⁷

In addition to insufficient funds, the possibility of changing terms is another risk. The issuer may substantially change the rules of use and redemption, and the relating charges, without prior notice. This may also undermine the confidence of consumers in the financial intermediary system even though the issuers of vouchers are not part of that system. Another important issue to be regulated is the definition and requirement of sufficient information. In the absence of this, issuers may deceive the users of vouchers, who are unable to assess the risks they undertake in the absence of the required information.

At present, there is no law in Hungary regulating the issue and redemption of vouchers or the handling of client funds. There is nothing to require issuers to possess the funds necessary for redemption, to redeem the voucher or to inform voucher holders about the change of certain terms in due time. If the absence of these rules results in fraud, it may undermine confidence in payments even if it only affects a small number of users. These negative news may encourage many customers to use cash, which in turn hinders the spread of electronic payment instruments. As no one supervises the issuers of vouchers, there is no one to point out risks to the parties concerned in time. Issuers may argue that they deposited the funds with an entity supervised by the HFSA, therefore this is not a problem. However, this issue should be considered separately as the fact that a payment service provider is supervised by the HFSA does not mean that the issuer has indeed deposited sufficient funds with them.

In light of the above risks, the MNB has come to the conclusion that there is a need for regulation of voucher issuance so that this market can work in a transparent, safe and reliable way. The adoption of regulation could significantly reduce the risk of the participants to the system and a framework would be established for the secure operation of the voucher market. During the regulatory work, supervisory bodies should also be designated to regularly monitor the operation of issuers of vouchers and to adopt measures to assure the secure functioning of vouchers where required. The MNB has presented its technical concept of the regulation to the Ministry of National Economy. The proposal would separate the regulation of vouchers into two parts. Single-use vouchers would be regulated in a government decree and supervised by the Hungarian Trade Licensing Office while negotiable vouchers would be covered by the CIPE Act and supervised by the MNB. Simultaneously with the regulatory initiative, economic agents also need to be made aware of the risks involved in the use of vouchers.

¹⁷ For the detailed discussion of risks relating to the issuance of vouchers, see HELMECZI, ISTVÁN NÁNDOR AND GERGELY KÓCZÁN (2011), 'On trade vouchers called "local money"', *MNB Bulletin*, April, pp. 30–43.

3 Operation and oversight of the Hungarian payment and settlement systems

The oversight of the payment and the securities clearing and settlement systems is one of the basic tasks of the central bank. In Hungary, oversight activity covers VIBER, ICS as well as the securities clearing and settlement system including the activities of the central counterparty. Oversight revolves around two considerations: the

reliability and efficiency of the payment and settlement systems. Reliability is monitored using on a risk-based approach (see Box 5). The types of risk resulting from the criteria: risk of service continuity, clearing and settlement risk and the system operational interdependency risk.

Box 5

Risk-based oversight framework

The risk-based oversight framework relies on uniform types of participants and risks. There are multiple actors in the scene of service providers and participants relating to payment and securities transactions. Actors are present all along the value chain from the submission of payment orders or conclusion of securities transactions to the clearing and settlement of payment and securities transactions. The multi-player scene has the following types of actors: settlement agent, clearing house, central securities depository, central counterparty (collectively: *service providers*) and direct participant, indirect participant, direct submitter (collectively: *participants*).

Risks crystallising in the payment and settlement systems always materialise due to some problem at the service provider or the payee (generally a participant). The following types of risk are defined in the risk-based oversight framework of the MNB:

- **Risk of service continuity**, which means the disruption or stoppage of the clearing or settlement service in the system. This is generally attributable to some operational irregularity at the service provider or may rise from financing or commercial problems at such.
- **Clearing and settlement risk**, which means a delay or failure of clearing or settlement in the system, despite the fact that clearing and settlement service is continuous. 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 emerge even if the clearing phase goes smoothly. Clearing and settlement risk may arise from the insufficient liquidity or insolvency or operational problems of participants.
- **System operational interdependency risk**, which arises from the fact that 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.

There are constraints to monitoring the risks listed above. For instance, oversight does not include the examination of the credit risk of the various system participants. Oversight covers service providers and participants only to a limited extent, from the aspect of the risks of the system.

The oversight work of the central bank comprises the continuous monitoring and analysis of the aforementioned risks and making recommendations to reduce risks and improve risk management. The tool set of oversight includes both regulatory instruments (supervision, regulation and auditing) and softer tools (oversight recommendations and proposals).

3.1 Risk of service continuity

In 2011, the systematically important payment and settlement systems (overseen systems) essentially operated smoothly, and thus the risk of service continuity arising from operational problems was lower than in prior years or, in the case of ICS, remained low.

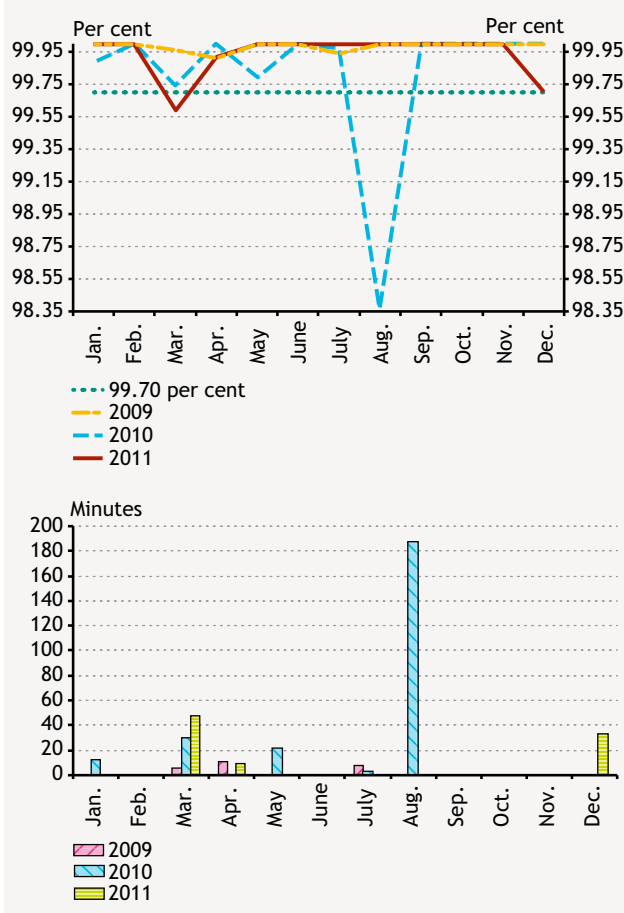
3.1.1 OPERATING PROBLEMS IN THE CENTRAL INFRASTRUCTURE

During the year, the monthly availability ratio¹⁸ of the core settlement service of VIBER was below the required 99.70 per cent in one month only (at 99.59 per cent). In 2011, there were 29 incidents resulting in the outage of the core settlement service or outage of the complementary services¹⁹ affecting the operation and service standard of VIBER and thus compliance with the Business Terms and Conditions. There were fewer outages of the core settlement service in VIBER, and the aggregate duration of incidents was also shorter. At the same time, for individual extraordinary events, the time between the start and end (recovery) of incidents grew longer (Chart 14). Incidents were caused by 5 types of errors: software error; IT (operational) error; combination of software and IT error, regulatory error²⁰; and administrative error. In line with the oversight recommendations, the MNB as the operator of VIBER devised proposals for avoiding similar operational problems in future. Oversight recommendations emphasise, inter alia, the need to strengthen change management and operational controls as well as deeper internal knowledge sharing.

Incidents resulting in the outage of the core settlement service and of complementary services in VIBER may also be attributable to service providers other than the MNB. Of the 29 incidents which occurred in VIBER in 2011, 18 were the responsibility of third-party service providers. There were a higher number of incidents where the cause of the outage of the complementary services caused by third-party

Chart 14

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



¹⁸ The indicator is calculated based on the duration of incidents resulting in the outage of the core settlement service. An outage of the core settlement service occurs when an incident within the MNB results in a downtime noticeable by participants.

¹⁹ An outage of the complementary services affects the operation of VIBER, but it does not result in downtime (e.g. issues with cash deposit, difficulties with the modification of the intraday credit line), and thus it is not taken into account when calculating the total availability ratio of the core settlement service.

²⁰ A regulatory error occurs when, during the preparation of a change, the design of certain processes or test cases is not careful and detailed enough, and thus the 'deficiency' results in an incident once the change is implemented.

required service level, and the continuous evaluation and enforcement of such) as well as the key role of support by

third-party service providers in the process of change management.

Box 6

Renewing the availability calculation methodology of VIBER

The methodology for the measurement of VIBER availability was revised in 2011. The methodological changes primarily involved expansion of the oversight tools to monitor any operational risk incidents in VIBER. Thus, based on the business impacts experienced by VIBER participants, monitoring of VIBER's standard of service has been expanded beyond payment transactions and the VIBER monitor functions to encompass all VIBER business events (e.g. modification of the credit line, end-of-day procedures, inquiries, execution of commands).

In addition to the expansion based on the business impacts explained above, the modification of the methodology also included two important changes affecting the calculation of the availability ratio of the core settlement service. On the one hand, in the future an outage of the component providing the data link between the internal account keeping system of the MNB and VIBER is also considered an 'outage of the core settlement service' as VIBER receives the daily opening balances, intraday credit line modification messages and cash deposit and withdrawal transactions at the counter of the MNB through this channel. On the other hand, it is now made clear that an 'outage of the core settlement service' does not depend on the number of participants or type of payment message affected.

In the course of revising the methodology, the VIBER business functions, the IT environment and system boundaries changing with the business functions, the life cycle of the business functions and the commercial effects of incidents affecting the various business functions were defined. The new methodology classifies core business impacts into three categories:

- in the case of the impact 'something should have happened but did not', an incident temporarily hinders or prevents the execution of an undertaking set out in the Business Terms and Conditions of the MNB;²¹
- if a function operates erroneously, the business impact is defined as 'something has happened but the result is not right';
- the impact is 'system slowdown' if the system is running but at a slow pace, for instance due to technical processing queues – for the time being, the methodology does not measure system slowdown, but expansion to include this aspect is planned.

New indicators (availability ratios) have been introduced in addition to the availability of the core settlement service and the availability of VIBER monitor such as credit line availability ratio; central bank workstation availability ratio; SWIFT commands, inquiries, notices availability ratio; end-of-day procedures, SWIFT end-of-day statement availability ratio; correct liquidity availability ratio, as well as system operational interdependency availability ratio.

In 2011, ICS demonstrated a high level of operational reliability, thus it was able to keep the deadlines specified for the clearing process in its Business Terms and Conditions at all times. In the course of the year, the clearing software took less than 20 minutes to process the transactions received and accepted by ICS on every settlement day. Processing time was significantly reduced relative to previous years.²² In 2011, several changes were implemented (STP launch, upgrade and development of

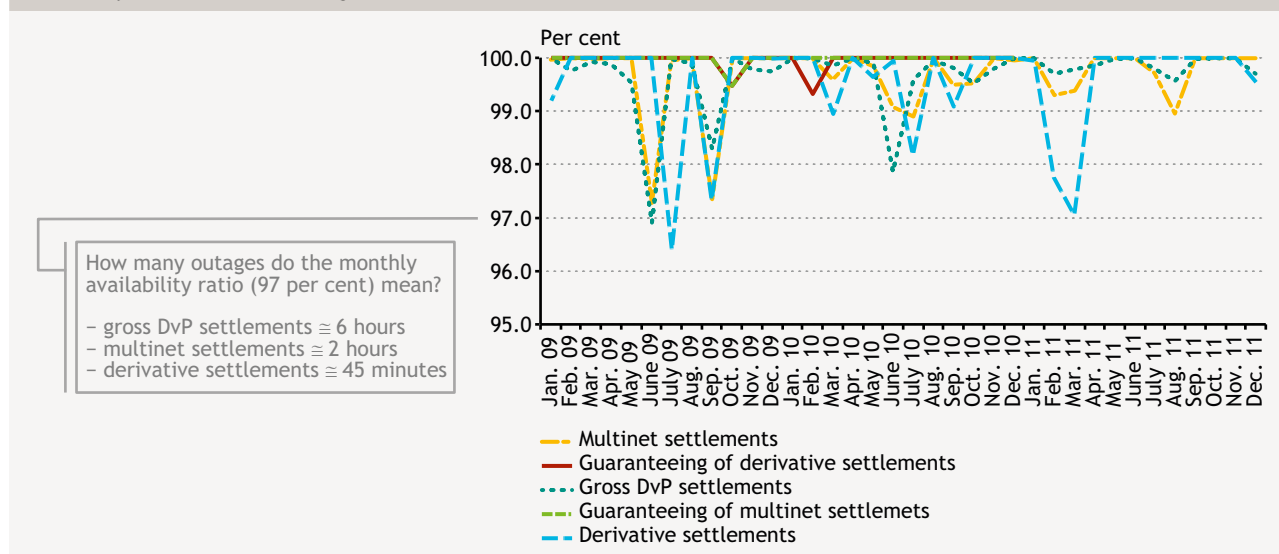
backup storage device) which increased the speed of transaction processing. ICS works as a deferred time gross clearing system. Until 2 July 2012, clearing occurred exclusively during the evening, and therefore the system had substantial time reserves to correct any malfunction that might arise. Since 2 July 2012, with the introduction of intraday clearing, the time available for each processing step has become shorter.

²¹ Business Terms and Conditions for bank accounts managed by the Magyar Nemzeti Bank and for settlement of Hungarian forint and foreign exchange transactions

²² Processing time of transactions received and accepted by ICS.

Chart 15

Availability of securities clearing and settlement 2009–2011



The availability of the key securities clearing and settlement services reflected a decline in operational risk in 2011.²³ The number of malfunctions also moved on a declining trend, and consequently the availability of the securities clearing and settlement system was sufficient (Chart 15). Since July 2010, KELER and KELER CCP have also been providing clearing services for the gas market; therefore the availability calculation methodology was amended with the involvement of the MNB in 2011 so that operational risks can also be monitored in respect of gas market clearing operations. Furthermore, at the initiative of the MNB, the availability calculation methodology for the power market is expected to be completed in the second half of 2012.

3.1.2 COMPLEX RISK CAUSED BY MARKET FLUCTUATIONS AND FINANCING RISK

In securities clearing, financing risk is essentially determined by the operation of the central counterparty function. KELER CCP – as the central counterparty – guarantees settlement in the event that the parties to the transaction fail to settle their obligations. The role of KELER CCP becomes important if a credit risk event occurs because this is when collateral may be utilised or, if that is insufficient, the guarantee callable on first demand provided

by KELER to KELER CCP may be called and the capital of KELER may be used (Chart 16).

In 2011, credit risk events did not occur in the securities clearing and settlement system and no collateral was mobilised (including the guarantee capital of the KELER group). There were wide price movements on the stock exchange on two occasions, when risk not covered by collateral increased temporarily, but the system was able to handle these extreme price movements.²⁴ Based on the stress tests, the own financial resources of KELER CCP were sufficient in 2011 in view of the fact that the HUF 12 billion guarantee callable on first demand²⁵ provided by KELER by far exceeded the calculated risks not covered by the individual and collective guarantee elements.

According to the oversight recommendation addressed to the securities clearing and settlement system, the callable guarantee model should be terminated in the future and simultaneously KELER CCP should be recapitalised. In an extreme situation (multiple credit risk events, market turbulence), the fixed-amount guarantee callable on first demand may absorb the assets of KELER, exposed to devaluation due to the market turbulence, thereby endangering the stable and smooth operation of the central securities depository.

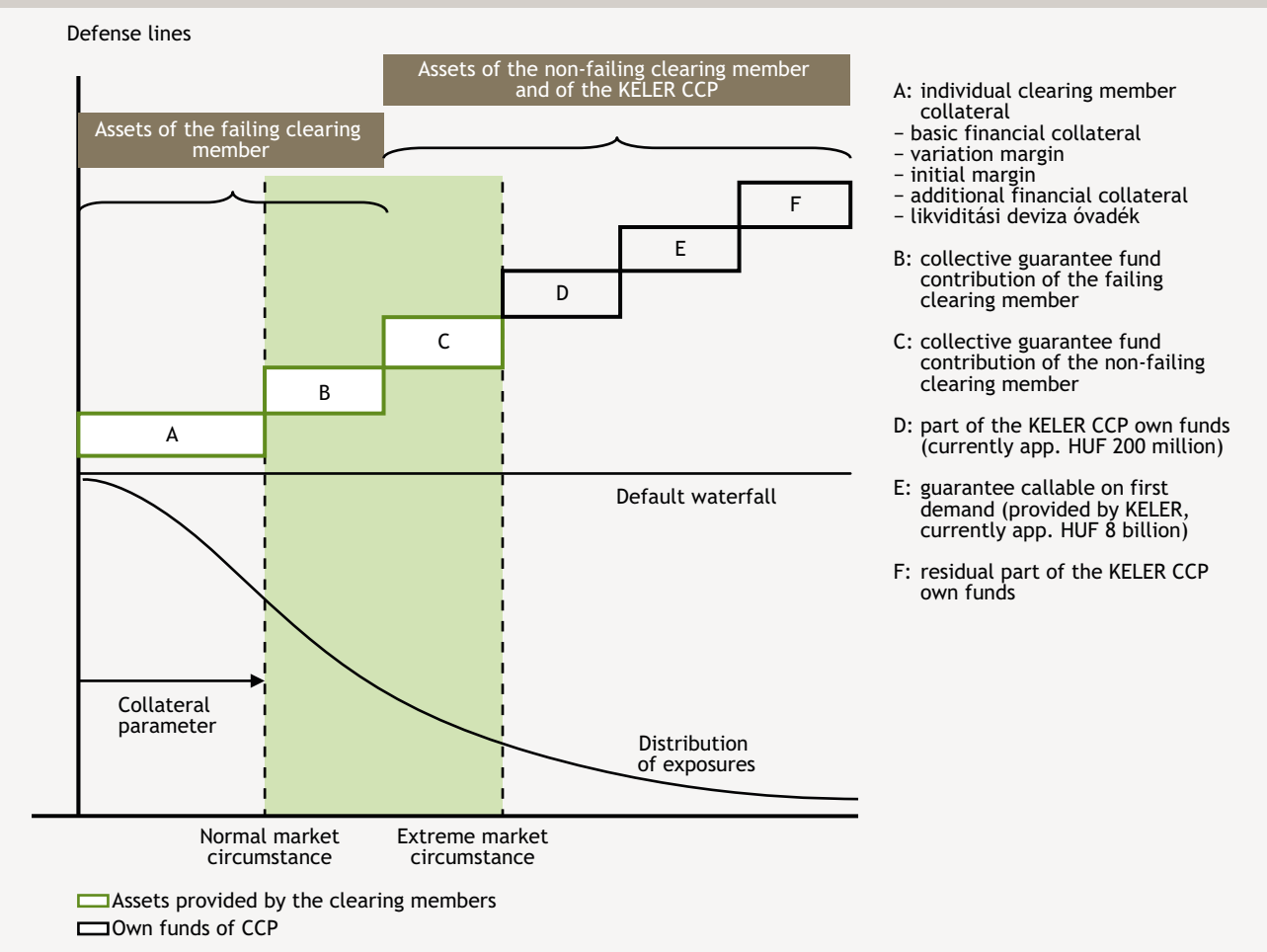
²³ The securities clearing and settlement system is complex, offering a wide range of services, and therefore the level of its availability cannot be described with a single indicator without risking major distortions. Consequently, we monitor availability separately for each service. The securities clearing and settlement system offers approximately twenty kinds of services to its participants, and therefore its availability cannot be compared consistently with the availability of VIBER or ICS. In terms of the execution and functionality of the service, gross settlement is best compared with the availability of VIBER and ICS.

²⁴ To cover normal market movements, KELER CCP collects individual collateral calculated based on historical data. In the event of extreme price swings, however, such collateral may not cover risks.

²⁵ In 2012, the amount of the guarantee callable on first demand declined to HUF 8 billion.

Chart 16

Lines of defence of the central counterparty function on the guaranteed capital markets based on the expected loss



The present operational model and applied guarantee system of Keler CCP is not fully in compliance with the EU regulation (EMIR) soon entering into force that governs the operation of central counterparties. Both EMIR and the oversight recommendations put forth by the MNB promote a move towards the management of risks by the institution where they arise, and the capital level of the central counterparty being determined on a risk basis. This means termination of the model based on the guarantee

callable on first demand described above, and consequently the recapitalisation of Keler CCP. The EU regulation to be issued (EMIR) also favours a change in this direction. EMIR may also affect the level of collective guarantee funds. However, the adaptation requirement for Keler CCP can be estimated accurately only after the adoption of the regulatory technical standards setting forth the detailed rules on the EMIR regulation.

Box 7

Elements of the proposed EU legislation (CSDR and EMIR) concerning the post-trading infrastructure

The European Commission is currently working on a complex package of legislation to cover post-trading infrastructures and regulate their operation. The EU laws will affect the operation of post-trading infrastructure. Even though the legislation has not been finalised, the outlines of several elements with an effect on Hungarian financial infrastructure are already clear.

EMIR, which will regulate the operation of central counterparties, has reached its final version, but the detailed rules are not yet known as they will be specified by regulatory technical standards developed by European supervisory authorities. EMIR will impose a clearing obligation through a central counterparty and a reporting obligation for OTC derivative products if certain conditions are met. As a

result of these requirements, the importance of the central counterparties and trade repositories collecting trading data will increase within the financial infrastructure. Consequently, EMIR also regulates the detailed terms of operation of the central counterparties and trade repositories and the process of authorisation. In addition, EMIR and the regulatory technical standards to be completed in the near future will contain provisions concerning risk calculation and management (and thus on capital requirements) as well as detailed segregation rules. Furthermore, they will address, inter alia, the issues of non-discriminatory access to financial infrastructures, the method of cash settlement (central bank money, if possible) and interoperability.

The draft regulation on central securities depositories (CSDR) elevates rules pertaining to the activities of central securities depositories to the EU level, similarly to the regulation on central counterparties. The draft regulation is currently in the negotiation phase. CSDR will regulate the operational conditions and authorisation procedures of central securities depositories. In addition, it will cover issues of access, clearing and settlement cycles as well as securities issuance on securities accounts. The current draft of CSDR does not allow, as a general rule, central securities depositories to offer any banking type of ancillary services to its participants; however, derogation is possible based on special, case-by-case permission by the Commission (derogation regime). The permission would cover only banking activities relating to securities settlement, but not banking services relating to the settlement of energy market products. If the central securities depository does not itself provide banking type of ancillary services relating to its core depository function (and the settlement does not occur in the books of the central bank in central bank money), it may designate a legally separate credit institution to perform settlement functions.

The risk of energy market risks spilling over to the securities clearing and settlement system must be minimised. In addition to guaranteeing capital market transactions (multinnet positions on the cash market and margins on the derivatives market), KELER CCP acts as a central counterparty on the gas market, whilst for the power market KELER CCP guarantees the settlement of transactions for its customers as the general clearing member of ECC (European Commodity Clearing AG), the clearing house

responsible for the clearing and guarantee of power market transactions. Spillover risks must be managed to prevent the central counterparty function on the energy market from endangering the counterparty function on the capital market. The MNB has addressed an oversight recommendation to the KELER Group to seek a solution ensuring the (legal) separation of the clearing and guarantee functions of the energy and capital markets.

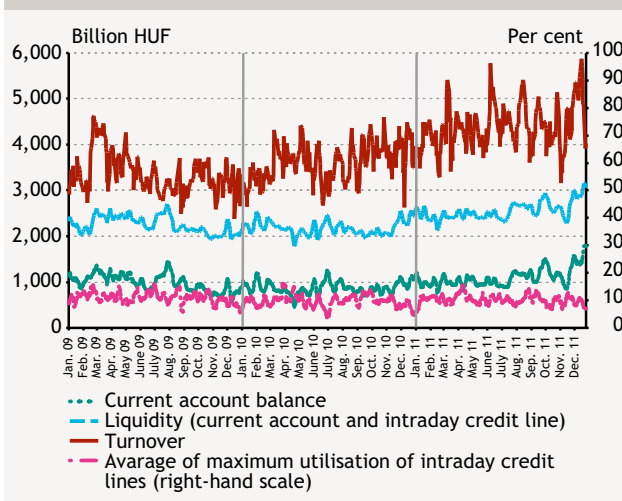
3.2 Clearing and settlement risk

Clearing and settlement risk was low in the overseen systems. Clearing and settlement risk may arise from the insolvency, temporary insufficient liquidity or operational problems of participants.

System-level liquidity in VIBER depends on the turnover and on the level of the conscious and active use of the tools of intraday transaction and liquidity management by participants. Participants have the option of increasing their available liquidity. They can do so by maintaining a higher (monthly average) current account balance as they are free to choose their reserve requirement ratio (between 2 and 5 per cent). Alternatively, the available credit line can be modified by pledging eligible collateral. The maximum level of the credit line is determined by the stock of eligible securities not blocked for other purpose,²⁶ calculated at the acceptance value. In the course of intraday transaction management the timing of transactions and a wide range of priorities can be applied deliberately, while the time criticality of the transaction needs to be taken into account.

In VIBER, 2011 was a year without any extraordinary liquidity-related incidents. The system continued to have abundant liquidity and its turnover stabilised at a level substantially higher than in previous years (Chart 17). Considering that VIBER is meant primarily for the clearing and settlement of large-value money and capital market transactions, its turnover clearly reflects the activity on those markets. The growth of turnover in VIBER was attributable mostly to the increase in the turnover of interbank and securities transactions as well as in the cash leg of securities transactions settled on a DvP basis, while the ratio of customer transactions declined relative to the previous year. As in previous years, the liquidity available to participants²⁷ was ample for the turnover, which was some 20 per cent higher than in 2010. On the other hand, the stock of securities pledged for the MNB, calculated at collateral value, increased at a slower rate than VIBER turnover.

Chart 17
Turnover, current account balance and liquidity of VIBER participants and maximum utilisation of intraday credit lines in the system
(2009–2011)



VIBER participants did not substantially reduce their intraday credit lines in 2011, which had risen substantially since 2008; as a result, intraday liquidity remained ample both at the aggregate and individual levels (Chart 17). There were minor changes in the composition of the credit lines of participants. The share of MNB bonds continued to increase over the other categories of eligible collateral. Collateral pledged for the payment systems as the beneficiary typically remain pledged until the maturity of the security; unpledging before maturity, and the use of securities for trading purpose, occurred in respect of some 20 per cent of the pledged portfolio.

In 2011, the sufficiency of liquidity in VIBER was also promoted by the optional reserve requirement ratio regime introduced in November 2010. In 2011, the 10 participants with the highest VIBER turnover (TOP10 VIBER participants) were responsible for 95 per cent of the annual

²⁶ The amount of collateral potentially available to pledge as collateral for intraday credit is affected by several factors. First, the part of the collateral portfolio that is not needed in the course of the money and capital market transactions on that day is available for pledging. Part of the portfolios will always be blocked by market actors for other reasons (e.g. collateral for one-day or longer-term collateralised central bank credit, individual or collective guarantee required by KELER CCP, guarantee fund for bank card clearing).

²⁷ Liquidity in VIBER consists of two elements: 1. current account balance, 2. the part of the securities portfolio pledged for the MNB as a beneficiary not used for monetary credit purposes.

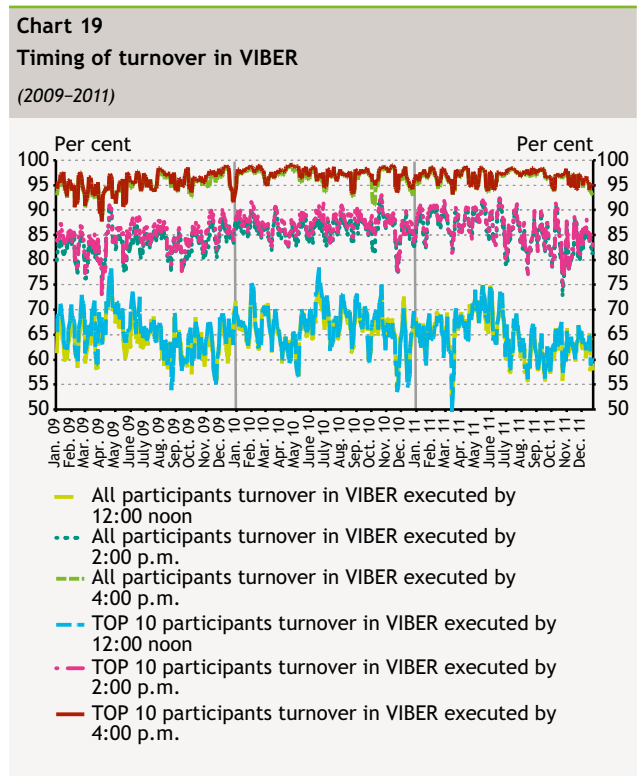
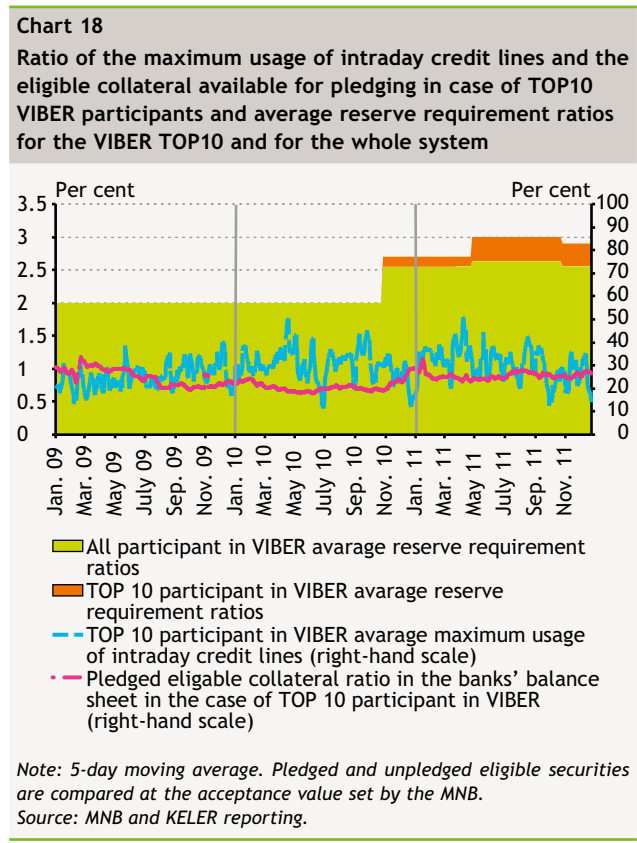
turnover. Several of the TOP10 VIBER participants made use of the option to freely vary the reserve requirement ratio from time to time. In general, VIBER participants with relatively high turnover compared to the low reserve balances resulting from the former fixed ratio increased their reserve ratios above 2 per cent in one step or gradually.

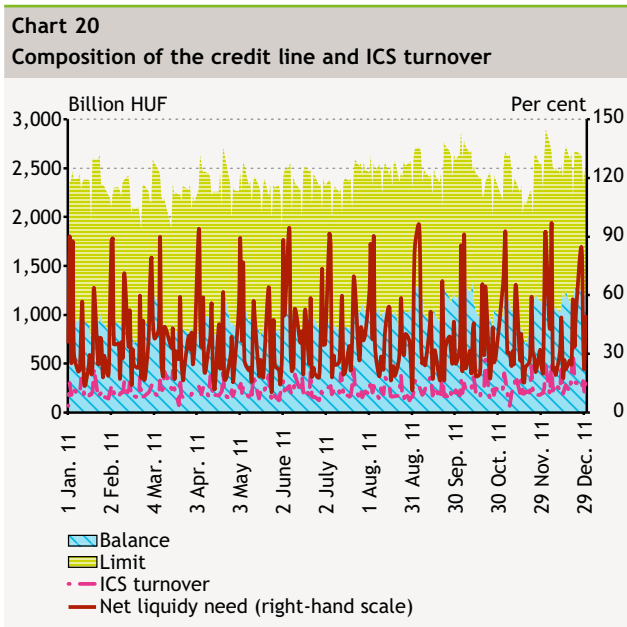
Some participants did utilise a high percentage of their intraday credit line on particularly high-turnover days. However, this did not result in crystallisation of clearing and settlement risk in the system as there was potential collateral available for pledging in the individual banks' balance sheets as a buffer (also in the case of the TOP10 participants). The maximum usage of intraday credit lines did not change on aggregate level relative to 2010. The particularly high-turnover participants from the VIBER TOP10 list continued to operate at higher average maximum intraday credit line utilisation (Chart 18). On the other hand, maximum intraday credit line utilisation showed greater fluctuations during the year than in the past, because due to the increased reserve requirement, the usage of the credit line did not need to be close to the maximum all the time.

There was a change in the habits of VIBER participants in the timing of transactions within the day relative to the previous year, but this did not cause any liquidity

problems at the system level. VIBER participants timed their daily turnover similarly to 2010 in the first half of 2011, whereas in the second half-year they executed their transactions later in the day (Chart 19). In second half of 2011, the share of transactions executed by 12:00 noon fell by 8 per cent on average. The share of transactions executed by 2:00 p.m. within the daily turnover did not decline to such an extent (total turnover intended for the day must be executed by the close of VIBER). The delay observed in the first stage of the operating hours may have been attributable to the increase in the transaction volumes of high-turnover participants who typically time their transactions to occur earlier and actively utilise their intraday credit lines; this was not accompanied by an expansion of available liquidity, and therefore the timing of transactions was delayed.

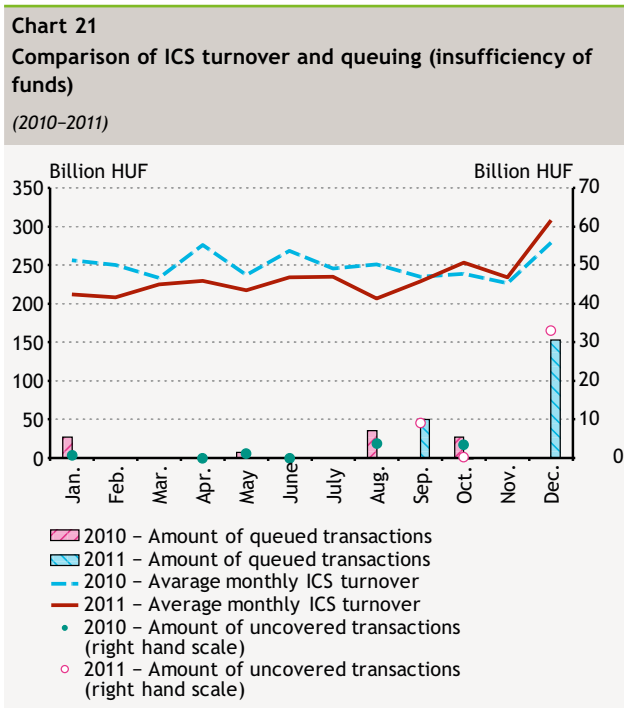
In 2011, liquidity in ICS was sufficient. Clearing participants basically use the same liquidity for clearing in ICS as in VIBER, which is why the liquidity growth in VIBER, and thus the higher intraday credit line and higher optional reserve requirement ratio, had a beneficial effect on liquidity in ICS. As a consequence of the optional reserve requirement ratio regime, banks with low balance sheet totals relative to their role in the execution of payments opted for higher reserve ratios, and thus they were able to execute their transactions more smoothly in VIBER and in ICS. The net liquidity





requirement²⁸ of ICS generally fluctuated between 15 and 60 per cent (Chart 20), the net daily utilisation, as an annual average, was 38.52 per cent of the available average daily liquidity. ICS is a gross settlement system, but the clearing process takes transactions of participants posted to each other into account as collateral on the receiving bank side; this is why there is a netting effect as only transactions generated in excess of the value of incoming transactions need to be funded. The liquidity made available by the MNB for the purposes of gross settlement is used only if the outflows of a credit institution exceed the sum of transfers received from other participants of the system. The highest liquidity requirement in the system is encountered on tax payment due dates and when large-volume public payments are made (wages, pensions, social transfers) but these tend not to endanger the security of clearing and settlement.

Unfunded queues in ICS have become less frequent than in previous years, and no gridlock has emerged. The ratio of the uncovered amount of queued batches in ICS clearing to total turnover remained insignificant. Nevertheless, despite the reduction in the number of queued items, their aggregate value increased. Liquidity occasionally proved to be insufficient in ICS due to the maturity of securities pledged as collateral backing up the central bank intraday credit line, the optimisation of current account balances following the regular behaviour of clearing members to fulfil the reserve requirement or their intention to avoid reserve surpluses at the end of the reserve requirement period. On more than one occasion, queuing occurred in connection



with the maturity of MNB bonds pledged as collateral. This is because on the day of maturity of bonds the securities are no longer eligible, whereas no securities issuance happens yet. Thus, the collateral temporarily missing during the overnight clearing cycle must be supplemented by blocking other securities. In other instances, the outgoing ICS transactions of clearing members tended to include items that the member was unable to take into account due to their unexpected nature or their arrival and acceptance in the late hours. Members would have been able to fill in the liquidity gaps from eligible and not yet pledged collateral available in their balance sheets. After the introduction of intraday clearing, the negligible probability of queuing at night declined even further (Chart 21).

If clearing members adapt their intraday transaction and liquidity management and strengthen their coordination with one another, the launch of intraday clearing is expected to cause no major changes in the clearing and settlement risk of ICS. In intraday clearing the daily credit transfer turnover is distributed among several clearing cycles, but clearing and settlement within the cycles follows a strict schedule. After the launch of the new intraday clearing, credit institutions must keep a closer watch on their liquidity positions. Depending on the settlement cycle, clearing members have 15 or 60 minutes to make funds available. This leaves sufficient time to pledge additional collateral. Smooth intraday clearing is further assisted by the

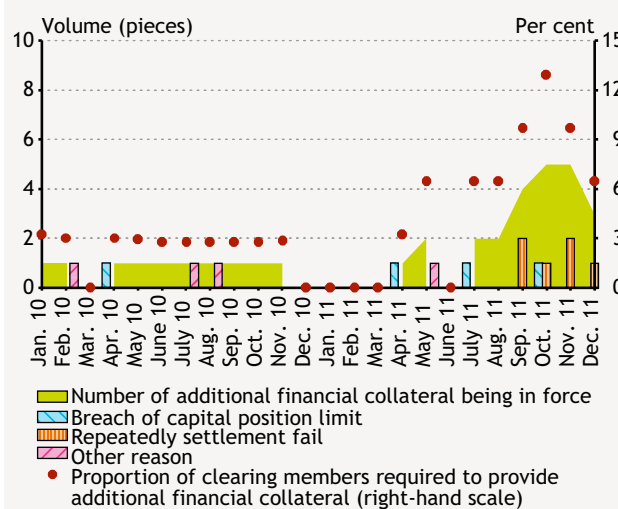
²⁸ Net liquidity requirement is calculated by dividing the net debit balance of all the banks in a debit position on the day (portion to be paid from the accounts kept at the MNB, not covered by transactions coming from other banks) by the total liquidity of the same banks available at the MNB.

fact that the settlement of ICS transactions is given the highest priority after central bank transactions, and thus the settlement orders of the cycle are executed before other VIBER transactions as long as sufficient funds are available. At the same time, high-value transactions may be redirected from VIBER to the intraday clearing of ICS. This does not necessarily cause any clearing and settlement risk incident as VIBER is the settlement platform of ICS intraday clearing. If there is sufficient information flow and coordination among clearing members and if the collateral parameter of intraday clearing is used properly relying on the gridlock resolution algorithm run periodically in VIBER, the payments transferred in VIBER can fund intraday clearing. The MNB and the clearing members have discussed these issues repeatedly. After the launch of intraday clearing, the MNB will monitor the adaptation process as well as the parallel operation of ICS and VIBER. If it notices an increase in clearing and settlement risk, the MNB will intervene.

In the securities clearing and settlement system, no clearing or settlement risk crystallised due to the insolvency of participants in 2011. Several checks are built into the system to manage the clearing and settlement risk arising from the insolvency of a clearing member in the guaranteed capital markets. In extreme cases, the clearing right of the clearing member may be suspended, while in less extreme cases it may be required to provide additional financial collateral. The additional financial collateral is a liquidity buffer that may be imposed, for instance, in the event of repeated settlement fail, disproportionately large exposure relative to equity (capital position limit) or failure to comply with the reporting obligations of clearing members. Following an oversight recommendation, in 2011 a new rule was introduced whereby in the event of failure to meet the equity requirement, additional financial collateral is automatically required from the clearing member; in combination, such additional financial collateral and the equity of the clearing member must reach the minimum required capital level. Failure to provide the additional financial collateral results in the immediate termination of clearing membership. Compliance with the minimum capital requirement is one of the key financial conditions for the admittance of clearing members and the continuation of membership, as it is the primary filter to address counterparty risk.

In the guaranteed capital markets, additional financial collateral requirements had to be imposed more frequently in 2011. Additional financial collateral was required on several occasions and from several clearing members (due to repeated settlement fails, disproportionate exposures on the commodity market or to meet the minimum capital requirement). These incidents (Chart 22)

Chart 22
Clearing member risk on the guaranteed capital markets based on the additional financial collateral required

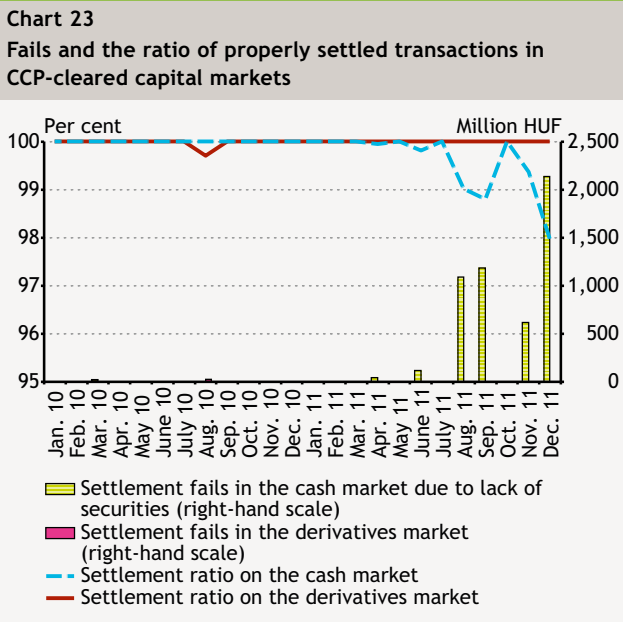


Note: The columns in the chart show the number of cases when the central counterparty required additional financial collateral, which must be maintained until such requirement is lifted. Thus, additional financial collateral may have to be maintained for several months; this is indicated by the green shaded area.

did not jeopardise the safe and smooth operation of the system. The required additional financial collateral was provided in each case.

In addition to the additional financial collateral requirement, settlement fails may also indicate clearing and settlement risk in the system. On the markets guaranteed by KELER CCP a settlement fail occurs if the clearing member obliged to settle does not fulfil its financial, collateral, securities or other obligations relating to the clearing of positions or does not fulfil them in time. While in 2010 settlement fails on the guaranteed capital market related mostly to the derivatives market (Chart 23), where clearing members failed meet their financial obligations on 2 occasions and their collateral obligations on 5 occasions in the aggregate value of HUF 64.3 million, there were no settlement fails on the derivative market in 2011. In the case of two clearing members, the settlement fails in 2010 occurred because of the member's inability to provide the necessary liquidity, while one clearing member defaulted due to a technical problem.

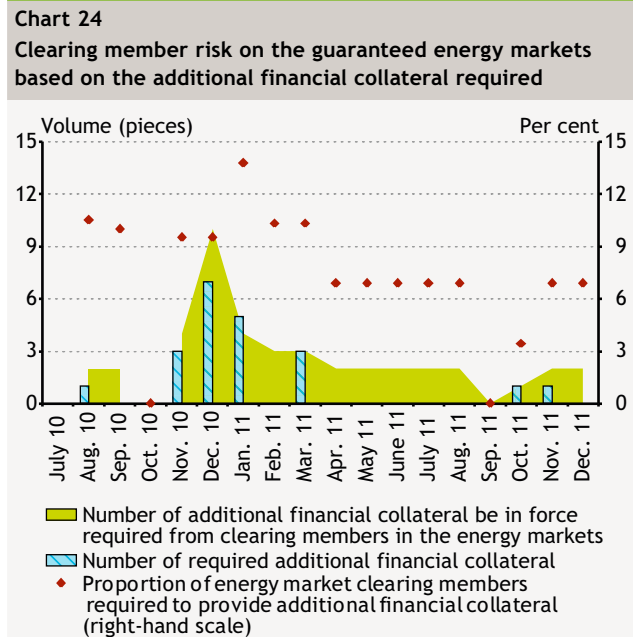
In 2011, the frequency and value of settlement fails in the guaranteed cash market showed an increase in clearing and settlement risk over the previous year's levels. Almost half of the settlement fails extended beyond the intended settlement day. Settlement fails occurred in the cash market on 22 occasions with a total value of HUF 5.2 billion (Chart 23); in each case, the reason was the lack of the security. The settlement ratio on the cash market



has been fluctuating since July 2011, reaching its low (97.9 per cent) in December 2011.

The settlement fails in the cash market were attributable to 5 clearing members (of the 31). Settlement fails were highly concentrated both in terms of frequency and value. Settlement fails are typically due to gridlocks in the chain of counterparties, i.e. the clearing member waited for its clients to deliver the securities and was unable to fulfil its obligation until the expected securities arrived. Fails were occasionally caused by technical issues. Settlement fails may indicate that the relatively early settlement deadline of the cash markets (11:30 a.m.) leaves little time for arranging the OTC transaction which would provide the coverage. This may be a source of particular difficulty on business days when the settled turnover peaks. As of 4 June 2012, the settlement deadline of the cash market was moved to 2:00 p.m., which is expected to reduce the probability of incidence of settlement fails. If the frequency and value of settlement fails does not decrease, oversight recommendations will be issued.

In 2011, the clearing and settlement risk in the energy markets (gas market, power market) increased



Note: The columns in the chart show the number of cases when the central counterparty required additional financial collateral, which must be maintained until such requirement is lifted. Thus, additional financial collateral may have to be maintained for several months; this is indicated by the green shaded area.

temporarily. This resulted from the settlement fail of a gas market clearing member, EMFESZ Ltd. (EMFESZ) (see Box 8). To manage the settlement fails, first the collateral of EMFESZ, and then the collective guarantee funds were used on several times. Due to the guarantee callable on first demand as described above and because KELER CCP simultaneously guarantees the capital and energy markets, the securities clearing and settlement system is also exposed to the spillover risk of the energy market. Consequently, it is vital for KELER CCP to prevent the pass-through of the risk of the energy market to the clearing and settlement of the guaranteed capital market. In connection with the EMFESZ case, the MNB issued 11 recommendations to KELER CCP in relation to the clearing arrangement in the gas market. One of the key recommendations was that KELER CCP should look for solutions ensuring the (legal) separation of the central counterparty of the energy market, that is, the separation of the financial resources backing the CCP clearing of the various guaranteed markets.

Box 8:
Settlement failure by EMFESZ

Gas market transactions are concluded on two markets: the free market and the balancing market. The central counterparty may influence the trading of a clearing member on the free market, since clearing members are not allowed to enter into transactions in the free market once their clearing membership has been terminated. However, the central counterparty may not exclude the clearing member from imbalance transactions even after the termination of its clearing membership as pursuant to the legislation applicable

to the gas market, clearing members are obliged to participate in those. That obligation ceases to apply only if their licence is suspended or withdrawn by the Hungarian Energy Office.

Clearing and settlement on the gas market occurs in monthly settlement cycles, which means that the balancing transactions of a given month are financially settled on the 15th day after the end of the gas month. By way of comparison, for capital market transactions the corresponding period is 2 or 3 days, depending on the type of transaction, rather than 45 days. The settlement cycle is important because the central counterparty must manage the open exposures of the period until the financial clearing and settlement of the gas month.

The turnover of EMFESZ on the balancing gas market increased substantially starting in October 2010, and early in November it exceeded 100 per cent of the blocked individual collateral. Even though no settlement fail occurred, the increased risk was clear at that point. Due to the continuous increase in risks, KELER CCP required additional financial collateral on several times. EMFESZ did not fulfil its collateral obligations on any of those occasions, and therefore KELER CCP terminated its clearing membership. Following the termination of its clearing membership, EMFESZ started settling its financial clearing obligations, and eventually it met its clearing and fee payment obligations in full.

The EMFESZ incident highlighted the fact that the operational model of gas market clearing contains exogenous factors (such as the length of the clearing cycle, the emergence of substantial imbalances that cannot be deduced from historical data), over which KELER CCP has only limited control. Based on the lessons of the EMFESZ settlement fails, if similar situations are to be prevented, the systems need to be modified to facilitate early intervention at the time when the central counterparty notices the (gradual) build-up of risk, thus allowing for the exclusion of high-risk gas market clearing members from the market as soon as possible.

In view of the lessons from the problems encountered earlier in connection with settlement finality procedures, Act XXIII of 2003 on Settlement Finality in Payment and Securities Settlement Systems (hereinafter referred to as SFA Act) and Act CXII of 1996 on Credit Institutions and Financial Enterprises (hereinafter referred to as CIFE Act) were amended and designated system operator test were performed. The SFA Act sets out the procedures applicable by system operators to the opening of insolvency proceedings against the participants of these systems. The lessons learned from the insolvency of the Általános Közlekedési Hitelszövetkezet and the Jógazda Takarékszövetkezet prompted the joint effort of the MNB, GIRO, KELER, the HFSA and, on certain subjects, the MNE.

The stakeholders have reviewed their insolvency related procedures and conducted communication and system operation tests in accordance with the overseer's recommendations. The discussions indicated the need of the amendment of the SFA Act and CIFE Act on certain points, which the MNE implemented at end-2011 at the recommendation of the MNB. The SFA Act was amended in a number of sections, for instance, concerning the channel of communication of the opening of insolvency proceeding (priority of electronic channel in the course of opening of insolvency proceeding by the HFSA, expectations concerning the electronic channel), the contents of the decision of authority (it must explicitly state that the decision is an insolvency proceeding pursuant to the SFA Act).

3.3 System operational interdependency risk

The three overseen systems are linked at a number of points to ensure the smooth clearing and settlement of payments and securities transactions. The mutual dependency of the systems may lead to system operational interdependency risk. ICS and VIBER members use practically the 'same' liquidity – the sum of the account balance and intraday credit line at the MNB – and therefore any delay in the operating hours of ICS or any major incident may impact the operation (daily opening) of VIBER. However, this also works in the other direction: if the MNB is unable to provide the liquidity information for the overnight clearing in ICS, it may cause a delay in the clearing processes of ICS. The launch of intraday clearing makes the dependency structure even more complicated as the settlement platform of ICS intraday clearing is VIBER, and clearing and settlement will be time critical. The securities clearing and settlement system is important for both VIBER and ICS as the intraday credit line is a component of the liquidity of payment systems and collateral for such credit lines can be pledged in the KELER system. The securities clearing and settlement system also depends on VIBER, because that is the settlement platform for the cash leg of DvP securities transactions.

Inter-system operational interdependency risk has declined in respect of all three overseen systems since the previous year. In 2011, no operational interdependency risk affected VIBER from the direction of ICS, thus the opening of VIBER was not delayed by any ICS problems. The operational interdependency risk emerged in VIBER from the direction of KELER on one occasion, when for a short time KELER did not receive the outgoing messages sent by VIBER because of its internal technical problems. An

incident due to incorrect parameterisation caused problems in ICS from the VIBER side as the MNB issued the queue resolution permission late. On some settlement dates the outgoing messages of VIBER relating to the settlement of certain transactions submitted by KELER were received by KELER later than the required time because of the 'morning queuing effect'. The MNB as the operator of VIBER is looking into the morning queuing of transactions and its possible resolution.

In view of the role of the MNB in cash distribution and the fact that the MNB provides credit exclusively against collateral, which is managed and valued in the internal systems of the MNB, there may also be system operational interdependency risk within the MNB for VIBER. During VIBER's operating hours the cash transactions with the MNB are settled in VIBER. Thus, for its cash logistic activities of the MNB, VIBER is linked to the central cash accounting system of the MNB, the encrypted data transmission channel and the MNB's customer account management system. Collateral management is also performed in the customer account management system of the MNB, within special modules.

Of the three connected internal systems mentioned above (cash accounting system, customer account management system and data transmission channel) the intra-system operational interdependency risk of the first two has decreased, while in the case of the data transmission channel risks increased. Investigation of the latter issue is underway; until it is resolved, data flows are monitored continuously to assure uninterrupted and sufficient data transmission.

3.4 Efficiency: development projects

Mostly as a preventive measure, the MNB has created facilities for the so-called payment versus payment (PvP) method of settlement in VIBER at the request of high-turnover VIBER participants. Since 12 December 2011, the 'payment versus payment' method of settlement has offered an opportunity for the secure execution of large-value customer transactions while saving substantial liquidity, which is conducive to the risk-free execution of the large-value customer transactions of the Hungarian credit institutions participating in VIBER. On the basis of the principle of total cost recovery, the MNB takes into account the costs of the investment when determining VIBER fees. Since 2010, the cost of VIBER services has been determined with time-driven activity-based costing, which assures the allocation of a clearly defined scope of related costs to the service concerned.

For ICS, 2011 was marked by preparation for the launch of the new intraday clearing. The representatives of system members also participated in the entire development process through working groups. Multiple intraday clearing started, with five cycles, on the settlement day of 2 July 2012. In the context of the launch of intraday clearing, the MNB authorised the regulations of ICS. The oversight

assessment of the new system will occur after its launch. GIRO did not increase its transaction fees in connection with the introduction of intraday clearing. The principle of total cost recovery is also applied in the pricing policy of ICS, while fees provide for a certain return on equity in addition to covering costs. The business operation of GIRO is assured at the unchanged fees after the investments relating to intraday clearing.

The KELER Group improves its services continuously, taking into account business impacts as well as the opinions of market participants. The clearing of the alternative market of the BSE (BÉTa) and its guarantee by the central counterparty started in 2011. The BÉTa offers a platform for trading blue-chip stocks issued abroad. At the end of 2011, upon the recommendation of the Debt Management Agency, the stock exchange trading of Hungarian government securities was moved from the BSE to the MTS platform, where the contracts continue to be cleared and guaranteed by the KELER Group. In 2011, modernisation of the electronic client communication system (KID) and of the corporate event management system, as well as the development of international clearing was commenced.

Glossary

4-hour rule	Pursuant to MNB Decree 15/2010. (X. 12.), starting from 1 July 2012, in accordance with the so-called '4-hour rule', the payment service provider of the payer must assure that Hungarian forint credit transfers generated by customers electronically within the time period specified for same-day execution (i.e. before the final submission time) are received by the payment service provider of the payee within 4 hours of acceptance.
Acquirer (payment card)	The payment service provider that the merchant accepting payment for purchases by payment card enters into an agreement to execute transactions. In the course of the clearing and settlement of transactions the acquirer collects and forwards to the merchant the value of card transactions.
Additional financial collateral	Surplus collateral required by KELER CCP from clearing members and power market non-clearing members for guaranteed capital market, gas market and power market transactions.
ATM	Automated Teller Machine, through which cash withdrawals as well as other transactions (e.g. credit transfers) can be executed using payment cards.
Batch processing	Simultaneous collective processing of items received at different points in time which are put in the same group if specific features are identical.
BÉTa	Multilateral trading facility (MTF) operated by the BSE, as a platform for trading foreign stocks in Hungarian forints. The stocks purchased in the BÉTa market are identical with the stocks listed on foreign stock exchanges.
Blue-chip stocks	The most liquid and most traded stocks in a market.
BSE	Budapest Stock Exchange Ltd.
Capital position limit	Quantity of the open derivative positions which a clearing member or client may have as a percentage of equity. At KELER CCP the position limits are calculated by dividing the initial margin requirement calculated by KELER CCP by the equity.
Central counterparty	The central actor that interposes itself between the counterparties and guarantees the settlement of the transaction even if either party fails to fulfil its obligations.
Central securities depository	Its main responsibility is the safekeeping of printed (physical) securities, the registration of immobilised or dematerialised securities (existing in the form of electronic signals) and the registration of the owners of securities by main account. Central securities depositories operate securities settlement

systems, in which securities transactions are settled by book entries (that is, without physical movement of the securities).

Chip migration

The equipping of payment cards bearing only a magnetic stripe with chips, simultaneously the enabling of devices handling payment cards to accept chip cards.

CIFE Act

Act CXII of 1996 on Credit Institutions and Financial Enterprises.

Clearing

The acceptance, formal and substantive verification of orders followed by the calculation of the bilateral or multilateral liabilities of clearing members. Liabilities may be calculated on a gross or net basis.

Clearing and settlement risk

A delay or failure of clearing or settlement in the payment or securities clearing system, despite the fact that the clearing or settlement service is uninterrupted. The term 'clearing and settlement risk' is justified by the separation of the two phases (clearing and settlement) in some systems. Depending on the structure of the system, the realisation of clearing risk does not necessarily result in the failure of settlement and settlement risk may occur even if the clearing phase goes smoothly. Clearing and settlement risk may crystallise from the insufficient liquidity or insolvency or operational problems of participants.

Clearing house

The entity performing the processing, clearing and, in the absence of a settlement agent, settlement of transactions.

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.

Direct submitter

A customer who has an agreement with the clearing house exclusively for the direct submission to the clearing house of payment orders relating to its own economic management, pursuant to the authorisation of a direct participant and under a clearing arrangement with such participant, who is not considered a participant in the payment system.

DvP

Delivery versus Payment. The settlement method which links the cash and securities legs of orders for the settlement of securities transactions; it assures that the settlement of securities leg occurs only after the settlement of cash leg has been completed, or conversely, the settlement of cash leg occurs only if the securities are available and settlement is assured.

EBPP	Electronic Bill Presentment and Payment
ECC	European Commodity Clearing AG, a Leipzig-based clearing house acting as a central counterparty mainly for clearing in the energy market.
Eligible collateral	The scope of collateral that the MNB accepts as cover for the secured credit transactions it enters into (including intraday credit lines). The types of eligible collateral are listed in the 'Terms and Conditions of the Central Bank's Operations in Hungarian Forint and Foreign Exchange Markets'.
EMIR	Regulation on OTC derivative transactions, central counterparties and trade repositories.
EuroMTS	A multilateral trading platform mainly for secondary market trading in government bonds, where government bond series in excess of EUR 5 billion issued by most European countries are traded.
GIRO	GIRO Elszámolásforgalmi Ltd.
Gridlock	Gridlock may emerge if orders submitted by one or a few participants in the payment or securities clearing system are not settled due to the lack of funds or securities. As a result, the orders of a number of other participants remain unsettled.
Gross settlement	A clearing mechanism whereby only entirely funded transactions are cleared.
Guarantee callable on first demand	For transactions guaranteed by KELER CCP, in addition to the protection offered by the individual and collective guarantee elements, KELER also provides a guarantee to KELER CCP up to a certain percentage of its capital. If in the course of the management of settlement fails KELER CCP needs, over and above the use of individual and collective guarantee elements, to resort to the guarantee callable on first demand, KELER is obliged to make available to KELER CCP funds up to the amount of the guarantee callable on first demand.
HFSA	Hungarian Financial Supervisory Authority.
HHI (Herfindahl–Hirschman-index)	Indicator measuring market concentration, calculated by summing the squares of the percentage market shares held by the various market participants. Its value may be between 0 and 1. A value close to 0 means the absence of concentration, while 1 indicates a monopolistic market structure.
ICS	Interbank Clearing System, a deferred time gross clearing system operated by GIRO Zrt., offering two types of clearing: overnight clearing and, since 2 July 2012, intraday clearing.
Individual guarantee elements	Collateral required by net clearing systems, which are part of the guarantee system and can be used only if the clearing member providing the security fails to settle (in case of the KELER CCP: basic financial collateral, variation margin, initial margin, additional financial collateral, liquidity FX security deposit).

Information asymmetry	A (decision) situation where one of the parties to a transaction has more, or more accurate, information 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 in 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.
Liquidity	The totality of financial instruments that can be used to settle orders in the payment and settlement system.
Maximum usage of intraday credit lines	An indicator calculated for the usage of the central bank's intraday credit line which shows the maximum percentage used in a given business day for the settlement of orders.
MNB	Magyar Nemzeti Bank (the central bank of Hungary).
MTF	Multilateral (alternative) Trading Facility.
MTS	The multilateral trading facility operated by EuroMTS.
Net settlement	In the process of netting, the conversion of the payables and receivables of clearing members vis-à-vis one another into a single payable or receivable by deducting the receivables from the payables. Netting may be bilateral or multilateral. Then the net debit positions thus calculated are settled. If funds are insufficient, the guarantee system of net clearing must be activated.
Optional reserve requirement ratio	Since the reserving period of November 2010, credit institutions subject to a reserve requirement have been able to choose their reserve requirement ratio. They can change their ratio twice a year (in April and October), and choose between rates of 2, 3, 4 and 5 per cent.

OTC	Over the Counter market (including MTF and OTF platforms).
OTF	Organised Trading Facility
Participant	An entity entitled to send orders to the payment or securities clearing system in its own name or on behalf of its customer. Participants can be direct or indirect, depending on whether they are connected on their own or through another participant.
Payment account	An account held in the name of one or more customers of a payment service provider which is used for the execution of payment transactions, including bank accounts.
Payment service provider	A credit institution, institution issuing electronic money, institution operating the Postal Clearing Centre, payment institution, the MNB and the Treasury offering payment services.
Payment system	In the case of the overseen systems, the form of cooperation based on the agreement between cooperating parties to run the system specified in point 18 of Chapter I of Annex 2 to the CIFE Act. Part of the financial infrastructure. It includes the different means of payment, bank procedures as well as interbank payment systems, which in combination facilitate the execution of payments.
POS terminal	Devices facilitating the execution of payments by payment card (occasionally also the withdrawal of cash) in merchant locations. Information relating to the transactions is collected in electronic or paper formats; the former is the electronic POS (EFTPOS: Electronic Funds Transfer POS), the latter the imprinter.
Post-trading infrastructure	The group of institutions performing clearing and settlement functions after the conclusion of a transaction.
PSA	Act LXXXV of 2009 on the Pursuit of the Business of Payment Services
PSD	Payment Services Directive, Directive 2007/64/EC on payment services in the internal market.
PvP	Payment versus Payment. Simultaneous execution of interbank and customer payment orders of two participants in a payment system, which assures that they are settled when and only when the other party has sufficient funds for the settlement and both orders can be settled.
Queue management	A central procedure whereby the system does not reject temporarily uncovered orders in the payment or securities clearing system, instead, they are put in a queue, then processed automatically when sufficient funds are available.
Risk of service continuity	The disruption or downtime of the clearing or settlement service in the payment or securities settlement system. This is generally attributable to some operational irregularity at the service provider or it may arise from its financing or commercial problems.

Settlement	Execution of payment and securities delivery obligations between system participants. Settlement occurs through accounting records on the accounts kept at the entity functioning as settlement agent.
Settlement agent	An organisation that maintains the settlement accounts of the entities participating in the payment and securities settlement system and the account of the central counterparty, providing the execution of orders and, if necessary, grants credit to an entity or the central counterparty for the purpose of facilitating settlement.
SFA Act	Act XXIII of 2003 on Settlement Finality in Payment and Securities Settlement Systems.
Social cost	It includes the entire resource requirement of the payment chain, that is, the expenditures of all the participants in the payment chain excluding the fees paid by the parties to each other within the chain.
System operational interdependency risk	It may arise if the various interdependent steps in the clearing and settlement process are performed by different service providers. The mostly liquidity-related interdependencies of systems may give rise to contagion.
Third-party, external service provider	A party not directly involved in the process of clearing and settlement. Mostly performs communication services, supply of software and hardware, other support or outsourced services.
Trading	The mutual contractual agreement between trading members with the purpose of the sale and purchase of financial instruments. Settlement may be through physical delivery or cash settlement.
VIBER	Real time gross settlement system, a payment system primarily for the purpose of settling large-value and time critical transactions. Clearing and settlement occurs in real time, upon the verification of cover (gross settlement), in a single step. If in the course of the processing immediately following the submission of the transaction there are sufficient funds available, the order is executed finally and irrevocably.

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