PAYMENT SYSTEMS REPORT

2019

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

King Louis I. ('The Great')

PAYMENT SYSTEMS REPORT

2019

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Pursuant to Act CXXXIX of 2013 on the Magyar Nemzeti Bank, the primary objective of Hungary's central bank is to achieve and maintain price stability. As set forth in the Act on the Magyar Nemzeti Bank, one of the main responsibilities of the Magyar Nemzeti Bank (MNB) is to promote the smooth execution of payments and to facilitate the reliable, efficient functioning of the financial market infrastructures that support this. All of this is indispensable for the performance of real economy and financial transactions.

The purpose of this Report is to present a comprehensive review of trends in the field of payments and the operation of the overseen financial market infrastructures, the main risks and the measures taken by the MNB to fulfil the responsibilities above. In publishing this report, the MNB wishes to contribute to enhancing the transparency of its activities in relation to financial market infrastructures and the execution of payments, while also endeavouring to enhance financial literacy and thus raise awareness about payment-related issues.

The analyses in this Report were prepared by the Directorate Financial Infrastructures of the MNB, under the general direction of Executive Director Lajos Bartha. The Report was approved for publication by the Financial Stability Board at its meeting on 25 June 2019. Contributors: Patrik Gergely Balla, Zita Bárdits, László Bodnár, Judit Brosch, Árpád Cseh (editor), Vivien Deák, Krisztina Füstös, Brigitta Gábriel-Lajos, Gábor József Harkácsi, László Kajdi, Milán Kiss, Miklós Luspay (Head of Department), Milán Mészárovics, Cecília Pintér (editor-in-chief), Gábor Sin, Ádám Szepesi, Kristóf Takács, Miklós Tornai, Lóránt Varga (Head of Department), Ádám Zágonyi.

The key messages of the study as well as the Report were discussed and valuable advice on the finalisation of the document was provided at the meetings of the Financial Stability Board on 12 March 2019 and 25 June 2019, and at the Monetary Council meeting on 11 June 2019.

The MNB staff relied primarily on information relevant to 2018, although looking forward the Report also analyses ongoing developments observed in the course of 2019.

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1 Executive summary

In 2018, the development of the payment infrastructure was characterised by an expansion in the payment card acceptance network and, similarly to previous years, the rapid spread of contactless technology. The share of shops offering payment card acceptance is growing in practically all retail size categories, and around 86 per cent of the 145,000 POS terminals supported contactless payment at the end of 2018. Electronic payment methods also continued to gain ground, with customers conducting a total of some 1.25 billion electronic payment transactions in Hungary in 2018. Payment card purchases showed the strongest increase, reflecting growth of approximately 25 per cent in terms of their number and value compared to 2017. The proportion of contactless card purchases was over 86 per cent.

The efficiency of Hungarian payments also continued to improve, moving even closer to the European Union average. In particular, the value of payment card purchases amounted to more than 27 per cent of household consumption in 2018, almost 2.5 times higher than the 2012 figure. The share of electronic payment of utility and other bills approached 48 per cent, having almost doubled in five years. Due to the dynamic increase in electronic transactions, the share of cash usage in retail payments has been steadily falling.

The range of innovative, mainly card-based, mobile payment solutions offered by Hungarian banks and other payment service providers is expanding, but the number of transactions conducted using these means is still low. The payment applications of more and more foreign non-bank participants are also available in Hungary, although regarding the volume of transactions, a real breakthrough in the spread of mobile payments may come with the emergence of innovative solutions based on instant payment.

While the rise in payment card fraud in 2018 may appear significant due to the low base, the proportion of fraud in terms of the number and value of losses relative to total payment card turnover remained negligible, as in past years. Thus, the Hungarian payment card system continues to be very secure by international standards. Moreover, as a result of the legislation which focuses on consumers' interests, a mere 8 per cent of the losses written off on the issuer side related to payment card fraud were borne by cardholders, with the rest absorbed by card issuing and acquiring banks.

Due to payment regulation infringements, penalties amounting to HUF 106.1 million were imposed in the course of regulatory payments inspections in 2018. Nevertheless, in the case of the 11 institutions examined, the general experience is that the operation of the payment service providers under review is essentially adequate. Regulatory inspections mostly detected infringements related to the provision of information to customers, amendments to and termination of the framework contract and the immediate crediting of the amount of the payment transaction. Among other things, the inspections highlighted that the stricter liability and loss allocation rules were interpreted by payment service providers differently and in many cases incorrectly.

In the second half of 2019, several new laws facilitating more efficient payments and secure banking by customers as well as better customer information will take effect, and the MNB will begin monitoring compliance right away. The number of payment incidents has been rising in the banking sector for years, albeit at a decreasing rate. However, considering the number of payment service providers and the complexity of the financial infrastructure, the number of cases is still low.

The overseen financial market infrastructures operated efficiently and safely in 2018, supporting the functioning of money and capital markets with their high availability. As incident recovery times increased, the operational risk of financial market infrastructures rose slightly in 2018, but there was no substantial decline in the quality of service perceptible by the participants. Compared to the previous year, the number of transactions executed in the Hungarian systems increased by three per cent, while the value of transactions grew by 11.7 per cent. The value of transactions corresponded to 40.6 times Hungary's annual GDP, meaning that the systems settled more than HUF 6 billion each day. In 2018, there was no significant central bank or financial market event with a major impact on the liquidity of payment systems participants. Payment system participants had ample liquidity to conduct the increased volume of payment transactions.

Cooperating with the international Supervisory College of KELER CCP, the MNB discussed the 2018 activity of KELER CCP, its authorised services as well as its short- and long-term plans. The college concluded that the activity of

KELER CCP complied with the EMIR regulation. In order to eliminate the negative consequences of the turbulent developments on the international electric energy markets, the extraordinary General Meeting of KELER CCP decided to increase the capital of the company in October 2018. Even though the value of late delivery events was the highest in 2018 since 2012, KELER CCP handled the situations which evolved appropriately, and thus neither participants nor the central counterparty suffered any losses.

Preparations for introducing the instant payment system continued in 2018. As developments progressed, the groundwork was laid for the system participants' tests commencing in 2019. The MNB and GIRO adhered to the predetermined schedule with the developments: consequently, the central infrastructure of the instant payment system goes live on 1 July 2019, in line with the original schedule. During the testing phase, the MNB closely monitored the progress of system participants' internal projects, establishing that a significant number of players made good headway in their preparations, although major risks and delays were identified at some banks. In view of this and bearing in mind the fully secure operation of the instant payment service offered to customers, the MNB decided to extend the time available for testing the live systems. Accordingly, the instant payment service will become accessible by all domestic bank clients uniformly and with full functionality from 2 March 2020.

Issues related to the liquidity management of the instant payment system were also finalised. First and foremost, the system participants themselves will have to prefund the required liquidity for executing transactions on their instant settlement accounts. Nevertheless, the MNB will also be at the service of banks with a new collateralised credit instrument to enhance liquidity security outside of VIBER operating hours. According to preliminary calculations by the MNB, the existing liquidity in the banking sector – including required central bank reserves over HUF 200 billion, hundreds of billions of forints of O/N deposits and potentially available securities pledged for the MNB amounting to over HUF 2,000 billion – will be more than enough to ensure continuous financing for instant payments.

The MNB took further steps to promote the development of innovative payment services founded on the basic infrastructure of instant payment. Developing innovative payment solutions based on the basic service (e.g. user-friendly mobile payment applications) is essential, because these will allow customers to conveniently initiate instant credit transfers in all payment situations. In addition to the introduction of secondary account identifiers (mobile number, email address or tax identification number instead of the payment account number) and the request-to-pay message, the MNB is supporting the development of innovative payment services by elaborating a guide on instant payment processes applicable in the main payment situations as well as by creating a Hungarian QR code standard.

The cost level of retail payment services in Hungary is relatively high by international standards, and there are several structural peculiarities in Hungarian banks' pricing that are unfavourable from the perspective of the continued development of domestic payments. Most importantly, retail customers in Hungary typically pay transaction fees in proportion to the number or value of credit transfers, in contrast to the international best practice of package pricing. To facilitate the further spread of electronic payments, which would be beneficial for society as a whole, the MNB seeks to enable retail customers to initiate instant credit transfers of an unlimited number and value after paying the monthly payment account management fees, without additional costs. Banks can be reasonably expected to waive the transaction fees of instant credit transfers on account of customers' current high costs, and this would also be in their interest. Hungarian banks must boost their competitiveness, and they would benefit from this much more over the medium term than they would lose in the short run due to the small contraction of their payment revenues. Widely used package pricing combined with waiving of transaction fees would also foster the financial awareness of Hungarian retail customers, by creating transparency and comparability across bank account products.

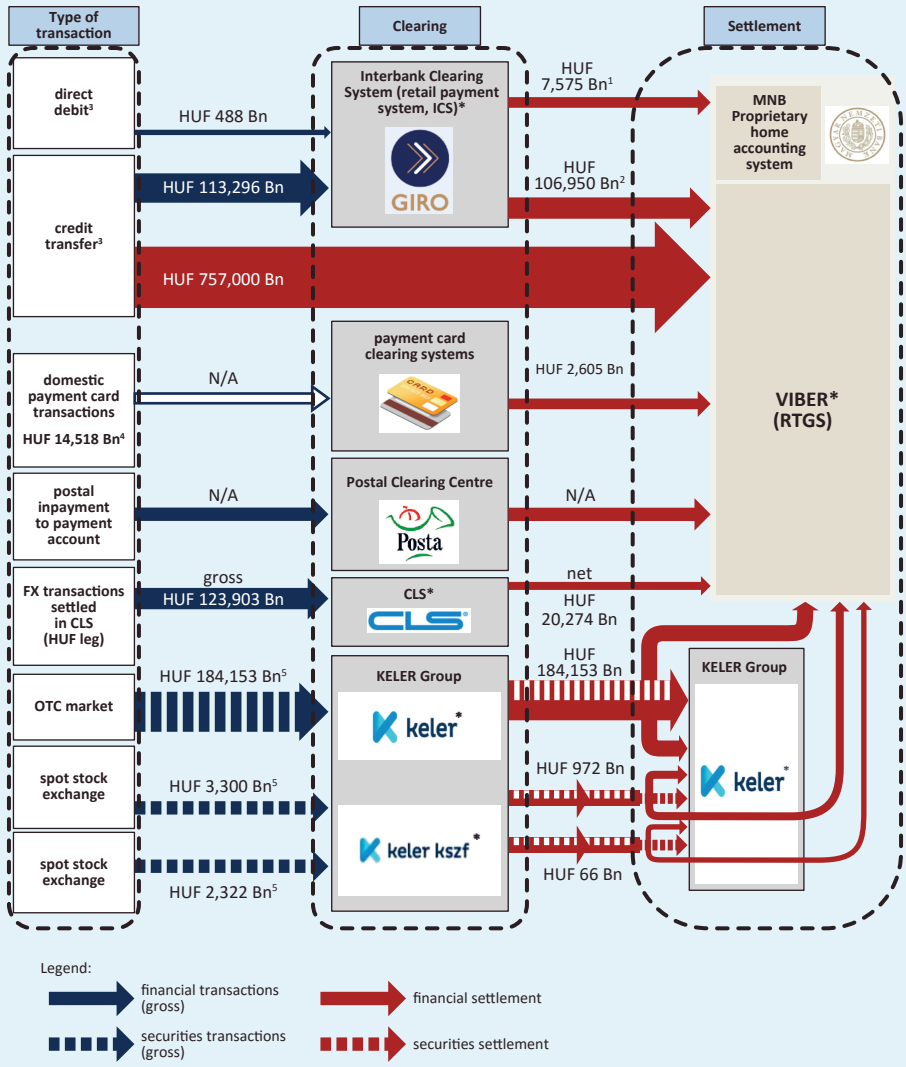
The introduction of strong customer authentication and the third-party service provider access to customer accounts, representing the greatest changes from the new Payment Services Directive (PSD2), are approaching completion. The emergence of innovation and third-party service providers will require a new type of security risk management, which will be monitored by the MNB. It is important to raise the risk awareness of service users, which is facilitated by the MNB through its analyses of the relevant new, more detailed reporting. The MNB will start to check compliance with the new technical and security requirements as well as data reporting from September 2019.

2 Operation of the domestic payment system

Smooth execution of payments and the reliable, efficient operation of financial market infrastructures are essential for the execution of real economy and financial transactions. Payments in central bank or commercial bank money and transactions performed with securities and other financial instruments require centralised systems that allow for the clearing and settlement of transactions.

VIBER is a real-time gross settlement system operated by the MNB. Its primary purpose is the settlement of large-value, time-critical money and capital market transactions between participants and on behalf of their customers and the related financial market infrastructures (ICS, KELER Group, CLS). The Interbank Clearing System (ICS) is a gross payment system mainly for the clearing of households'

Chart 1
Overview of Hungarian financial market infrastructures
(2018)



[1] *Transactions settled in the overnight clearing*
[2] *Transactions settled in the intraday clearing*
[3] *On-us transactions are not included*
[4] *Only the interbank part of total payment card transactions is cleared in the payment card clearing systems.*
[5] *Securities transactions (gross)*
[*] *Overseen systems*

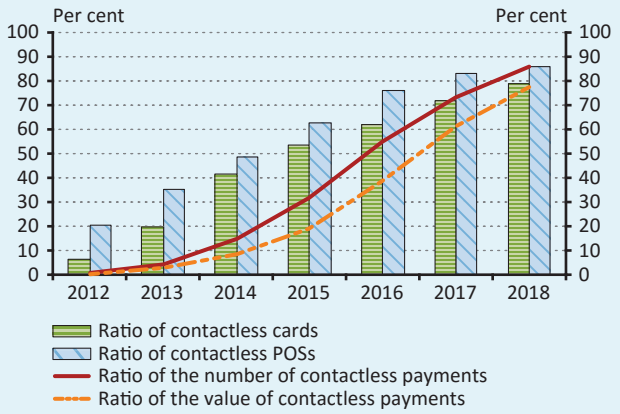
and companies' low-amount payments operated by GIRO Zrt. (GIRO), offering two clearing methods: intraday and overnight clearing. GIRO performs the clearing of payment transactions, while the MNB, as the settlement agent, is responsible for settlement. The clearing of card transactions is performed in the systems of international card companies (Visa, MasterCard), while postal payment instruments are typically cleared in the Postal Clearing Centre (PCC). Members of the KELER Group, the central securities depository (KELER CSD) and the central counterparty (KELER CCP), are responsible for securities clearing and settlement services, and the registration of domestically issued securities (Chart 1). CLS is an international FX settlement system operated by CLS Bank. It is based on a multi-currency payment-versus-payment (PvP) mechanism and eliminates FX settlement risk. The T2S (TARGET2 Securities) is a pan-European securities settlement system operated by four European central banks, used for executing European securities market transactions.

2.1 Payment service developments

2.1.1 TURNOVER OF THE MAIN PAYMENT METHODS AND THE RELEVANT INFRASTRUCTURE

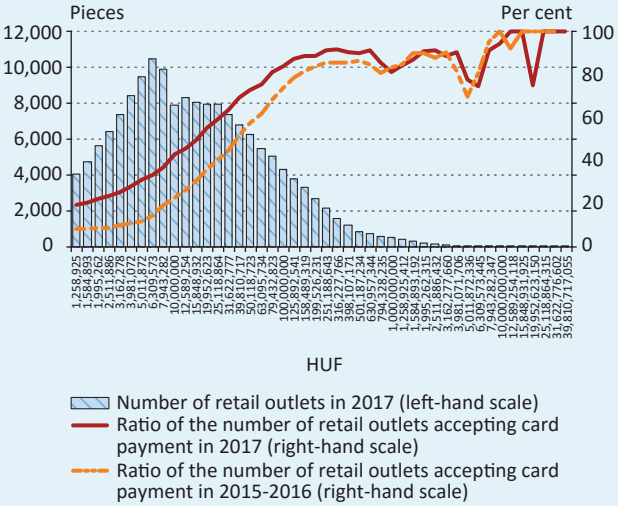
In 2018, the development of the payment infrastructure was mainly reflected in the continued expansion of the payment card acceptance network as well as the rapid spread of contactless technology, similar to earlier years. The number of payment accounts managed by payment service providers did not change significantly compared to the previous year. Nor was there any major change in the overall number of payment cards issued in Hungary, but the number of contactless cards increased by nearly 13 per cent, exceeding 7.4 million, and consequently this type accounted for 80 per cent of all payment cards at the end of 2018 (Chart 2). In addition, as a result of the government-funded POS terminal deployment programme, the payment card acceptance network continued to expand, and at the end of the year the number of physical acceptance points was over 116,000, while the number of POS terminals was close to 145,000. Within the POS terminals operated at the acceptance points, the share of contactless devices jumped to approximately 86 per cent (Chart 2). The number of online acceptance points also continued to grow at a fast pace, rising by nearly 26 per cent to nearly 12,000 in 2018.

Chart 2
Spread of contactless payment card technology in the Hungarian payment card system
(2012-2018)



The ratio of shops accepting card payment is growing in practically all retail size categories. In 2017, 46 per cent of the shops required to use online cash registers (OCRs), which represent the retail sector well, accepted card payment, whereas data from 2016 show that this proportion was merely 30 per cent. Growth was clearly seen in all size categories from the smallest outlets to shops with an annual turnover of HUF 1 billion. Accordingly, card-accepting shops covered 76 per cent of all transactions in 2017. At the same time, it remains valid that the larger the annual turnover of a business, the higher the probability of card acceptance. (Chart 3)

Chart 3
Frequency of retail outlets and proportion of those that accept card payment by annual sales turnover, on a logarithmic scale
(based on 2017 OCR database figures, compared to 2015-2016 data)



Electronic payment growth continued unabated in 2018, still mainly driven by payment card purchases. With respect to payment card purchases, the significant expansion seen in previous years continued in 2018, both the number and the value of payment card purchases increased by roughly 25 per cent as compared to 2017 (Chart 4). As a result of the swift developments in the infrastructure, in terms of the purchases conducted with Hungarian payment cards, over 86 per cent of the number of transactions and approximately

78 per cent of the value of transactions were carried out using contactless technology in 2018 (Chart 2). The number of credit transfers and direct debits rose by nearly 4 per cent, surpassing the average from earlier years. Due to the above-mentioned growth, the number of electronic payment transactions was close to 1.25 billion. Similar to previous years, after a minor uptick in 2017, the number of cash withdrawals declined again in 2018, as the number of cash withdrawal transactions fell by over 1 per cent.

Despite the persistent growth in the share of electronic payments, cash transactions continue to play a significant role in retail payments. As a result of the dynamic increase in electronic transactions, the share of cash in retail payments has been steadily shrinking. However, the rate of this decline is relatively slow: the share of the number of cash payments in retail outlets required to operate an OCR dropped from 90 per cent to below 85 per cent between 2015 and 2017. Nonetheless, the value of cash payments shows a much brighter picture, with its proportion falling from around 75 per cent to under 68 per cent. (Table 1)

The number of innovative, mainly card-based mobile payment solutions available for domestic customers continues to increase, but the number of such transactions is still very low. In the case of mobile-based payment services, the most widespread solution among Hungarian banks is to develop card-based mobile wallets. By the end of 2018, more than 100,000 cards had been registered in mobile wallet applications. While in the total number

Chart 4
Turnover of main payment transaction types related to payment accounts
(2012-2018)

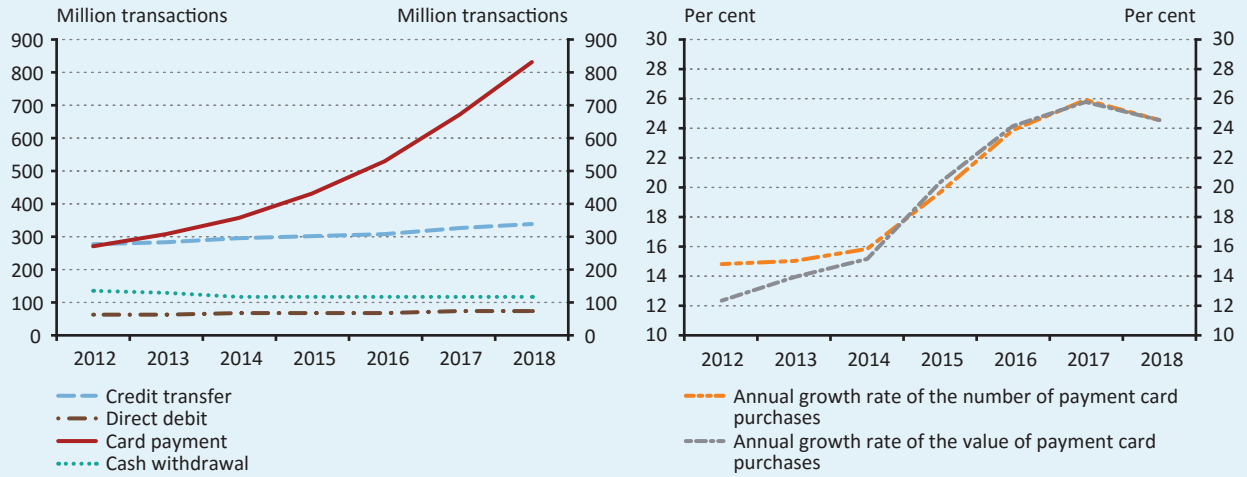


Table 1
Distribution of payment methods among purchases conducted on online cash registers
(2015-2017)

	2015	2016	2017
Total number of payment transactions	**3.63 billion**	**3.74 billion**	**3.82 billion**
Number of cash payments	90.0 %	87.7 %	84.8 %
Number of payment card purchases	8.7 %	10.4 %	12.6 %
Number of other payment transactions	2.5 %	3.1 %	3.1 %
Total value of payment transactions	**HUF 9,134 billion**	**HUF 9,780 billion**	**HUF 11,011 billion**
Value of cash payments	74.3 %	71.5 %	67.8 %
Value of payment card purchases	21.7 %	23.7 %	25.7 %
Value of other payment transactions	4.0 %	4.8 %	6.5 %

Note: The sum of the shares of cash, card and other payment transactions may exceed 100 per cent because there can be transactions were multiple payment methods are used at the same time.

of domestic payment card purchases, there are roughly 83 transactions per card, the same figure for the cards registered in a mobile wallet was 34. Accordingly, there is still room for growth in this field, which may be supported by the fact that Hungarian cardholders have become quite used to using contactless technology. In addition, the spread of card-based solutions may also be facilitated by the use of services independent of issuers, i.e. the development of mobile wallets where payment cards issued by any payment service provider can be registered. It is also important that these solutions have a great advantage compared to traditional cards issued in physical form, which is the so-called tokenisation, i.e. the use of one-time identifiers instead of the card numbers that can be easily obtained.

An increasing number of foreign non-bank actors' payment applications are also available in Hungary, but in terms of the volume of transactions, a real breakthrough may primarily come from the emergence of innovative solutions based on instant payment. Several innovative payment services are already available to Hungarian customers, offered by various fintech and, more typically, global bigtech companies. Besides the card-based solutions mentioned above, there are e-money systems and other innovative services based on traditional infrastructures. The innovative payment services that are already available or will be available in the near future in Hungary include PayPal, TransferWise, Alipay and Apple Pay. However, the drawback of these solutions is that they create closed, parallel systems, which is inconvenient for consumers, as they do not represent a genuine option in all payment situations. Taking this into account, consumers preferring innovative payment solutions need to employ different services in different payment situations, downloading various applications and using them concurrently. In addition to the above-mentioned solutions, another possibility is to develop credit transfer based mobile payment applications. However, these services are still not widely adopted, since credit transfer as a payment method is, in contrast to cash, currently not suitable for instant execution. This landscape may be shaken up by innovative payment services based on the instant payment infrastructure, described in more detail in Chapter 3.3.

2.1.2 EFFICIENCY OF DOMESTIC PAYMENTS IN INTERNATIONAL COMPARISON

The efficiency of domestic payments improved in 2018 as well, moving even closer to the European Union average. The MNB measures the development of domestic payments using three indicators, which cover the most important payment situations (Table 2). Based on these, the efficiency of domestic payments continued to improve in 2018, greatly facilitated by the beneficial, active central bank involvement in the development of the Hungarian payment system. The slight setback in the credit transfer-to-GDP ratio mainly resulted from the stronger GDP growth than in previous years, but in this respect Hungary remains close to the European Union average.

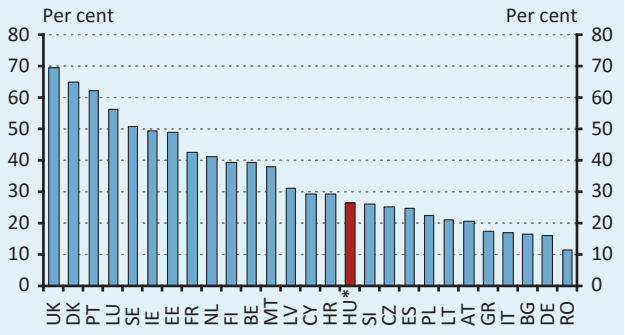
Table 2
Changes in indicators measuring the level of development of Hungarian payments compared to the European Union
(2012-2018)

Indicator	Calculation method	Hungary							European Union
		2012	2013	2014	2015	2016	2017	2018	2017
Credit transfers	Annual value of credit transfers / GDP	13.6	13.5	14.2	14.5	16.0	16.1	15.5	17.7
Electronic payment of retail purchases	Annual value of purchases conducted with payment cards and other electronic solutions / Annual household consumption	11.7 %	12.8 %	14.6 %	17.2 %	20.6 %	24.2 %	27.4 %	36.5 %
Electronic payment of utility bills and other service charges	Estimated annual number of direct debits and other electronic bill payments / Estimated annual number of bill payments	23.5 %	24.2 %	25.4 %	33.3 %	39.2 %	43.9 %	47.8 %	70 % [1]

Source: MNB, HCSO, ECB, Eurostat
Note: There can be deviations from previously published data due to reporting modifications.
[1] Estimated value based on per capita direct debit figures of EU countries and central bank analyses.

On account of the development of the Hungarian payment card infrastructure as well as the significant expansion in payment card transactions, the electronic payment of purchases continued to catch up with the European level in 2018. The indicator measuring the electronic payment of purchases was up by 3.2 percentage points as compared to the previous year (Table 2). In this respect, Hungary's performance steadily reflects the average of the European Union (Chart 5). Approximation to the EU average is principally attributable to the dynamic growth in payment card purchases, largely due to the widespread use of contactless technology and thus to the apparent change in consumer habits in certain payment situations, resulting from the positive customer experience associated with contactless payments.

Chart 5
Electronic payment of purchases in European countries
(2017)



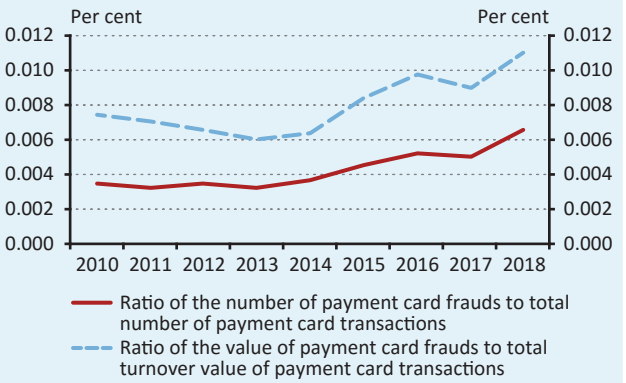
Source: MNB compilation based on ECB and Eurostat data

** Due to methodological differences and exchange rate changes, it is slightly different from the Hungarian value shown in Table 2.*

2.1.3 FRAUD RELATED TO ELECTRONIC PAYMENT TRANSACTIONS

The ratio of payment card fraud to turnover was also negligible in 2018. In the first three quarters of the year, on the issuer side, some 45,000 fraud events caused losses amounting to HUF 1.2 billion. Although the growth in terms of fraud seems large due to the low base, the proportion of fraud relative to all payment card transactions remained negligible, as in recent years, in terms of the number and the value of losses (Chart 6). The amount of fraud on the acquirer side was even lower: in the fewer than 6,400 cases, losses amounting to HUF 292 million were caused in the first three quarters of 2018.

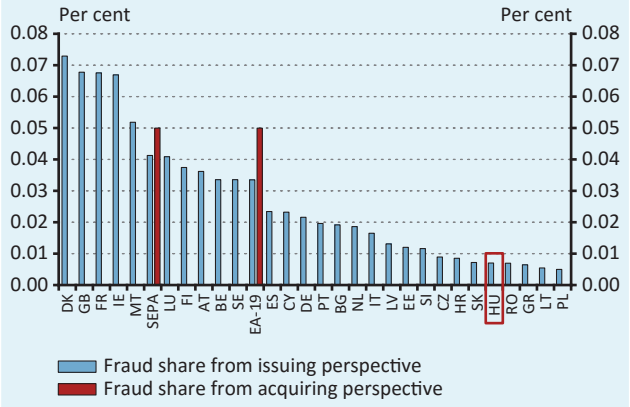
Chart 6
Ratio of fraud and related losses to total payment card turnover on the issuer side
(2010-2018 Q1-Q3)



Earlier developments in terms of bill payments continued to have an impact in 2018, substantially contributing to the share of electronic payment of utility bills and other service charges nearly doubling over five years, with this ratio moving to nearly 50 per cent. The measures taken by Magyar Posta Zrt. in previous years aimed at the electronisation of yellow and white cheque transactions, considered to be a Hungarian peculiarity, as well as the continued steady proportion of direct debit transactions, mainly used for regular bill payments, contributed significantly to the dynamic rise in the ratio. As a result, the share of electronic bill payments within all bill payments was close to 50 per cent in 2018, having almost doubled since 2013. (Table 2)

The security of the Hungarian payment card system is outstanding even by international standards. The European Central Bank prepared its fifth report on card fraud in 2018, providing a European overview. Similar to previous years, the latest international comparison shows that Hungarian consumers and businesses can conduct card payments with an outstanding level of security. As the regional comparison attests, the proportion of card fraud relative to the number of transactions is typically lower in Eastern European countries. (Chart 7)

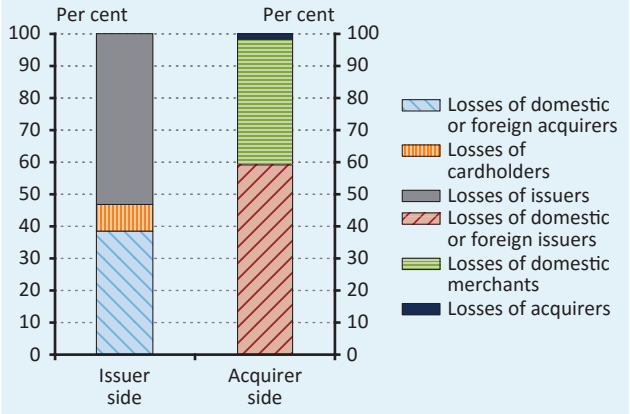
Chart 7
Ratio of payment card fraud relative to payment card turnover in Europe



Source: ECB Fifth report on card fraud (2018)

As a result of the legislation, which focuses on consumers' interests, a mere 8 per cent of the losses written off on the issuer side were borne by cardholders. In the first three quarters of 2018, cardholders sustained losses from issuer-side fraud amounting to HUF 91 million, representing only 8 per cent of the total losses that were written off on the issuer side. Therefore, due to the legislation favourable to consumers, only a fraction of the losses written off related to payment card transactions must be borne by consumers. Most of the HUF 1.1 billion[1] loss written off on the issuer side was absorbed by card issuing banks (53 per cent) and card acquiring banks (39 per cent). In the case of the HUF 270 million[2] loss written off on the acquirer side, the largest items were also sustained by card issuing banks (59 per cent), while Hungarian retailers suffered a loss of HUF 105 million (39 per cent) through fraud. (Chart 8)

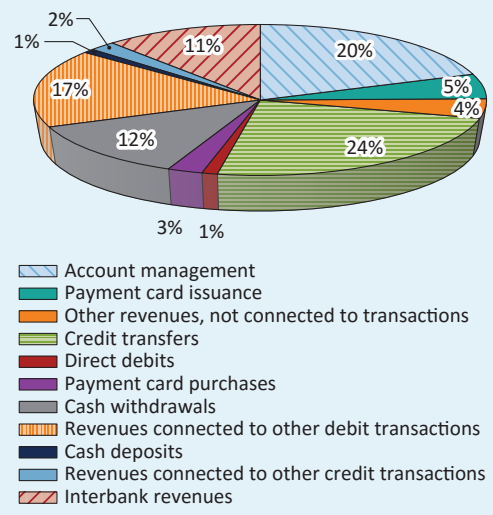
Chart 8
Losses written off in relation to payment card fraud on the issuer and acquirer sides
(2018 Q1-Q3)



2.1.4 PAYMENT TRANSACTION REVENUES

Banks' income generated from payment service fees continued to grow, and credit transfers still comprise the largest source of revenue. In 2018, the income of payment service providers arising from the provision of payment services increased by 7.2 per cent year-on-year, exceeding HUF 530 billion. Revenues related to credit transfers (some HUF 127 billion) as well as account packages and account management (close to HUF 104 billion) were also the highest in 2018, amounting to nearly 24 and 20 per cent of total payment service revenues, respectively (Chart 9). The exceptional revenues related to credit transfers are attributable to the fact that, due to the large volume of corporate payments, the total value of credit transfers is the largest among electronic payment methods, and in terms of this payment method payment service providers' pricing typically charges the payment transaction directly, often in proportion to the value of the transaction. After the introduction of the instant payment system, such pricing behaviour by banks will not be sustainable. For more details, see Chapter 4.

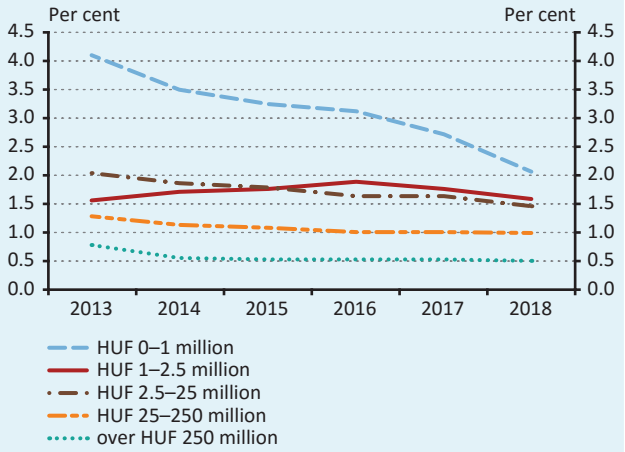
Chart 9
Breakdown of revenues related to payment services by revenue type
(2018)



[1] The amount of losses actually written off on the issuer side may differ from the amount of the total losses incurred due to the delay in terms of the settlement of certain items.
[2] The amount of losses actually written off on the acquirer side may differ from the amount of the total losses incurred due to the delay in terms of the settlement of certain items.

The burden on smaller merchants remains higher in terms of payment card acquiring costs; however, there is a downward trend as a result of the government-funded POS terminal deployment programme. There was no major change in the structure of payment service providers' revenues related to payment card acquiring, which represents costs to retailers on the other side. For the smaller retailer groups with a quarterly turnover below HUF 2.5 million, the acquiring service is still relatively more expensive compared to the volume of payment card purchase transactions, but the dynamic downward trend also continued in 2018. The change was especially noticeable in the case of the group with a quarterly turnover of less than HUF 1 million, whereby payment service providers' revenues from the smallest retailers amounted to slightly over 2 per cent of the transaction volume in 2018. However, this was still substantially higher than the 0.5 per cent seen in the case of the retailers with a quarterly turnover of over HUF 250 million. (Chart 10)

Chart 10
Ratio of bank revenues compared to payment card purchase turnover in merchant categories according to quarterly payment card turnover
(2013-2018)



2.1.5 FINDINGS OF PAYMENT INSPECTIONS

The general experience of the payment inspections conducted in 2018 is that the operation of the examined payment service providers is adequate, although deficiencies were found in each case. In 2018, on-site inspections were conducted at 11 institutions, and in the case of 7 of these, the inspection was already closed in 2018 or in the first quarter of 2019. In addition to the implementation of measures, fines amounting to HUF 106.1 million were also imposed. In a novel development compared to earlier years, the MNB not only had to require the performance of measures, but also had to levy a fine on a voucher issuer (Table 3).

In connection with the Payment Services Act, official inspections most often found infringements related to customer information and the amendment and termination of the framework contract. Half of the deficiencies identified during inspections were related to violations of the Payment Services Act, which is partly attributable to the fact that cooperative credit institution mergers meant nothing more than an organisational merger in a legal sense, and the coordination of the existing processes and the payment infrastructure was implemented to a limited extent with respect to the agreement on the provision of payment services (hereinafter: framework contract). The violation of the requirements on information provision and the amendment and termination of the framework contract comprised around one quarter of all infringements. The correction of payment transactions and the failure to observe the liability and loss allocation rules also accounted for a large share of the infringements identified in the year under review (Chart 11).

In itself, the use of a cash-substitute payment instrument does not prove that the customer was fraudulent or acted with gross negligence, and the onus to provide credible evidence on this is on the payment service provider in all cases. In multiple cases, the inspections established that some payment service providers do not appropriately apply the rules on correction, either in the framework contract or in their complaint management practices (e.g. value date, deadline of refund, legitimacy of the refund). In many cases, the payment service providers generally pass on the liability and the losses related to cash-substitute payment instrument (bank card, Internet banking, mobile banking) to customers, relieving themselves of the burden of proof stipulated in the Payment Services Act. During their operation, these institutions refused to correct specific cases of fraud by citing grounds that are not in line with the Act. In its inspections, the MNB will not accept the procedures where the payment service providers did not prove the customer's fraudulent behaviour or gross negligence. Proof must be appropriately sound and substantiated, so cases when the use of PIN codes or other passwords is cited will still not be accepted, just as if the payment service provider verifies only that it sent the code to the mobile phone number provided by the customer in a text message, because in mobile banking, malicious software on the mobile phone may prevent the customer from noticing that a text message has arrived.

During verification of the information in the company register related to the opening of a payment account,

Table 3
Key data of the inspections conducted by the MNB, by type of institution
(2015-2018)

Key data of the inspections	Type of institution	2015	2016	2017	2018
Number of institutions inspected (in the year of the inspection)	Bank	7	2	7	**5**
	Specialised credit institution	-	-	1	**1**
	Cooperative credit institution	15	13	5	**3**
	Other payment service provider	-	-	1	**1**
	Voucher issuer	-	4	1	**1**
	Total:	**22**	**19**	**15**	**11**
Number of findings (in the year of the inspection)	Bank	69	0	67	**12**
	Specialised credit institution	-	-	6	**2**
	Cooperative credit institution	115	88	67	**44**
	Other payment service provider	-	-	13	**10**
	Voucher issuer	-	6	3	**2**
	Total:	**184**	**94**	**156**	**70**
Number of obligations required within the framework of measures	Bank	48	0	16	**6**
	Specialised credit institution	-	-	5	**1**
	Cooperative credit institution	78	48	35	**27**
	Other payment service provider	-	-	7	**8**
	Voucher issuer	-	2	-	**0**
	Total:	**126**	**50**	**63**	**42**
Number of fines (in the year of the decision)	Bank	4	4	4	**3**
	Cooperative credit institution	9	3	4	**4**
	Other payment service provider	-	-	1	**-**
	Voucher issuer	**-**	**-**	**-**	**1**
	Total:	**13**	**7**	**9**	**8**
Value of fines – HUF million (in the year of the decision)	Bank	43.5	24.5	56.5	**64.5**
	Cooperative credit institution	23.2	5.6	15	**39.5**
	Other payment service provider	-	-	3.5	**-**
	Voucher issuer	**-**	**-**	**-**	**2.1**
	Total:	**66.7**	**30.1**	**75**	**106.1**

payment service providers increasingly use electronic, automatic solutions rather than, for example, paper-based certificates of incorporation and court orders. Experience shows that infringements related to the opening of a payment account, though currently causing relatively many critical findings, will decline in the future. This is partly because in recent years most market participants already modified their procedures in this field, and partly because the previously stricter requirements in the law changed in 2018. The Payment Services Act does no longer stipulates that customers must submit company register documents, and it is sufficient if the payment service provider integrates access to the company register systems into its procedures to retrieve data. This access may be used by the payment service providers not only for opening accounts but also for monitoring various changes in data.

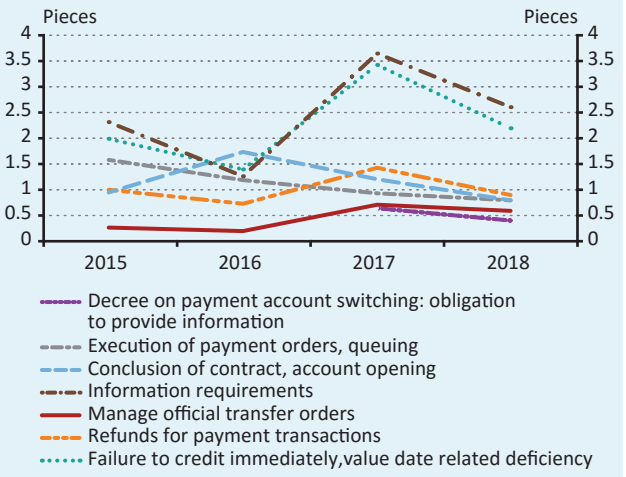
Due to the manual workflows, there are still cases during the processing of official transfer orders when the beneficiary receives the claimed amount later or not at all. The rules on the handling, processing and execution of official transfer orders are contained in the Payment Services Act and the MNB Decree on Payment Services. These infringements were most often due to the fact that the processing of official transfer orders is only partially automated. The most frequent mistake proved to be the delayed processing of official transfer orders, due to the own payment orders of customers acting as paying parties

(typically regular transfer orders, value-dated payment instructions and the payment orders received after the closing time of the previous day) sometimes having priority over the execution of official transfer orders (Chart 11).

Based on the inspection of the adherence to the stipulations in the MNB Decree on Payment Services, payment service providers mostly failed to observe the rules on the immediate crediting of the amount of payment transactions. The infringements related to the MNB Decree on Payment Services comprised roughly one-third of all findings, and particular note should be taken of the violation of the rules on crediting payment transactions to payment accounts, which in itself involved over one-fifth of the identified infringements. Although the payment orders and payment transactions executed with a delay or incorrectly sometimes disrupted the predictability of customers' payment transactions, overall, they did not jeopardise it. Similarly to the previous years, the amount of payment transactions is still not always made immediately available for the beneficiary particularly in the case of crediting initiated with a payment card, affecting both the retailer and the customer segment. Delays are also frequent with postal cash transfers and FX transfers. The violation of this provision is still strictly judged by the MNB, as the level of development of information technology allows much faster processing in banks' systems since the publication of the relevant legislation (Chart 11).

Fast, simple switching between payment accounts and appropriate account closure is hindered by the unreasonably strict terms and conditions related to payment cards, imposed by payment service providers on their customers. The Decree on Payment Account Switching aims to facilitate a rapid, efficient process of switching payment service providers for consumers, thereby fostering competition in payment services. In the course of the regulatory inspections in 2018, the MNB found that payment service providers refused the closure of accounts, which can be considered the last step of the process of switching accounts, on several occasions even in cases when it was not allowed by the Decree. The most frequent reason for the refusal was related to the existence of a payment card or other services (Internet bank, texting service), i.e. in the cases where a payment card belonged to the customer's previous account, and thus the earlier payment service provider refused closure of the account with reference to that. However, when creating the Decree on Payment Account Switching, legislators' intention was that switching banks should be as convenient and simple for customers as possible, and that it be ensured in a way that the payment services provided to consumers (e.g. the option to use a payment card) should not be interrupted during the switching of accounts. Another issue that hampers the one-step payment account switching is the administrative condition laid down in the framework contract that customers need to hand over their payment card at a branch of the earlier account-servicing institution upon closing the payment account, even though physically handing back the card does not reduce the probability of fraudulent card use by the customer or someone else (Chart 11).

Chart 11
Most frequent infringements in payments by institutions
(2015-2018)



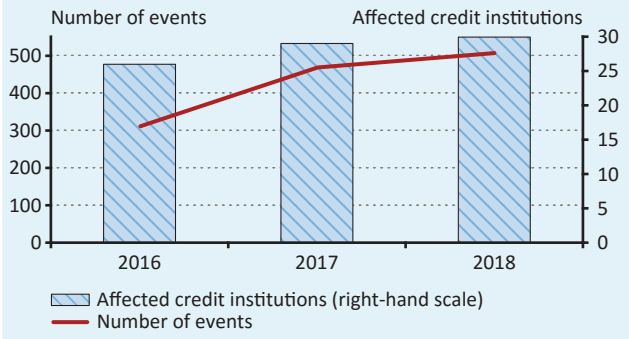
In the second half of 2019, several new laws facilitating the efficient, secure banking by customers as well as better customer information will take effect, and the MNB will start checking compliance right away. According to preliminary plans, the MNB will conduct payment inspections at seven payment service providers in 2019. The laws covered by the inspection will be complemented by the stipulations in the Decree on Fee Information, effective from 31 July 2019. This law seeks to help customers compare the payment accounts offered by various payment service providers based on the fees. With respect to the broader scope of the inspections, it is worth noting that the overwhelming majority of the rules of the Strong Customer Authentication RTS will apply from 14 September 2019.[3]

[3] Article 30 (3) and (5) are already applicable since 14 March 2019.

2.1.6 PAYMENT MALFUNCTIONS AT PAYMENT SERVICE PROVIDERS IN 2018

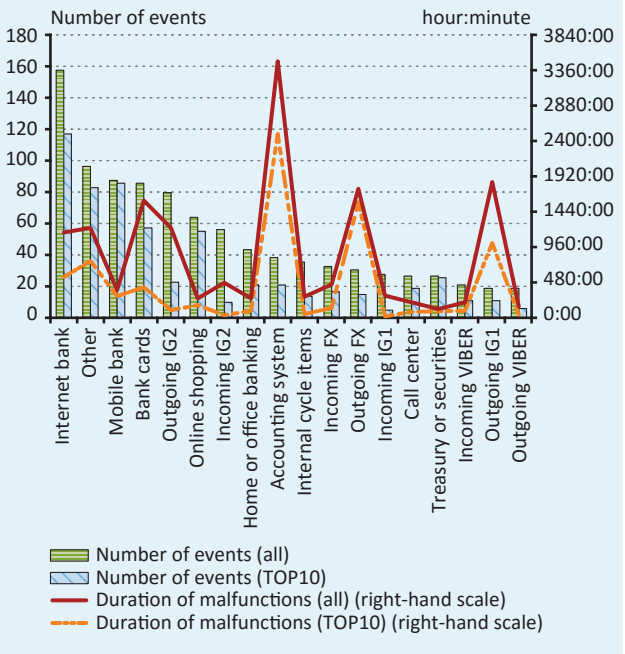
Although the number of payment malfunctions has been growing in the banking sector for years, albeit at a decreasing rate, the number of cases is still low considering the number of payment service providers and the complexity of the financial infrastructure. The number of incidents reported by credit institutions has increased steadily in past years (Chart 12). In 2018, the MNB received information on 506 incidents from 30 credit institutions in total. During the year, the average duration measured from the occurrence of the incidents until their resumption was 15 hours and 49 minutes, nearly 4 hours and 45 minutes longer than in 2017. The longest incident lasted for about two months, when a system parameter was incorrectly set in a change management procedure. This mistake was reported by customers before the payment service provider detected it. However, according to the incident reports submitted to the MNB, the overwhelming majority of incidents are spotted by banks before customers. The time between the occurrence and the detection of the incidents has dropped by nearly three quarters of an hour, to 3 hours and 27 minutes, since last year.

Chart 12
Number of incidents at payment service providers and the number of credit institutions affected
(2016-2018)



Similar to earlier years, in 2018 most payment incidents were related to Internet banking systems, but the longest incident was caused by problems linked to the outgoing transactions to ICS overnight clearing (IG1). Based on the incident reports submitted, an incident usually had an impact on more systems at the same time. Incidents connected to mobile banking, bank cards, outgoing VIBER and outgoing ICS IG2 transactions were much more frequent at larger (TOP10) payment service providers than at smaller ones. On the other hand, incidents related to online purchases, incoming VIBER, incoming ICS IG1 and incoming ICS IG2 transactions were more typical of smaller service providers. Similar to the previous year, roughly 50 per cent of the incidents affected both the Internet banking and mobile banking systems in 2018. Among other things, these incidents hindered customers from initiating credit transfers, seeing their account history as well as using other mobile banking services (Chart 13).[4] In 2018, the incidents lasting over 100 hours were typically attributable to malfunctioning applications, inadequately performed maintenance and unexpected input values during automatic data processing. However, taking into account all incidents, most of the malfunctions were related to operation and third-party service providers. Similar to 2017, human errors related to business processes were fairly frequent in 2018. In 2018, errors occurring during the sending of authenticating text messages rose slightly, causing incidents in 24 cases. In 2018, a similar ratio of

Chart 13
Number and duration of payment service providers' malfunctions by activity, highlighting the data of the TOP10 payment service providers
(2018)



[4] In 2018, there were 160 incidents related to Internet banking, 89 incidents related to mobile banking and 44 involving home or office banking services.

errors related to payment cards and ATMs occurred as in the previous year.[5] A significant portion of errors were still caused by various network failures, which is in line with the fact that the adequate functioning of business processes related to payment cards and ATMs requires the coordinated activity of various independent actors (e.g. card companies, retailers, credit institutions, telecommunication companies).

Box 1
New reporting related to severe operational security incidents

Since early 2018, payment service providers have been required to send a report to the MNB on the occurrence, investigation and conclusion of severe events.[6] The MNB processes the reports submitted by the payment service providers and sends them to the EBA and the ECB as well. The new reporting requirement is the first major step in the integrated pan-European incident reporting scheme. The new reporting requirement is divided into three types (initial, intermediate and final report). The initial report, which contains only some basic information, must be sent by payment service providers within 4 hours of detecting the incident in order to notify authorities about incidents as soon as possible. Interim reports should be produced with a fixed periodicity until the termination of the incident. This report contains detailed information on the affected systems, business processes and the reasons behind the incident.

The final report, which must be sent by payment service providers after the termination of the incident, contains full information a detailed and accurate description of the incident and the planned measures to prevent the reoccurrence in the future. In 2018, 14 payment service providers reported 28 incidents affecting 15 institutions. Experience shows that there are many administrative problems in connection with reporting (the deadlines were not observed in several cases, the reports were not sent in the correct order, data fields remained blank). Analysis of the incident reports showed that incidents were most often caused by slow system performance, no detection of error signal or lack of testing process. Therefore, incidents usually had a negative impact on the availability of the systems, but no incident affected data confidentiality.

[5] The incidents concerned bank cards or ATMs in 19 per cent of the cases (62 cases) in 2016, 16 per cent (75 cases) in 2017 and 17 per cent (87 cases) in 2018.
[6] The criteria for determining the severity of the incident are described in the MNB's reporting decree (P64 reporting).

2.2 Operation of financial market infrastructures

2.2.1 TURNOVER OF FINANCIAL MARKET INFRASTRUCTURES

Compared to the previous year, the number of payment transactions executed in the overseen systems increased by three per cent, while the value of the transactions rose by 11.7 per cent in 2018. On the whole, the transactions amounted to 40.6 times the annual value of Hungarian GDP (Table 4). In 2018, VIBER, the ICS and KELER CCP saw an increase in the value of transactions, while transactions declined in the case of KELER CSD. The total value and the number of transactions in VIBER increased by 14 per cent and 5 per cent, respectively, relative to the previous year. The increase in value was due to central bank O/N and preferential deposits, interbank transactions, transactions related to the settlement of ICS intraday clearing and HUF IRS margin clearing. The average value of transactions in VIBER rose by HUF 60 million in one year. The increase in the number of transactions was mostly attributable to the rise in the number of customer and interbank transactions. In terms of the number of transactions, the ICS achieved a 3 per cent increase, with an 11.7 per cent rise in value. The expansion in transactions shows significant differences across settlement platforms and transaction types. The growth was the result of the individual credit transfers of intraday clearing (5.6 per cent) as well as the direct credits of intraday clearing (3.7 per cent). Following a steep decline in the previous year, the number of direct debits exhibited a rise of 1.91 per cent in 2018. KELER CSD transactions were down both in terms of their number (by 6 per cent) and their forint value (by 5 per cent). On the TARGET2-Securities pan-European securities settlement platform (T2S), there were 142 KELER CSD transactions with a value of HUF 1,842 billion. The value of capital market transactions cleared by KELER CCP increased by nearly 8 per cent, while their volume did not change considerably.

The forint transaction volume settled in CLS increased steadily in 2018, and the first quarter of 2019 exhibited an impressive rate of growth. While in 2017 CLS settled 82,000 foreign exchange transactions in which one of the legs was forint, in 2018 this figure was 125,000. In addition to the growth in the number of transactions, the total daily settlement value also rose: in 2017 the average daily forint settlement of the system amounted to HUF 448 billion, while in 2018 CLS settled an average daily value of HUF 507 billion. This also means that the average netting effect rose from 80 to 82 per cent. In the first quarter of 2019 the total daily settlement value was 56 per cent higher than in 2018, and it approached the daily value of HUF 800 billion (Chart 14). The rise in turnover is attributable to the expansion of the domestic account management market, since more and more local credit institutions provide CLS-related account management services – in line with the expectations of the MNB. The central bank will continue to closely monitor the development of the forint transaction volume settled within the framework of the service, since the risk mitigation tools of CLS greatly contribute to the development of the Hungarian foreign exchange market. In this context, the MNB operates as an intermediary between the parties involved in the project, and continuously consults with CLS in order to make the conditions of access to the service even more favourable.

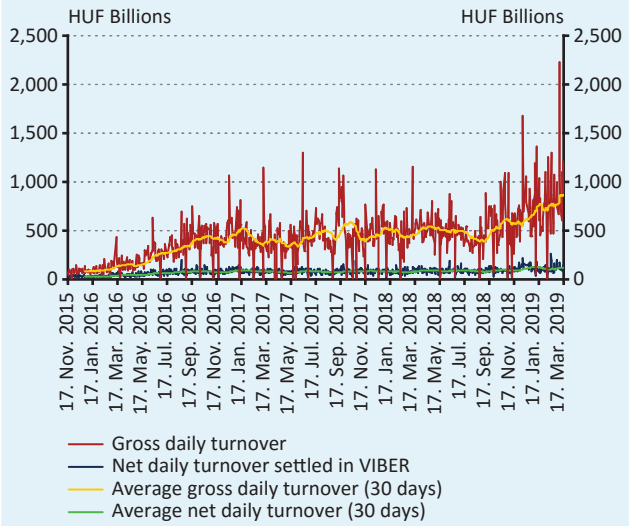
Table 4
Turnover of domestic financial market infrastructures
(2016-2018)

Overseen systems		Volume (thousand)			Value (HUF thousand billion)			Turnover/ GDP		
		2016	2017	2018	2016	2017	2018	2016	2017	2018
VIBER		1,545	1,565	1,649	1,113.1	1,234	1,403	31.58	32.32	33.35
ICS	overnight clearing	149,529	150,527	142,206.6	13.7	15.8	7.58	0.39	0.41	0.18
	intraday clearing	190,176	199,351	218,172.7	82.9	86.8	106.95	2.35	2.27	2.54
KELER CSD		697	680	639	240.7	196.4	186.4	6.83	5.14	4.43
KELER CCP*		1,731.8	2,015.9	2,004.1	5.1	5.3	5.7	0.14	0.13	0.14

** The data are for the capital market.*

Note: The ICS overnight clearing turnover volume does not include the so-called non-clearing items that do not entail any payments, as they are only technical transactions, which have an impact only on the capacity and efficiency of the system.

Chart 14
Daily gross forint transaction volume settled in the CLS system and the related net forint transaction volume settled in VIBER
(17 November 2015 - 17 March 2019)



2.2.2 SERVICE CONTINUITY RISK OF FINANCIAL MARKET INFRASTRUCTURES

The overseen financial market infrastructures functioned efficiently and safely in 2018, supporting the operation of money and capital markets with their high availability. The systems worked robustly during the whole year, and compared to the previous year, the availability of the ICS, KELER CSD and KELER CCP improved, while that of VIBER deteriorated slightly. Operational risk and system interdependency risk rose slightly in the overseen systems in 2018, on account of the longer incident recovery times. The CLS and T2S financial market infrastructures, which are under international cooperative oversight with the participation of the MNB, operated safely and efficiently, similar to the domestic systems.

In 2018, VIBER operated in a highly reliable manner. Compared to the previous year, the service continuity risk slightly increased, due to the longer incident times of complete service outages. In every month, the availability of VIBER remained above 99.7 per cent, which is the requirement in the oversight practice in Hungary (Chart 15) and declined to below 100 per cent in only four months. The time between the start and the elimination of an incident (recovery) was a little longer than in 2017, with the longest outage lasting for 21 minutes, and three out of the five incidents causing a complete service outage lasting over 15 minutes. The total incident time of complete service outages grow 2.27-fold in year-on-year terms. Following the incidents, the system operators learned the lessons, and, where considered necessary, gave proposals for the avoidance of incidents in the future. The incidents did not cause disruption on the financial and capital markets.

Overnight and intraday ICS clearing operated in a reliable manner for the whole year, and the availability ratio of both clearing systems improved compared to the previous year (Chart 16). Both clearing systems of the

Chart 15
Monthly availability ratio of the core settlement service in VIBER (left-hand chart) and aggregate duration of outages of the core settlement services in minutes (right-hand chart)
(2016-2018)

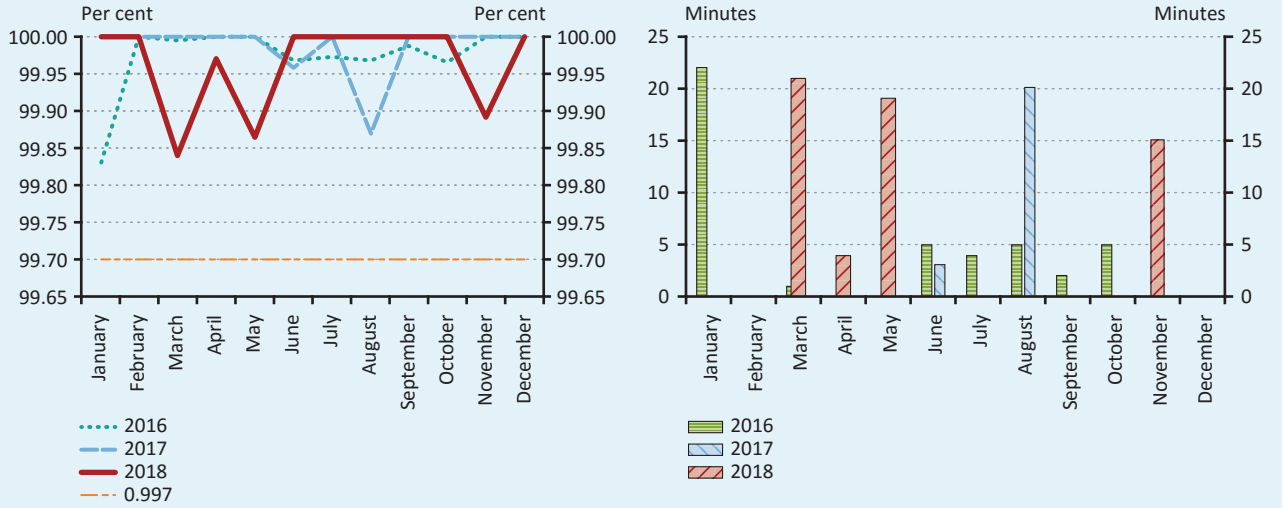
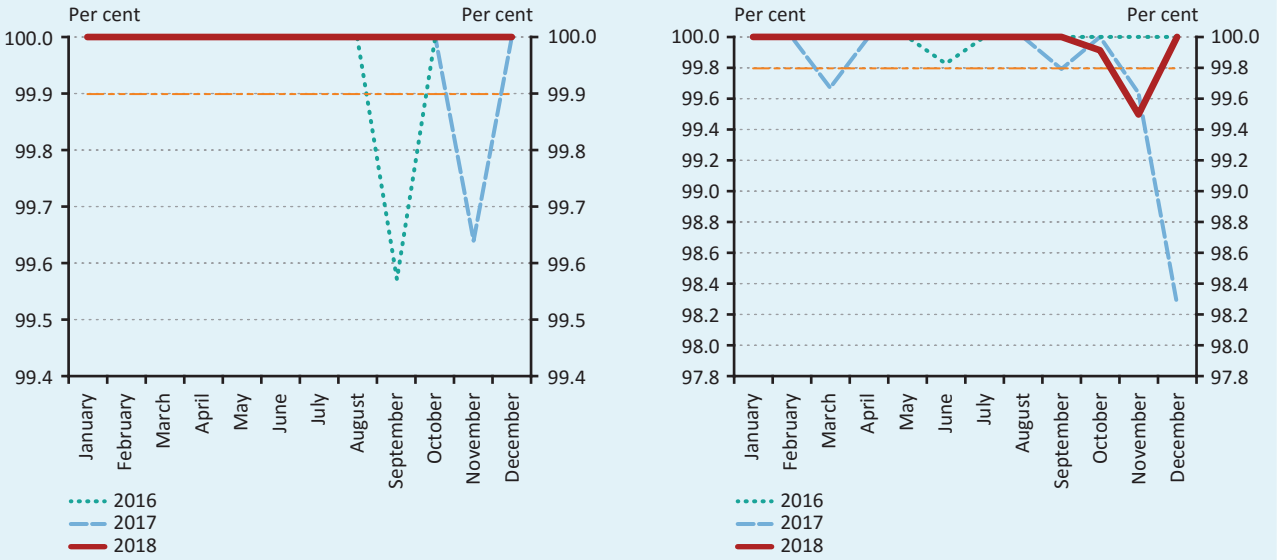


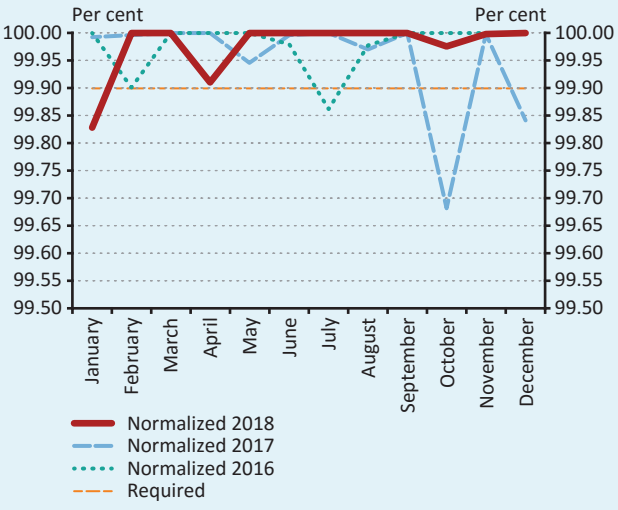
Chart 16
Impact of overnight (left-hand chart) and intraday (right-hand chart) clearing incidents on availability
(2015-2017)



ICS processed transactions rapidly and with adequate efficiency. The availability ratio of overnight clearing[7] did not fall below the undertaken service level in any month. And in intraday clearing, there were only two events when the GIRO did not meet the deadlines defined in the Business Terms. During the incidents, the identification of the errors, the response times and the elimination of the issue occurred in an adequately rapid and efficient manner. The incident in October was considered serious, because during it the batches of several system participants were rejected in intraday clearing, on account of an outage. The incident in November was caused by a malfunction at the settlement agent, and therefore the outage affected the first three cycles. In connection with this incident, the interdependency risk should be noted, since it is a risk factor that requires special attention. As the example shows, it can lead to an incident that not only violates the time interval for the drawdown of the collateral amount stipulated in the ICS Business Terms, but also causes an outage spanning several cycles.

According to KELER CSD's calculations, both the number and the duration of incidents perceptible by customers are still low; the securities depository operated with outstanding availability for customers in 2018 again. The availability of KELER CSD's services to customers increased slightly compared to 2017 (from 99.95 per cent to 99.98 per cent). Last year, KELER CSD's availability was below the required level of 99.9 per cent in only one month (Chart 17). The lower availability in January was caused by two incidents in the system for maintaining investment assets. These incidents were resolved by KELER CSD in a professional manner, just as in earlier years. As a result of the measures introduced on account of the investigation into the incidents, the number of events deemed as malfunction was down.

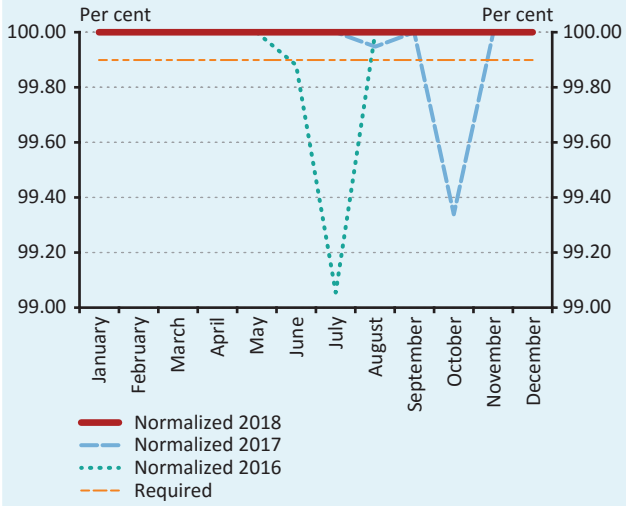
Chart 17
Availability of KELER CSD for customers
(2016-2018)



[7] Monthly availability ratio: ((number of working days*GIRO (night or intraday) opening hours – outage due to incident)/(number of working days*GIRO (night or intraday) opening hours))*100; ICS overnight clearing SLA 99.90 per cent; ICS intraday clearing SLA 99.80 per cent.

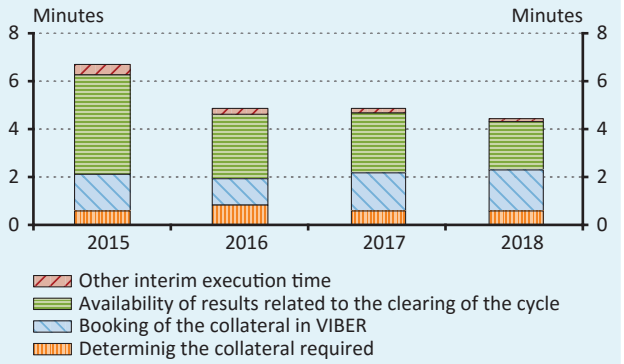
Based on the data supplied by KELER CCP, the system operated with a high degree of reliability in 2018, having improved its availability to customers compared to the previous year. The IT architecture supporting the business services of KELER CCP is operated by KELER CSD, and therefore the malfunctions in KELER CSD's IT systems have a significant direct or indirect impact on the availability level of KELER CCP. In 2018, the availability ratio of KELER CCP business services increased to 100 per cent, as there was no major malfunction affecting customers (Chart 18).

Chart 18
Availability of KELER CCP
(2016-2018)



The execution time of the clearing and settlement of transactions in the payment systems met the expected efficiency requirements. At present, some of the execution times of domestic payment orders are strongly influenced by VIBER's processing capacity, as in addition to executing its participants' payment transactions, it also serves to settle clearing of the related financial market infrastructures. The execution time of VIBER transactions is calculated on the basis of the time stamps on SWIFT messages.[8] If sufficient funds are available on the participant's payment account, the average execution time of interbank and customer transactions is 12 seconds, whereas the cash leg settlement of securities transactions and the settlement of the ICS intraday clearing cycle require less than 15–16 seconds on average. With respect to ICS intraday clearing in 2015–2018 as a whole, the average execution time of a clearing cycle[9] continuously fell, dropping to 4.4 minutes in 2018. The major jump in speed is mostly due to the introduction of the 10 clearing cycles, as well as the changes resulting in improved performance of the clearing system. In 2018, the maximum clearing cycle execution time peaked at 34 minutes, but it never exceeded 14.5 minutes in the first clearing cycle, which includes the highest number of transactions, during the year (Chart 19).

Chart 19
Time requirement of the ICS intraday clearing process
(2015-2018)



Box 2
Cybersecurity – CROE methodology

The secure operation of critical financial market infrastructures is vital for the maintenance of financial stability, as they are the core in the various payment and securities clearing processes. These systems run in complex infrastructures, and therefore the systems' expectations of cyber resilience are necessary to guarantee the secure operation of these systems. The key component of financial infrastructures and market infrastructures of the different countries are connected at multiple points to each other over the networks and interrelated; therefore, all participants should meet the same level of cyber resilience to achieve adequate protection of the whole ecosystem against cyber attacks.

[8] The method measures the time elapsed between the time stamp of the individual transaction received by the MNB via SWIFT and the time stamp of the response message sent via SWIFT following the transaction's settlement in VIBER (confirming settlement).
[9] The average execution time of a cycle lasts from the cut-off time of the acceptance period for the given cycle and the availability of results related to the clearing of the cycle for participants.

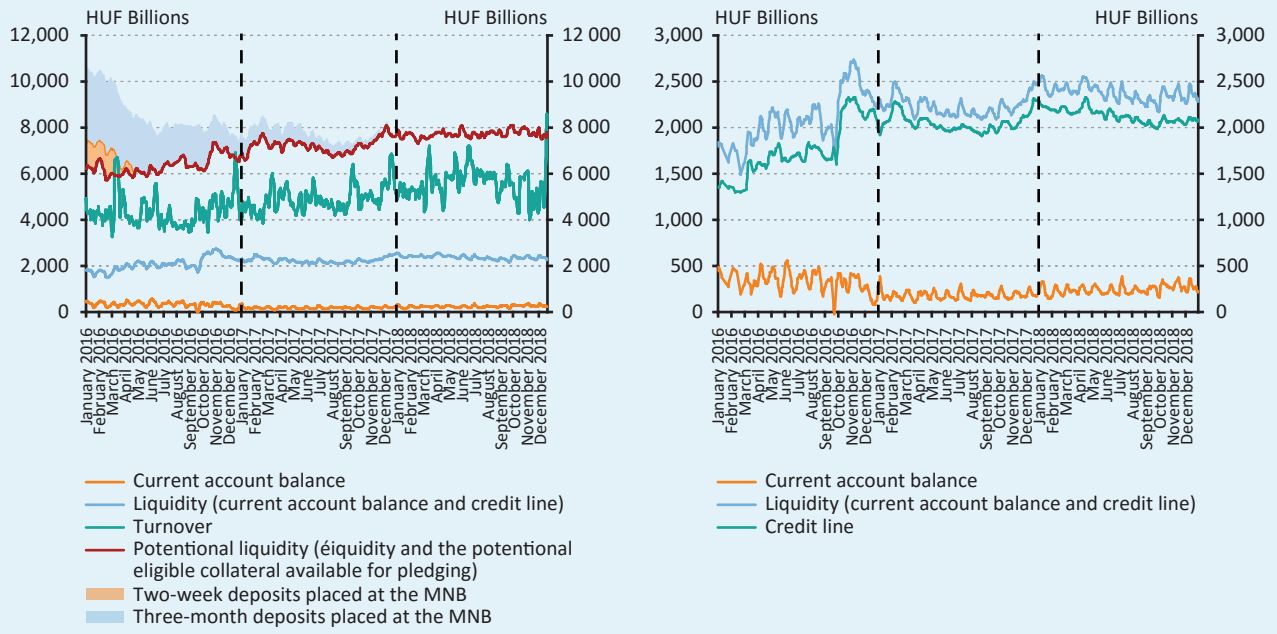
Considering this, the ECB published the Cyber Resilience Oversight Expectations (CROE) in the autumn of 2018. The CROE has three main goals: (1) to set clear and understandable oversight expectations for financial market infrastructures, in the following primary categories: governance, identification, protection, detection, response and recovery, testing, security awareness and continuous development, (2) to provide clear guidance to set up oversight standards applicable to the systems, and (3) to support the regular and co-operative discussion between the financial market infrastructures and overseers. The CROE generally aims the payment systems, however, national and central authorities may, at their own discretion, extend the scope of application to other financial market infrastructures, such as central securities depositories or central counterparties. Consistent with the actions of the overseers from other Member States, the MNB started implementing the CROE into its own oversight standards methodology.

2.2.3 CLEARING AND SETTLEMENT RISK OF FINANCIAL MARKET INFRASTRUCTURES

2.2.3.1 Clearing and settlement risk in VIBER and the ICS

In 2018, the clearing and settlement risk in payment systems was low, and liquidity was adequate for executing payment transactions, both at the system and individual bank levels. The liquidity in VIBER and the ICS is essentially determined by the same factors; any changes in these factors equally affect both systems and their participants. The direct participants of both systems are largely the same, given that clearing in the ICS is settled in VIBER on the participants' payment accounts held with the MNB. Consequently, participants use the same liquidity for conducting payments in both systems: the account balance available on their payment accounts and the intraday credit line provided against their security portfolios pledged to the MNB. Payment system participants continue to obtain a very high level of liquidity, the amount of which did not change much in 2018, having consistently fluctuated in the HUF 2,350±250 billion band in the past two years (Chart 20). In 2018, payment system participants were able to execute the increased turnover with their available liquidity.

Chart 20
Changes in the account balance and liquidity, potential liquidity and turnover of VIBER members (left-hand chart), highlighting the developments in the account balance and payment liquidity (right-hand chart)
(2016-2018)



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

No changes in the central bank's monetary instruments affected the liquidity of VIBER participants in 2018. In 2018, the phase-out of the 3-month deposits continued, but the associated liquidity has not been channelled through to participants' intraday credit line. In the first half of 2018, the credit line contracted slightly, by HUF 100–200 billion. The reserve requirement ratio did not change in 2018, and therefore the payment account balance remained essentially the same in 2018 compared to previous year. Liquidity dropped somewhat from the HUF 2,400–2,600 billion in early 2018 (in line with developments in the credit line), stabilising at HUF 2,300–2,500 billion in the final quarter of the year. Two-thirds of participants' potential liquidity[10] comprises securities on the balance sheets of the participants that may be optionally pledged, and therefore participants have a large liquidity buffer to conduct their payments. All of the released liquidity, generated due to decreased collateral needs deriving from the continuous phase-out of the 3-month deposits and the expiring Funding for Growth Scheme transactions, was channelled through to the intraday credit and (partly) to the additionally pledgeable securities in the past 2 years. Thus, the volume of these securities increased from HUF 3,000 billion in early 2017 to HUF 4,300–5,000 billion in late 2018. Overall, potential liquidity varied around HUF 7,500–8,000 billion in 2018 (Charts 20, 21 and 22).

Chart 21
Impact of changes in the monetary policy instruments on collateral available in the payment systems
(2016-2018)

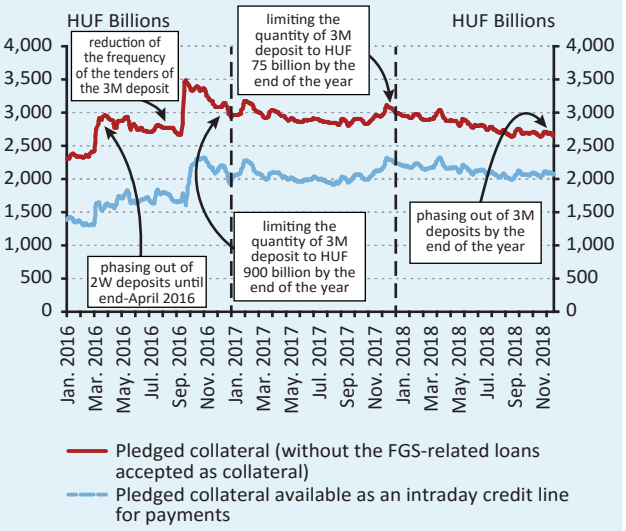
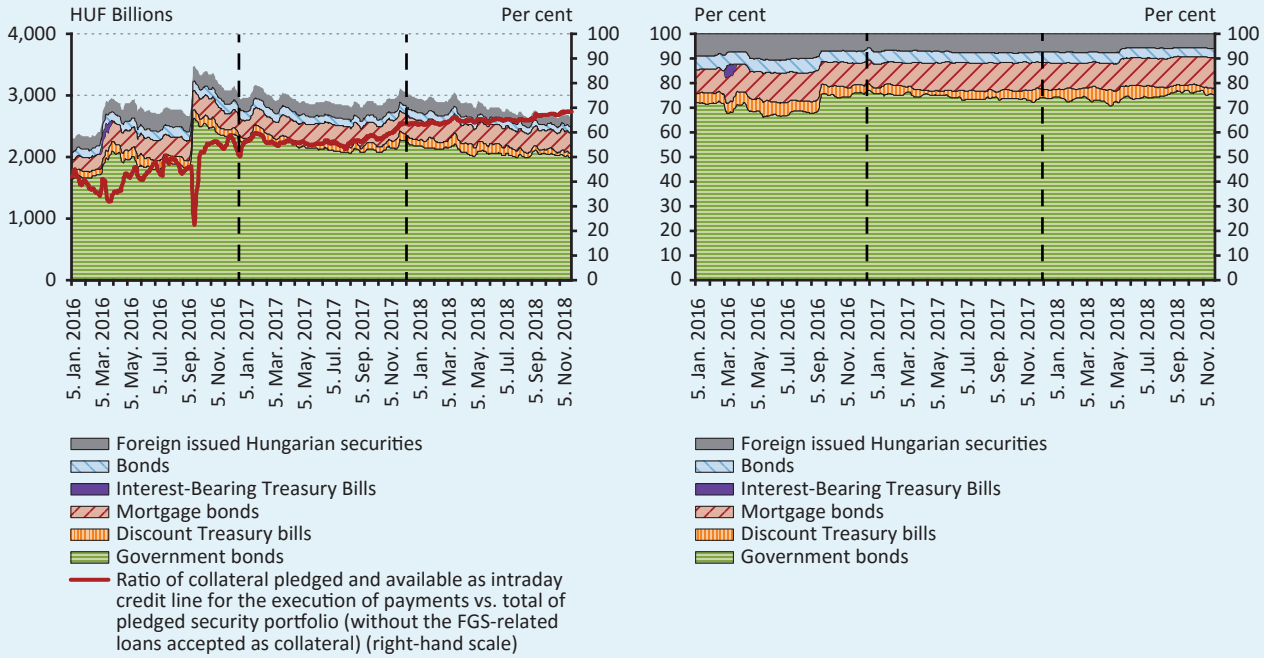


Chart 22
Amount of pledged securities and the ratio of credit line to total pledged collateral (left-hand chart); distribution of pledged securities by type (right-hand chart)
(2016-2018)



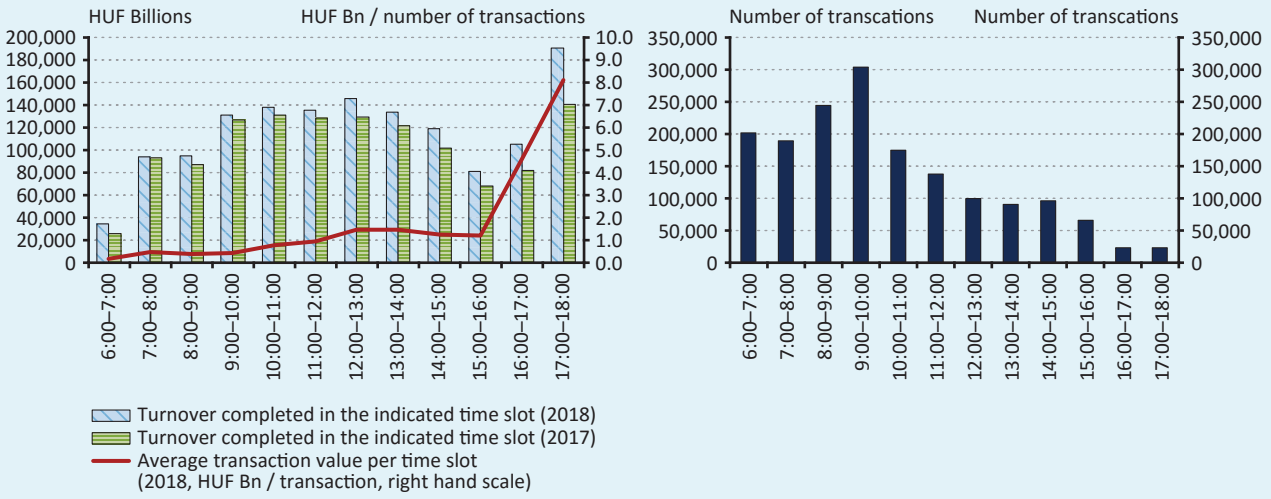
[10] From the perspective of payment systems, potential liquidity is the sum of the account balance of the payment system participants' payment account held with the MNB, the intraday credit line provided against the securities pledged by the participants to the central bank, and other, additionally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

The turnover of the ICS intraday clearing cycles is balanced, the available ample liquidity is sufficient for conducting the transactions, and consequently the potential clearing and settlement risk is still low. The strong rise in the volume of transactions was partly caused by the credit transfers of the Hungarian State Treasury channelled from overnight clearing to intraday clearing. All in all, in each month the number of transactions with intraday clearing increased by 5–13 per cent relative to the previous year, with a corresponding rise in value of 14–40 per cent. The first cycle remained the one with the highest number of transactions, as this is when the credit transfers initiated after the end of the previous business day, mostly retail transfers, are processed. In 2018, the strongest growth in terms of the number of transactions, amounting to over 30 per cent, occurred in the second cycle in April, May and June, which exceeded even the spike in the holiday period in December. Most of the transactions are still concentrated in the eighth and ninth cycles. In 2018, the debit turnover of intraday clearing accounted for an average 0.69 per cent of the total liquidity available in the system at any given moment. The ratio of turnover to total liquidity exceeded the average only on tax payment days and the beginning of the traditionally busier summer and year-end periods, exceeding 2 per cent of total liquidity only in May–June and August–September.

2.2.3.3 Liquidity management of VIBER and ICS participants

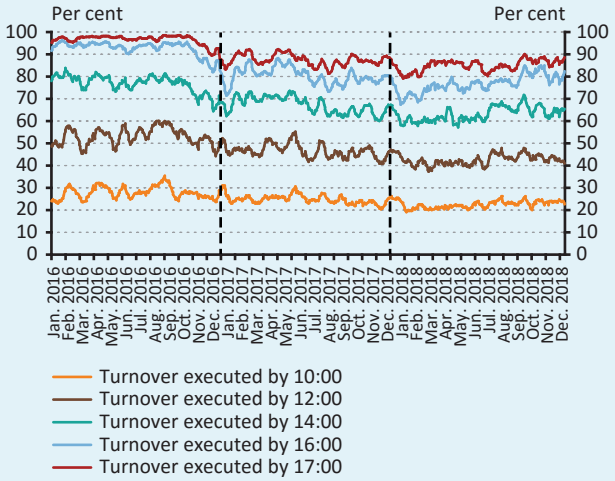
Payment system participants once again managed their liquidity in an active, efficient manner in 2018. Adequate allocation of their intraday liquidity necessary for executing payments continues to be important for mitigating clearing and settlement risk. Similar to 2017, in 2018 the execution of VIBER participants' higher-value transactions took place in the late afternoon and evening hours, and a significant portion of their daily transactions were executed during the 1-hour time-slot prior to VIBER closing. Intraday developments in the value of the VIBER transactions follow an almost normal distribution; around 60 per cent of the transactions took place between 9:00 and 15:00. By contrast, the number of transactions was concentrated in the morning hours; 67 per cent of the number of daily transactions were already carried out by 11:00 (distribution is typically left-skewed). The 14-per cent increase in VIBER transactions compared to prior year can be observed in each intraday time slot. VIBER participants continued to initiate their higher-value items for execution typically after 16:00 hours[11] and generated a considerable portion of their daily turnover between 17:00 and 18:00 hours.[12] In 2018, transaction timing patterns remained practically unchanged compared to previous year, there was no substantial modification of the initiation of payments (Charts 23 and 24).

Chart 23
Intraday developments in the value and average size (left-hand chart) as well as the number (right-hand chart) of the VIBER transactions broken down by hour
(2018)



[11] Within total daily transaction volume, the share of their transaction volume executed after 16:00 increased from 18 per cent in 2017 to 21 per cent in 2018.
[12] Within total daily total transactions, the share of their transactions executed between 17:00 and 18:00 increased from 11 per cent in 2017 to 14 per cent in 2018.

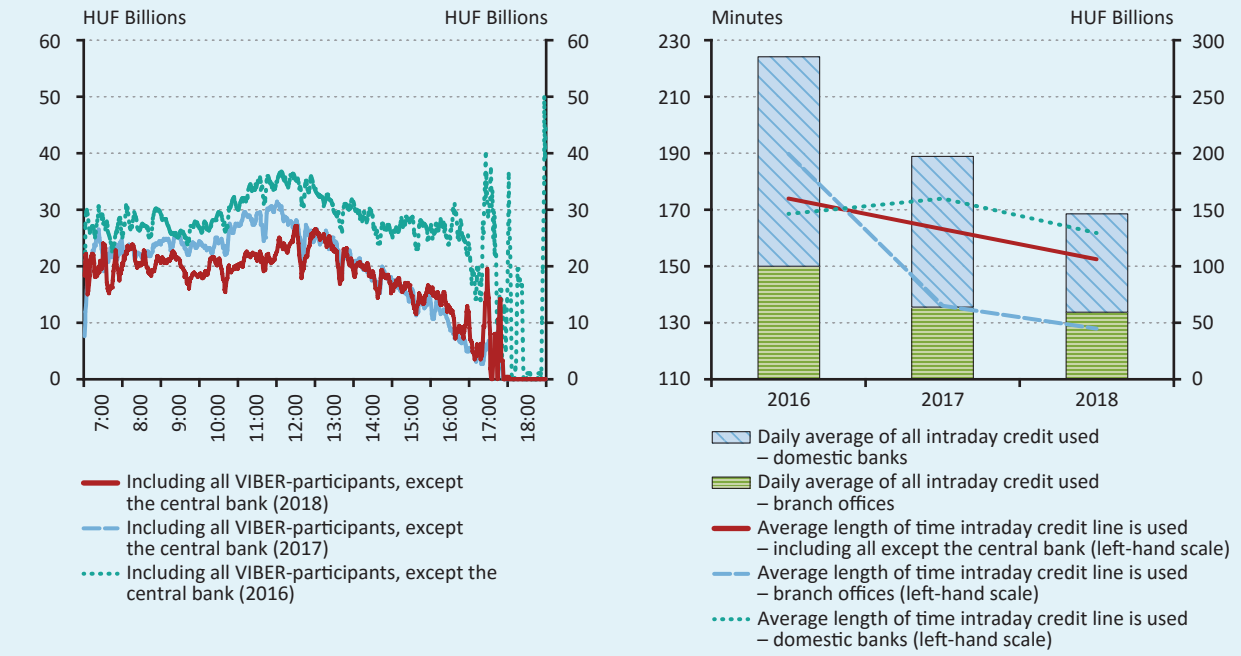
Chart 24
Timing of VIBER transactions (the portion of total daily transactions completed until a specific point in time)
(2016-2018)



Note: Excluding the transactions of the MNB, KELER CSD, the Hungarian State Treasury, GIRO and the Hungarian Post.

In 2018, the maximum utilisation of intraday credit line (MICL)[13] of VIBER participants did not change. In line with prior years' trends, the absolute value of intraday credit line used for payment execution further decreased at the system level, and participants used their credit line for a shorter period of time. The MICL is still considered low (2–12 per cent) at the system level and remained practically unchanged compared to previous year, but on an individual bank basis, the MICL figures still vary considerably. In the case of the four VIBER participants that use the credit line the most, an average 11-percentage point increase can be seen in the MICL, but more than half of the participants do not use their respective credit lines at all or only rarely. In addition to the MICL, it is important to analyse the extent and duration to which participants utilise their credit lines. In case of both these variables, a steady decrease can be observed since 2016. In 2018, the average value of the utilisation of intraday credit lines dropped by roughly 30 per cent (approx. HUF 50 billion) compared to previous year. In addition, participants used the credit line 10 minutes shorter on average to ensure liquidity, so in all they used it for a total 2.5 hours on average every day[14] (Chart 25, right-hand panel). In 2018, the intraday credit line utilisation depended on the company form of participants and the time of day transactions were submitted to VIBER. Whereas utilisation declined in the morning, it increased after the end of customer operating hours. The change was mainly caused by domestic banks, while the credit line utilisation

Chart 25
Intraday credit line utilisation during a day in VIBER (left-hand panel), average daily duration and average used value in a day by company form (domestic banks, foreign branches, right-hand panel)
(2016-2018)

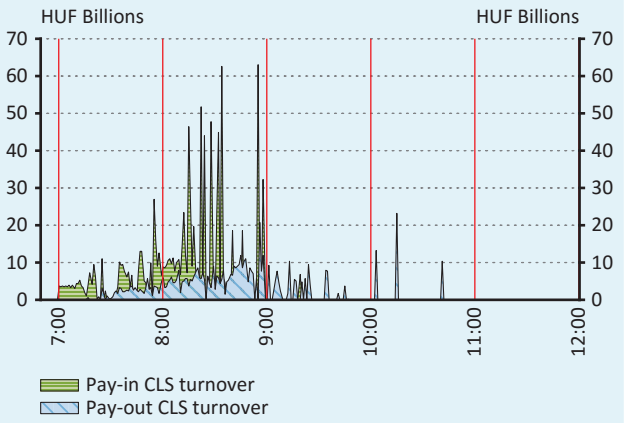


[13] Credit line utilisation shows the portion of the total available intraday credit line a bank has used on a given business day. The lowest intraday current account balance is compared to the available credit line and as such, it is considered to be a snapshot.
[14] These values only apply to the banks that effectively used their credit line for managing their payments.

of foreign branches was similar to that of the prior year. The extent to which foreign branches use their intraday credit has been similar for years, and furthermore they exhibit a more balanced intraday usage pattern compared to domestic banks in conducting their payments (Chart 25, left-hand panel).

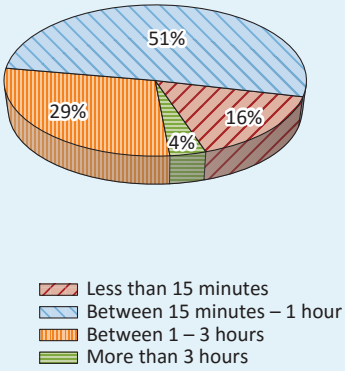
Payments to CLS did not cause any liquidity problems in VIBER, and thus the related clearing and settlement risk continues to be low. In 2018, direct members of CLS provided cover for CLS settlement related to their forint FX transactions via 5 VIBER participants, acting as their nostro account managers. Due to the operational features of CLS, settlement-related payments to and from the system must be completed in 2 time bands specified by CLS: between 7:00–8:00 and 8:00–9:00. In 2018, the daily average transactions of payments to CLS in the period under review reached HUF 83 billion,[15] accounting for 1–2.5 per cent of the total VIBER transactions settled on the given day (Chart 26). In 2018, in spite of the substantial turnover, nostro agents made their CLS-related payments mostly relying solely to their account balances. Credit lines were utilised rarely and only to a negligible degree (the average credit line utilisation of VIBER participants acting as nostro agents in the period of paying to CLS was around 0.002–1.6 percent only).

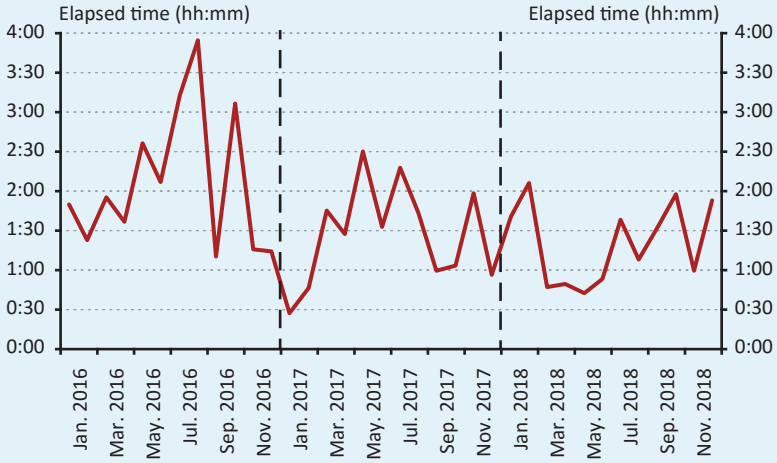
Chart 26
Daily distribution of the average transaction value of payments to and from CLS
(2018)



Even though the occurrence of queuing rose slightly in 2018 due to the larger volume of transactions, the average time spent in the queue decreased by 20 minutes. Transactions initiated by a bank are placed in a queue until sufficient funds become available for execution (as a result of the financing effect of received, credited transactions or a credit line increase or queue rearrangement). The fact of queuing in itself does not necessarily mean that a participant has a liquidity problem, as the existence of the queue is a natural part of the operation of real-time gross settlement systems. Therefore, based on an examination of queues, it can be decided whether there is an actual liquidity problem behind it or the queuing is attributable to individual banks' liquidity management practices. The number of queued items was somewhat higher, by 20 per cent, than in the previous year (a total of around 4,000 transactions were queued), which is still around one-third of the magnitude from previous years (2014–2015). Although queuing occurred on almost all working days, the time spent in the queue declined by around 23 per cent. The items queued up for one hour on average, i.e. 20 minutes less than in the previous year (Chart 27). Within the

Chart 27
Average daily duration of queuing (right-hand panel – (2016-2018)) and its distribution (left-hand panel –2018)





[15] Taking into account both payments to CLS and payments initiated by CLS, the daily average transaction volume doubles, i.e. increases to some HUF 166 billion. This is 2–5 per cent of the daily average VIBER transaction volume.

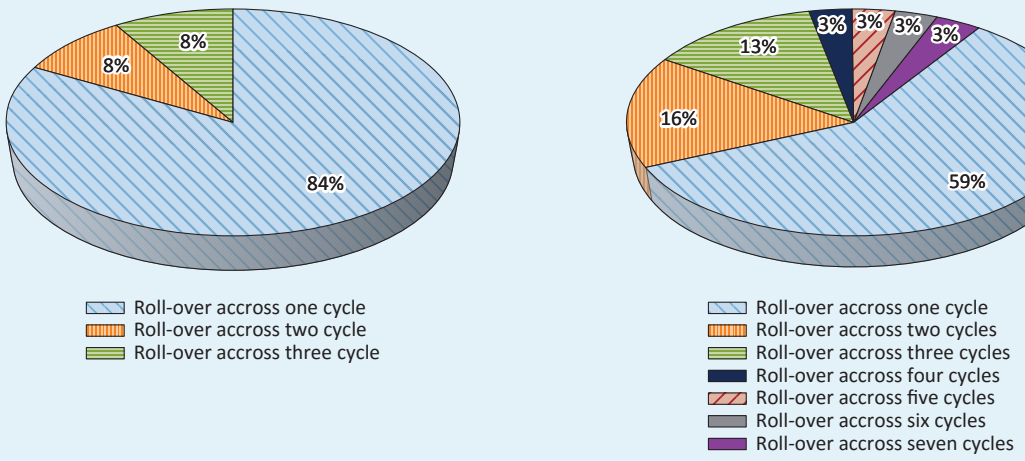
day, queuing typically started in the first two or three hours after the opening of VIBER, and transactions were out of the queue by 13:00 the latest. Due to the different liquidity management of the participants, the duration of queuing varies widely. Banks with a high monthly queuing frequency are typically participants with active liquidity management and high credit line utilisation, whose transactions tend to be queued up for an average of 60 minutes per day, similar to 2017. Considerably longer queuing of over three hours also occurred, but the number of these cases was negligible (comprising 4 per cent of all queued items), and it characterised participants with a less active liquidity management. Such long queues are undertaken deliberately. Since the turnover of these participants is low, they did not cause liquidity issues for others.

In ICS intraday clearing, the number of roll-overs across cycles and the number of affected transactions and batches also increased, but this was related to two system participants with a low volume of transactions. In 2018, the number of roll-overs across cycles grew more than 2.5 times, whereas the number of affected batches and transactions was up by 363 and 43 per cent, respectively, amounting to a roll-over value of HUF 43.5 billion. The roll-overs were attributable to liquidity shortage on the one hand, and, similar to the previous year, to liquidity management errors or flawed practices on the other hand. However, 60 per cent of the roll-overs are linked to two system participants with a marginal market share. One of them was responsible for 38 per cent of the roll-overs, and for all of the roll-overs spanning more than three cycles. During the current 10-cycle clearing, roll-overs across two cycles do not yet lead to the violation of the so-called four-hour rule, but during roll-overs across three or more cycles the four-hour rule is violated. 59 per cent of the roll-overs span one cycle, 16 per cent affect two, 13 per cent affect three and merely 12 per cent affect four or more cycles. The remaining 40 per cent of roll-overs is shared among seven system participants in varying proportions (Chart 28).

2.2.3.4 Clearing and settlement risk in KELER CSD

Although the number of delivery-versus-payment transactions fell in 2018 compared to the previous year, the total value of such transactions increased. In KELER CSD, in addition to over-the-counter (OTC) transactions, which account for a substantial portion of the turnover, the settlement of fixed and auction transactions takes place according to the DvP principle. Clearing in line with the DvP principle considerably reduces the settlement risk of the transactions. The reason for this is that payment and crediting of the securities does not take place until the funds necessary for performing the transaction become available. Compared to last year, the number of transactions declined by 7.5 per cent in 2018, whereas their total value moved in the opposite direction, rising by 7.6 per cent. In KELER CSD settlements, DvP transactions represent the largest transaction value. In 2018, the value and number of DvP transactions amounted to 77.7 and 33 per cent of the total volume, respectively. The currency of settled transactions was mainly forint, with a share of 99.5 per cent in 2017 and 98.7 per cent in 2018 in terms of the value of transactions. 2018 saw delivery-versus-payment transaction settlement in 11 currencies other than the forint, with EUR and USD accounting for the largest share. Many of the DvP transactions conducted by KELER CSD are related to the clearing and settlement of OTC transactions. The proportion of OTC transactions relative to DvP transactions amounted to 99.9 per cent in 2017 and 2018.

Chart 28
Ratio of roll-overs to total roll-overs (2017 (left-hand chart) – 2018 (right-hand chart))



The vast majority of DvP transactions were still settled in central bank money. With respect to DvP transactions, the share of central bank money was 95.97 per cent in 2018, whereas the same figure was 96.76 per cent a year earlier. The high value of central bank money settlement is welcome, because the system participants that have a payment account with the central bank – the MNB in our case – may use the available central bank instruments designed for liquidity management, and these instruments most probably provide the funds necessary for the settlement of the cash leg of transactions. It must be noted, however, that the MNB does not manage accounts for all KELER CSD customers. In their case, cash leg settlements are performed in commercial bank money through the cash accounts held with KELER CSD. Nevertheless, considering the high share of central bank money, settlement risk continues to be low.

In 2018, free-of-payment (FoP) transactions declined considerably compared to the previous year, which mitigated the settlement risk. KELER CSD records value exchange transactions as FoP transactions when the cash and securities leg of the transaction are separate. In these cases, KELER CSD technically only performs a securities debiting and/or crediting instruction. FoP transactions may entail a settlement risk for the capital market because it is unknown when and how the cash leg of the securities transaction will be settled. It should be noted, however, that although the securities transactions cleared through KELER CCP are technically also considered FoP transactions, their settlement is guaranteed by the central counterparty, i.e. in these cases there is no settlement risk. Compared to the previous year, the total value of FoP transactions[16] and the number of transactions diminished by 33 per cent and 5 per cent, respectively. FoP transactions represent a lower transaction value than DvP transactions. Although the number of FoP transactions cleared by KELER CSD amounted to 67.42 per cent of all transactions in 2018, their share in terms of value was merely 22.35 per cent.

2.2.3.5 Clearing and settlement risk in KELER CCP

In 2018, turnover on the cleared markets increased compared to 2017, with the largest rise on the spot gas and electric energy markets. KELER CCP clears the financial instruments traded at the Budapest Stock Exchange and MTS Hungary as the central counterparty. It clears the domestic natural gas markets, and it provides non-clearing member services as an energy market general clearing member for spot and forward electric energy, natural gas and emission quota products traded at ECC markets. In 2018, the total value of spot capital market transactions cleared by the central counterparty exceeded HUF 3,300 billion, representing a 15.4 per cent increase compared to the previous year. Compared to 2017, a 1.8 per cent decline (equalling some HUF 43 billion), was seen in the total annual turnover of derivative capital market transactions. On the spot gas markets cleared as the central counterparty, transactions increased considerably compared to 2017, which may be attributable to the fact that one of the domestic market's trading and clearing currencies changed from the forint to the euro in the second half of 2017. Foreign traders or those with business ties to abroad probably benefitted from this event. Forward gas markets contracted both in terms of the number and total value of the cleared transactions. Last year, the total value of the cleared transactions in this segment was almost 20 per cent lower than in 2017. In the case of the electric energy market non-clearing member services, the volume of transactions continued to grow, as in previous years, and therefore the total value of the transactions conducted in 2018 exceeded the 2017 value by almost 75 per cent.

KELER CCP performed an intraday margin call once in 2018. When exchange rates fluctuate widely, the value of the collateral provided earlier by system participants may not fully cover the value of the open positions. In such a scenario, the central counterparty may perform an intraday margin call, also known as an extraordinary clearing event. During an intraday margin call, negative variation margins and the instruments and collateral hedging them are determined. On 15 November 2018, intraday margin call was performed on the stock exchange derivatives equity market, because certain forward maturities of the shares of a company mirrored spot market price changes. The stock price volatility may have been due to press reports stating that the majority shareholder in the company received an offer to sell their majority stake. Before that, the central counterparty last announced an intraday margin call in 2015, also on the derivatives market. Since in the meantime and for most of 2018 the price movements did not warrant an intraday margin call, the clearing and settlement risk arising from price volatility is still considered low.

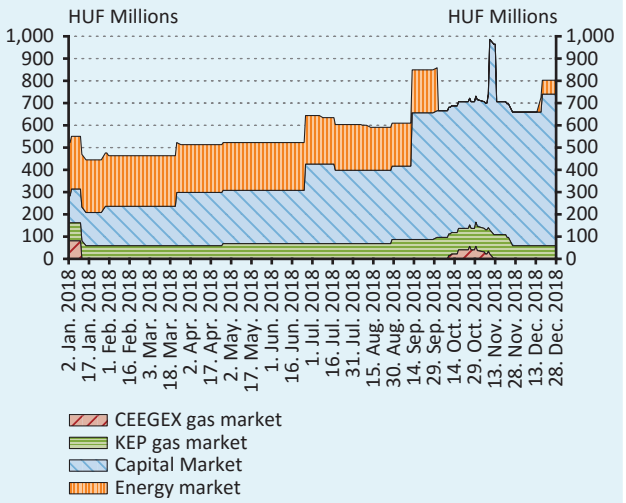
In 2018, additional risk-reducing instruments were mostly used in the case of capital market participants. With respect to the capital, gas and electric energy market transactions guaranteed by KELER CCP, the company has the option to impose additional financial collateral and/

[16] Excluding pledging and securities generation transactions.

or supplementary collateral, depending on the type of risk encountered. This happens when the risks related to the trading practice of the system participant or the electric energy market non-clearing members, the inadequate liquidity or capital position of the participants or the insufficient contribution to the guarantee funds required this. The imposed risk-reduction instruments are withdrawn when the corresponding risk ceases to exist or the participant's legal relationship with KELER CCP is terminated. In 2018, additional financial collateral and supplementary collateral were imposed 13 times and once, respectively. Due to the elimination of risks and system participation, additional financial collateral and supplementary collateral were withdrawn 10 and 5 times, respectively, during the year. The number of both the additional financial collateral and the supplementary collateral decreased in 2018 compared to the previous year.[17] In 2018, additional financial collateral was imposed 8 times on the clearing members in the equities section of the spot capital market. In the other cases, spot gas market participants and spot electric energy market non-clearing members were affected. In this respect, there was a huge difference relative to 2017, when the vast majority of impositions was related to clearing members of gas market and electric energy trading market. In 2018, a large portion of impositions were linked to repeated capital market defaults. In the rest of the cases, the reasons behind the sanctioning was the absence of data reporting, a rejection, limitation or pending clause pertaining to the audited financial statements or increase in some other, unspecified risk.

In 2018, the total amount of additional financial collateral and supplementary collateral increased considerably, and therefore KELER CCP effectively reduced the risks arising in connection with the participants. In the course of 2018, the lowest total amount of additional financial collateral and supplementary collateral was HUF 446 million in January, culminating at HUF 988 million in November after a steady rise and multiple periodic peaks during the year. The year ended with a total collateral amount of HUF 805 million (Chart 29). Accordingly, the total amount of the instruments imposed by KELER CCP for sanctioning and general risk management purposes more than doubled during the year. However, it must be underlined that the use of sanctions enhances the security of market participants as well as the clearing and settlement process. This is because it reduces the risk exposure of KELER CCP vis-à-vis specific members, and mitigates the overall potential risks arising during the post-trading processes.

Chart 29
Total value of additional financial collateral and supplementary collateral
(2018)



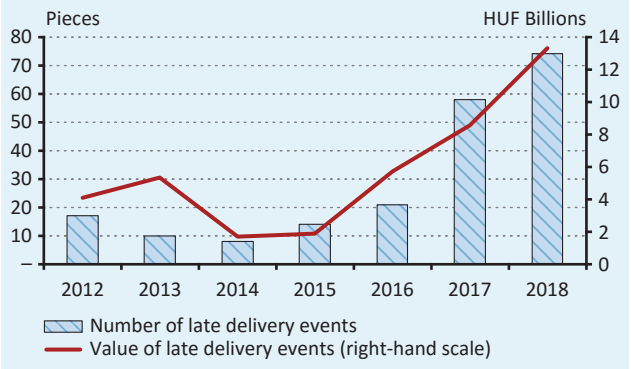
Even though the value of late delivery events was the highest in 2018 since 2012, KELER CCP appropriately managed the situations which evolved, and thus neither participants nor the central counterparty suffered any losses. The fundamental goal of KELER CCP is to ensure the smooth and orderly functioning of capital and gas markets. To that end, the central counterparty operates a membership and guarantee system. If a clearing member has insufficient funds, securities or collateral to settle a transaction when it becomes due, KELER CCP's default management procedure is activated. During this, the company makes arrangements to suspend the trading license of the defaulting clearing member and begins collecting the available collateral. As part of this process, the defaulting clearing member has the chance to deliver on its overdue obligations until a certain grace period expires. If that happens, it counts as late delivery events. KELER CCP provides only financial guarantee for gas market transactions and financial and securities-side guarantee in the case of capital markets. Thus, the default can be financial or securities-side. In 2018, participants failed to deliver their obligations on time in a total of 74 cases, amounting to approximately HUF 13 billion. During the year, most such late delivery events were related to the capital markets, specifically the equity section of the stock exchange spot market.[18]

Since 2012, defaults events were mostly linked to the stock exchange spot equity and bond markets, and therefore

[17] In 2017, additional financial collateral and supplementary collateral were imposed 24 and 10 times, respectively.
[18] 47 cases, totalling HUF 10.6 billion.

the 2018 events did not represent a major change from the earlier situation. Besides the capital markets, a total of 25 defaults totalling HUF 1.6 billion occurred on the gas and electric energy markets linked to KELER CCP. In the period since 2012, the 2018 figures stand out. The higher values of delays on the gas and electric energy markets were mainly due to the fact that, relative to earlier years, turnover on the domestic gas markets spiked from the second half of 2017. This is mostly because one of the domestic markets switched its trading currency from the forint to the euro. 2018 saw cases, amounting to HUF 705 million in total, in which the gas market participants were unable to provide by the deadline the collateral required from them. The remaining events were related to financial defaults, and in the case of the general clearing member service on the energy markets provided in cooperation with the ECC, obligations amounting to HUF 51 million were not executed by the deadline. Similar to the capital market, when it comes to gas markets, most delays by participants and those with the highest total value were linked to the spot market. Although the number of defaults and their total value in 2018 stand out from the data available since 2012, forming historic peaks, the risk management practice of KELER CCP ensured the innocent party that they would receive their claims without taking any losses. This continuously guaranteed the efficiency of domestic capital and gas markets, while also safeguarding the confidence in their security (Chart 30).

Chart 30
Number and value of late delivery events
(2012-2018)



During default events the use of collateral provided by the clearing member in 2018 was principally linked to the gas market clearing and guarantee activities. KELER CCP uses the collateral provided by participants when it would otherwise absorb losses by closing the open positions. There were 16 cases in 2018 when collateral was used, amounting to about HUF 550 million in total. These events were linked to gas market defaults when participants failed to fulfil their financial obligations. The value of collateral used in 2018 was considerably higher than the 2017 figure, when collateral was used in 9 cases, totalling HUF 206 million. These events were also related to gas market participants, where neither the spot market purchase price nor the forward market variation margin were paid. Overall, the value of collateral calculated and collected by KELER CCP covered the risk exposure and any losses of the central counterparty in all cases.

2.2.4 LATEST DEVELOPMENTS RELATED TO THE KELER GROUP

In order to eliminate the negative consequences of the turbulent developments on the international electric energy markets, the extraordinary General Meeting of KELER CCP decided to increase the capital of the company in October 2018. In connection with the clearing of international electric energy markets, KELER CCP provides the services of the Leipzig-based European Commodity Clearing (ECC) to traders who are unable or unwilling to meet the requirements for direct participation. Energy traders access the clearing and guarantee services related to the German, French, Swiss, Czech, Serbian, Benelux and UK electric energy markets via KELER CCP. Due to the regulation of the international energy markets and market events, the value of the guarantee fund maintained by the ECC central counterparty increased considerably in 2018, which directly affected KELER CCP. The negative impacts were strongly amplified by the international regulation effective for central counterparties as well as the evolution of the EUR/HUF exchange rate. On account of the turbulent events on the energy market, the required contribution of KELER CCP increased from the previously stable EUR 3–4 million to EUR 10.1 million by the second half of September 2018. Therefore, the capital of KELER CCP that could be taken into account in capital adequacy calculations steadily declined, as the contribution to other central counterparty guarantee funds must be deducted from the share capital. Consequently, an extraordinary General Meeting was convened, where the owners decided to increase the capital stock of KELER CCP by HUF 2 billion. The share capital of the company rose to approximately HUF 8 billion. This measure strengthened the capital and liquidity position of KELER CCP, and the company's resilience to financial stress was considerably bolstered. Besides the capital increase, several measures were adopted that aim to reduce the negative effects of similar stress situations in the future.

The authorisation of KELER CSD in accordance with the CSDR[19] continues. The CSDR, the regulation on improving securities settlement in the European Union (EU) and on central securities depositories, seeks to set uniform requirements in the EU to promote the safe, efficient and smooth settlement of financial instruments. The CSDR, which entered into force on 18 September 2014 in the form of regulation is directly applicable within the EU, and thus also in Hungary. Central securities depositories had to submit their application for authorisation to the competent authorities by September 2017, and thus within six months following the publication of the regulatory technical standards (RTS) on central securities depositories, which contain the detailed rules. The authorisation process includes three main milestones: the establishment of the completeness of the documents submitted during the authorisation, the assessment of the application for authorisation and the decision on the approval or rejection of the application. KELER CSD initiated the launch of the authorisation procedure at the MNB in September 2017, and it is still ongoing. Similar to KELER CSD, a total of 27 European Union central securities depositories have submitted their applications to the competent authorities, 11 of which were approved in accordance with the CSDR by the end of April 2019, while the remaining authorisation procedures are still pending.

In 2018, the international supervisory college of KELER CCP concluded that the central counterparty's operation was consistent with the relevant EMIR regulation. KELER CCP, as a central counterparty within the European Union, had to undergo a re-licensing process in 2014 to ensure compliance with EMIR. The procedure was performed by a supervisory college consisting of international members. According to the EMIR, KELER CCP must continuously comply with the requirements of international regulations, which is reviewed at least once annually by the supervisory college. In addition, the college must be notified regularly regarding any major changes that affect the licensed activity. In 2018, the annual review was conducted in December. The college concluded that KELER CCP's operation was consistent with the relevant EMIR regulation's requirements during the year. The main topics of the annual meeting included the overview of cybersecurity in relation to the central counterparty, IT operation and capital market default procedures. In addition to the MNB, the Hungarian Energy and Public Utility Regulatory Authority and the European Securities and Markets Authority (ESMA), members of KELER CCP's supervisory college include the authorities of the countries which have participants in KELER CCP, thus the Irish, Belgian and British financial supervisory authorities were also represented at the meeting.

2.2.5 INTERNATIONAL OVERVIEW OF THE SECURITIES FINANCIAL MARKET INFRASTRUCTURES

Following the authorisation of the CSDR regulation, a delegated regulation[20] was published on 13 September 2018 as expected by the industry, with the aim to reduce the number of failed securities transactions and facilitate their settlement on the intended settlement date in order to minimise the exposure of securities settlement system participants to counterparty risk and liquidity risk. The regulation establishes measures, procedures and mechanisms to be designed for investment firms and central securities depositories operating securities settlement systems to prevent and address settlement fails. In order to prevent settlement fails, central securities depositories, in accordance with the regulation, need to set up facilities and put in place certain defined functionalities and procedures mainly supporting an automated settlement process. The measures seeking to address settlement fails are related to the monitoring of settlement fails, the collection and distribution of the cash penalty applicable for settlement fails as well as to the specification of the operational details of the buy-in process launched in the case that financial instruments remain unsettled after the intended settlement date. With the observance of the regulation's requirements the legislator envisage that settlement discipline will be encouraged across the EU. The regulation will enter into force two years after its publication, and thus European central securities depositories, including the Hungarian KELER CSD, have until that time to fully establish compliant measures and procedures for preventing and addressing settlement fails.

In 2018, the MNB – as the member of the Post-Trading Standing Committee (PTSC) engaged with post-trading infrastructures – once again participated in the peer review analysis that aims to compare supervisory practices across the EU Member States. The PTSC is tasked with supporting the work of the European Securities and Markets Authority (ESMA), specifically the exploration of the areas where supervisory practices vary within the EU. Thus, it seeks to harmonise the EU's supervisory activities at the highest level

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

[20] Commission Delegated Regulation (EU) 2018/1229 of 25 May 2018 supplementing Regulation (EU) No 909/2014 of the European Parliament and of the Council with regard to regulatory technical standards on settlement discipline.

possible, by providing resolutions in legal interpretation issues, and it takes part in developing recommendations and guidelines. Each year, PTSC chooses a topic that it analyses at the expert level (peer review), cooperating with the supervisory authorities of the EU Member States. Any deviations found during the analysis are examined, and, where relevant, recommendations are prepared for the supervisory authorities. The main focus of the 2018 analysis was the CCPs' collateral and funding arrangements, but the results have not been summarised yet. 2018 also saw the follow-up on the 2017 analysis that assessed the CCPs' default management procedures. As part of this, the Committee determined the seven supervisory best practices that are expected to be integrated into national supervisory practices. The MNB undertook to supplement its own procedures by the end of 2019 to satisfy this expectation. Naturally, at all times the supervisory authorities need to strive to act in accordance with the policies and practices determined by the PTSC. This activity of the PTSC greatly facilitates the strengthening of supervisory convergence.

Establishing the recovery and resolution framework of central counterparties at the European Union level is underway. Central counterparties are financial market infrastructures performing critical functions, and their appropriate and balanced operation is key to ensuring the uninterrupted functioning of financial markets. Therefore resolution authorities need to have the appropriate measures in place for the potential financial crisis or bankruptcy of central counterparties to maintain critical functions and minimise financial losses. Although the European Union regulations (mainly the EMIR[21]) regulate the operation of central counterparties in detail, there is no EU law on their resolution yet. Therefore the adoption of the currently developed European Union draft regulation will bring about a major change, prescribing new rules for both resolution authorities and central counterparties. Pursuant to the draft regulation, resolution authorities need to set up colleges whose most important task will be to assess the resolvability of the central counterparty and develop a resolution plan. The resolution plan includes the resolution actions to be implemented during resolution. According to the draft regulation, resolution authorities' tools can be classified as follows: position and loss allocation tools, write-down and conversion tool, sale of business tool, creation of a bridge central counterparty tool and other resolution tools. According to the regulation, during the resolution of central counterparties, a payment obligation may be imposed on non-defaulting clearing members, the assets of the central counterparty under resolution may be sold, and the resolution authority may terminate the contracts of the clearing member in default. It should be underlined that the primary aim of these various tools is to reduce the losses of the financial system and to continuously maintain the critical functions of the central counterparty.

[21] Regulation (EU) No 648/2012 of the European Parliament and of the Council on OTC derivatives, central counterparties and trade repositories.

3 Introduction of the instant payment system

Preparations for the introduction of the instant payment system continued in 2018. On the MNB's and GIRO's part, this involved the establishment of the central infrastructure, and in parallel with that, the future system participants also launched their development projects. As the developments progressed, the groundwork was laid for the system participants' tests commencing in 2019. Moreover, liquidity management issues were finalised, and the MNB took further steps to promote the development of innovative payment services based on the basic infrastructure.

Box 3
Pan-European instant payment overview

The ECB's harmonised and standardised pan-European settlement service, the TARGET Instant Payment Settlement (TIPS), was launched on 30 November 2018, enabling payment service providers to offer credit transfer services to customers every day of the year, around the clock, in real time, without an upper limit. The TIPS service provides real-time gross settlement within national economies as well as for cross-border instant payment transactions. Therefore, individuals and companies whose payment service provider joins the pan-European instant settlement platform, can send and receive credit transfers within seconds, irrespective of the opening hours of their payment service provider.

TIPS was developed as an extension of TARGET2, the platform for processing high-value payment transactions operated by the ECB to offer a continuously available, final and irrevocable instant settlement service for retail payment transactions. In the system, settlement is performed in central bank money and only in euros for now; however, if there is a demand for other currencies, those can be integrated into the system. The funds for the transactions can be provided from TARGET2 accounts. TIPS operates on a 24/7/365 principle, but the incoming and outgoing liquidity transfers may only be conducted during the opening hours of TARGET2, and therefore TIPS participants need to take into account their liquidity needs outside the TARGET2 opening hours.

TIPS works on a cost-recovery and not-for-profit basis, thereby supporting payment service providers in applying competitive pricing in the case of the instant credit transfer service offered by them, so that electronic payment methods can spread as widely as possible. Joining the system is free, there are no entry or account management fees. While using the instant settlement service, only 0.2 euro cents are due per transaction, which is capped until 2020. Furthermore, the first 10 million transactions made by system participants before the end of 2019 are free of charge.

The introduction of TIPS, which is based on the instant credit transfer scheme of the Single Euro Payments Area (SCT Inst), aims to strengthen the pan-European access to the instant credit transfer service. Since the introduction of SCT Inst in November 2017, over 2,000 payment service providers have adopted it. However, the adoption rate varies widely across countries, even among euro area member states. Even though in several euro area countries the provision of the access to SCT Inst-based services has progressed well in the case of the majority (typically over 90 per cent) of payment accounts, there are still some member states where SCT Inst scheme adherence is in its early stages. Nevertheless, great headway is expected to be made in the euro area in 2019-2020. However, outside the euro area, the adoption rate of the SCT Inst scheme is much lower, primarily with respect to the development and introduction of instant payment solutions based on national currencies.

With regard to the innovative end-user payment solutions based on instant credit transfer, which are applicable in various payment situations (P2P money transfers, bill payments, purchases at physical acceptance points, purchases at online acceptance points), services are only up and running in a few euro area countries. Such services are available in Belgium, Estonia, France, Lithuania, Germany, Italy, Spain and Slovenia, most of which offer innovative payment solutions mainly for P2P money transfers, bill payments and purchases at online acceptance points, whereas the solutions enabling purchases at physical acceptance points are typically still at the planning stage. In addition, non-euro area countries such as Denmark, the UK, Poland and Sweden offer innovative end-user services based on their existing instant payment infrastructure.

In one-third of euro area countries, SCT Inst transactions are processed through the local clearing house. In another quarter of the euro area member states, settlements will probably be performed in this manner after payment service providers adopt the SCT Inst scheme. In order to provide pan-European access, the concerned clearing houses join the pan-European instant clearing service (RT1) offered by EBA Clearing or TIPS. In the euro area countries where there is no local clearing house offering SCT Inst-based transaction processing service, payment service providers primarily prefer to join the RT1; however, in some cases, TIPS is also an option. Accordingly, for now, a major portion of the SCT Inst-based transactions are conducted through local clearing houses and the RT1. Eleven months after the launch of the RT1, the number of SCT Inst-based transactions processed each day jumped to over 70,000, and therefore the total number of transactions processed in the RT1 reached 5 million in October 2018.

3.1 Establishment of the central system and the initiation of the system participants' tests

The MNB and GIRO stayed on the predetermined schedule with the developments; and therefore, the central infrastructure of the instant payment system launches on 1 July 2019, as originally intended. The first phase of the establishment of the central infrastructure at GIRO was successfully concluded on 31 July 2018, with the delivery of the central software and the establishment of the related infrastructure. Based on the tests that were run, the software versions delivered by the Danish Nets A/S Group contained few problems relative to the complexity of the system. By the end of 2018, the infrastructure necessary for beginning the tests was also established at the MNB and GIRO, and thus the tests between the MNB and GIRO started in December. On 31 January 2019, the last major version of the central system was delivered by the supplier on schedule; therefore, the testing of this version as well as addressing and correcting the errors which occurred in parallel with that started in February 2019. At the same time, the creation of the platform identical to the live system in all its parameters and suitable for testing was started so that performance testing could be performed under real-life conditions. Besides the testing of the system's functionality, performance tests were also run in 2019 Q1, which confirmed the expected requirements. During this, the tests related to the speed and availability of the system confirmed that the processing capability was in line with the expected maximum 500 transactions per second indicator. In addition, preparation for going live continued, as did development of the live business platform.

In parallel with the establishment of the central system, developments also took place by the future system participants; therefore, the testing phase could commence at the end of 2018. The technical connection tests were successfully completed at the end of the year, and thus the necessary connections were established. After that, in January 2019, the voluntary system participant business tests began, during which participants could test the central system with full functionality. Most system participants progressed with the preparations in line with their own predetermined schedule, but in some cases there were already reports of late deliveries. After the voluntary tests, the mandatory system participant testing phase was launched on 1 April 2019, during which the complexity of the testing increased, and more issues were discovered by the system participants. The MNB closely monitored the progress of each system participant. Although most players progressed with the preparation for going live as originally planned, in some cases major risks and delays were identified. At some system participants, these issues affected the complete and successful conclusion of the testing phase, and, in certain cases, the feasibility of going live as originally planned.

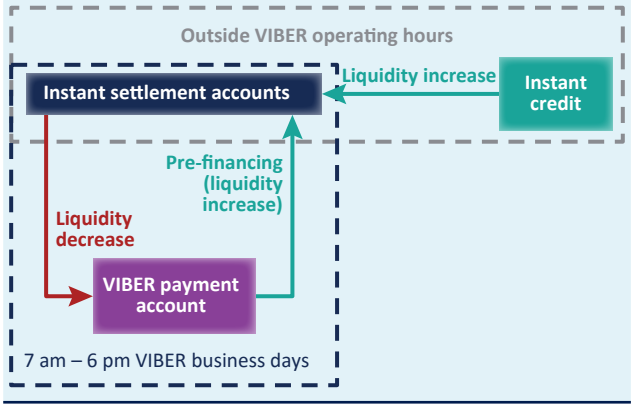
According to the decision of the MNB, the instant payment service will be accessible to all Hungarian bank customers uniformly and with full functionality from 2 March 2020. Bearing in mind the fully secure operation of the instant payment service offered to customers and the in-depth analysis of banks' development and test results, the MNB decided to extend the time available for testing the live systems. The go-live date was postponed to 2 March 2020 to allow all participants adequate time to finalise and fully test the developments. However, the central system goes completely live on 1 July 2019 so that the full functionality can be tested, and a live test run can be integrated into the process, as a result of which, according to the expectations, customers will have access to a fully mature system from 2 March 2020. System participants can participate in the live test run between 1 July 2019 and 31 August 2019 on a voluntary basis. After that, from 1 September 2019, all participants will be required to join. To ensure the uniform go-live date of 2 March 2020, a tight, detailed schedule has been developed for the live test run, setting demanding requirements for system participants. In addition, system participants will have more time to be able to provide innovative payment solutions based on the core infrastructure to their customers from the go-live date, thereby supporting the rapid spread of instant payments.

3.2 Liquidity framework of instant clearing

Instant payments will be executed from the liquidity provided on the instant settlement accounts. In the case of instant payment transactions where settlement between clearing members is needed, the amount will be settled in central bank money provided by the clearing members. In practice, this will mean that if in a transaction the payment service provider of the sender differs from the payment service provider of the recipient, the amount of the transaction will be transferred between instant settlement accounts created by the MNB specifically for this purpose. The amount will be booked from the instant settlement account of the payer's payment service provider to the instant settlement account of the recipient's payment service provider.

The direct participants of the ICS system mainly need to pre-finance the funds for executing the transactions on their instant settlement account. The direct participants of the ICS system need to provide the funds for their own and their indirect participants' outgoing transactions every day, around the clock. During VIBER operating hours (between 7:00 and 18:00 on working days), direct participants can transfer the pre-financed liquidity to their instant settlement account from the balance of their payment bank account using the GIROInstant central liquidity management solution. During VIBER operating hours, direct participants also need to ensure that sufficient pre-financed funds are available not only for intraday transactions, but also for the smooth execution of instant credit transfers submitted outside of working hours (at night and on holidays). Credit institutions subject to the minimum reserve system will have the option to request the MNB to offset their minimum reserves with their liquidity pre-financed from their payment account balance, whereby the liquidity allocated for pre-financing will be subject to the best possible interest rate condition to credit institutions, namely the central bank base rate.[22]

Chart 31
Sources of forint liquidity required to cover instant payments



System participants will have no problem providing pre-financing, but the central bank has prepared a new credit instrument to enhance liquidity security outside of VIBER operating hours. According to the preliminary calculations of the MNB, the existing liquidity in the banking system, including the minimum reserves of over HUF 200 billion, the hundreds of billions of forints of O/N deposits and the potentially available securities pledged for the MNB amounting to over HUF 2,000 billion, will be more than enough to ensure pre-financing for instant payments. To enhance the liquidity security of instant payments during the nights and holidays, the MNB has prepared a concept on credit disbursement outside of VIBER operating hours. In essence, after VIBER closing, the central bank will provide system participants a new credit instrument, the instant credit. Instant credit is a collateralised central bank credit instrument that can be provided by the MNB if securities collaterals are pledged for the MNB in advance. To preserve the liquidity security-enhancing feature of the instant credit instrument, the interest rate of instant credit will be 2 percentage points higher than the interest rate of the O/N collateralised loan instrument.

[22] For more details, see MNB Decree 10/2005 (VI.11.) on the calculation, the method of allocation and placement of minimum reserves, effective from 1 July 2019.

3.3 Development of innovative payment services based on the central infrastructure

Developing innovative payment solutions based on the basic service is essential, because these will allow customers to conveniently initiate instant credit transfers in all payment situations. Although the basic infrastructure allows credit transfers to be continuously available and executed rapidly, similar to cash payments, in order to make instant credit transfer a relevant alternative to cash in all payment situations, convenient and simple innovative payment solutions are needed. In practice, this means for example the development of mobile applications that are user-friendly and allow payments to be made with only a couple of clicks, the scanning of a QR code or the use of NFC data transfer technology (a solution similar to the contactless technology available in the case of payment cards). Interoperability between the developed solutions is also important, so that they can be used in all payment situations. This can help to avoid situations where consumers need to download, install and use different applications in different payment situations, which may easily discourage even users who are open to digital solutions.

The MNB is facilitating the development of innovative payment solutions based on the instant payment system by drafting guidelines on the instant payment processes. The benefits of the instant payment system can be fully utilised if based on this, widely used innovative payment solutions become available to households and companies. To that end, the MNB is drafting a guideline on the main payment processes of instant payments to help developers on the market to better understand the potential uses of instant payments. The guideline will provide market participants with a detailed description on the steps of the payment processes used in different payment situations (P2P money transfers, bill payments, purchases at physical acceptance points, purchases at online acceptance points) as well as on the tasks of the participating players.

The development of innovative services is also facilitated by the Hungarian QR code standard that is being developed by the MNB. A crucial element in the instant payment process is that payers and payees need to be able to identify each other to initiate a request to pay or an instant credit transfer. The quickest and most convenient way for this is if the parties share information with each other through an automated data transfer method. Among other solutions, QR codes, with the help of which already several (mobile) payment services are available all over the world, can be used for this. As in the case of Hungarian instant payments the law stipulates that data entry methods, thus also QR codes, need to be readily interpretable to everyone, the development of proprietary data entry solutions cannot provide a competitive edge; at the same time, the emergence of many different solutions signals a growing demand for additional development for market participants. For example, in the case of mobile payment applications, the payment solutions need to be prepared to handle various different data entry methods to ensure an adequate market share. In line with the demands of market participants, this situation is managed by the development of a Hungarian QR code standard under the guidance of the MNB, which may greatly facilitate the creation of widely used payment solutions based on instant payment.

Several market participants have already started developing innovative services related to the instant payment system. The MNB, as the professional leader of the project aimed at the Hungarian introduction of instant payments, continuously monitors not only the progress of banks' internal IT developments, but also the development of innovative payment solutions. A detailed questionnaire focusing on the latter topic was sent to account-servicing payment service providers, based on which several actors in the Hungarian banking sector plan to provide innovative payment services after the system is launched. Other important features of the central infrastructure include openness and interoperability, which, from a service development perspective, means, among other things, that non-bank payment service providers and retailers can both join. This means that a payment ecosystem may emerge related to the instant payment infrastructure that can be directly joined by not only account-servicing payment service providers but also payment initiation service providers and retailers.

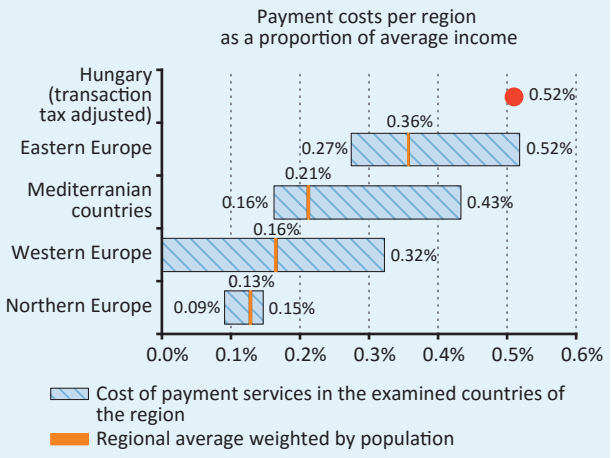
The MNB very much expects payment service providers to develop innovative services to provide access for their customers to instant payments. If payment service providers strive to fulfil only the minimum requirement in

their developments related to instant payments, they may be at a competitive disadvantage, even in the short run. For example, their customers will be able to use instant payments in a highly limited manner due to the lower quality of the service than at other service providers, which may lead to weakened customer relations and loss of customers. Therefore, payment service providers need to act proactively and provide innovative payment services to their customers, including offering the option to receive and send requests to pay messages. Based on this, the MNB very much expects that by the new go-live date of the instant payment system, as many innovative end-user payment solutions will be available to customers as possible, and that it will also be possible to initiate and receive request to pay messages from that date. This may considerably contribute to the initial rapid spreading of instant payments and the dynamic increase in transaction volume, which is in the common interest of all actors concerned.

4 Pricing issues related to conducting payments

By international standards, the price-level of Hungarian consumer payment services is high. Since the price of payment services significantly influences the use of the electronic payment methods, in 2018 the central bank examined the features of Hungarian banks' price setting in international comparison.[23] The relative monthly fees (compared to the average net wages of the given income category) of payment services incurred by retail customers are higher in Hungary than in any other country under review in all customer profiles (low-, average-, high-income), even adjusting for the effect of the financial transaction tax (FTT), which considerably impedes the wider adoption of electronic payment methods (Chart 32). One of the main reasons behind this is that in Hungary, fees related directly to transactions dominate.

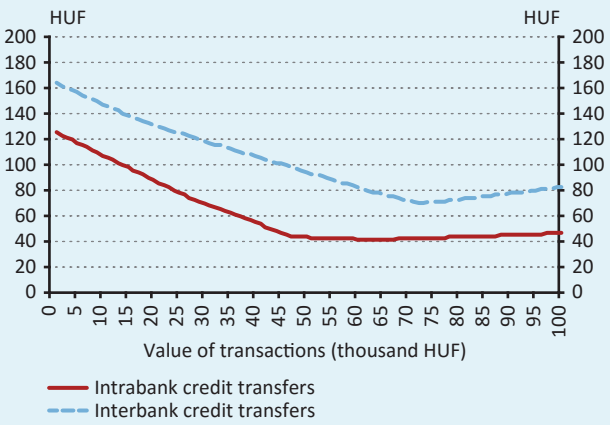
Chart 32
Payment costs relative to income in the different regions (in the case of average-earner customers)
(2018)



There are several structural characteristics in the price setting of Hungarian banks that are internationally not typical at all or only moderately on the one hand, and unfavourable from the perspective of the further development of Hungarian payments on the other hand.

Retail customers in Hungary usually pay fees in proportion to the number or value of transactions. While in the case of the fees directly linked to transactions more frequent use means higher fees for customers, in the case of package pricing this effect discouraging use does not take hold. In Hungary, the fees of the most frequent and, from the perspective of the electronisation of cash payments, most important low-value retail transfers are disproportionately high due to the widely used minimum fees, while value-based fees unreasonably increase the costs of high-value transactions (Chart 33). This practice greatly hinders the electronisation of the typically low-value cash transactions.

Chart 33
Average fee per transaction of low-value credit transfers weighted by the number of customers and adjusted for the transaction tax, by transaction value
(2018)



The dominance of the fees directly linked to transfer transactions is especially unfavourable because as instant payments are introduced, the opportunities for using credit transfers will become much broader than before. If the current banking fee structure remains unchanged, Hungarian consumers and firms may see that they can take advantage of the newly introduced instant payment service to the extent required and expected by them only

[23] https://www.mnb.hu/letoltes/mnb-penzforgalmi-arazas-nemzetkozi-osszehasonlitasban-002.pdf

at much higher costs. From the perspective of banks, the low utilisation of the system due to the high customer fees may lead to a situation where the significant development costs incurred during the introduction of instant payments fail to strengthen their customer relations, the more active use of banking services and the decline in cash use, which is also costly to banks. From the perspective of the common good, banks' current pricing structure entails the risk that the electronic payment methods that have lower social costs will not spread to the extent possible under optimal conditions.

As regards payment services, the international best practice is clearly package pricing, where no direct fees are linked to credit transfers. The analysis of foreign data shows that in most European countries, banks typically do not determine payment service fees based on the number or value of transactions, but collect them on a package basis, as part of the account management fees. This means that foreign bank customers usually do not face separate fees for individual credit transfers, similar to cash and bank card payments. In successful instant payment systems, retail customers are not charged direct fees linked to transactions. According to a study by the European Central Bank,[24] in most already existing European instant payment systems (e.g. in the UK, Denmark and Sweden), retail consumers can typically use the service free of charge. Besides, package pricing is the dominant pricing principle in several other retail services where digitalisation plays a major role in development (e.g. Internet access, mobile communication, streaming services).

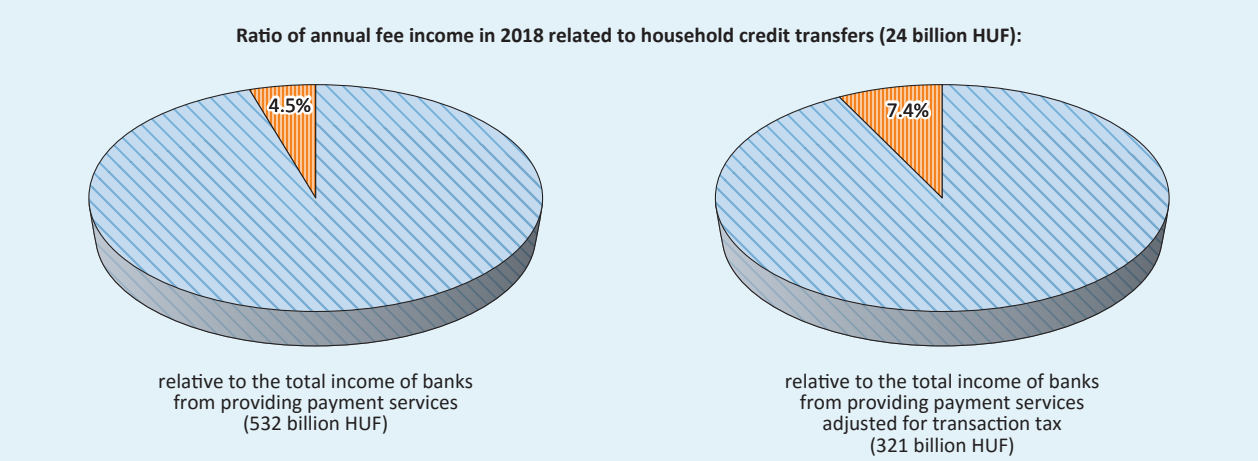
A good example for pricing that acts as an appropriate incentive is the fee structure of bank card payments. Hungarian banks voluntarily introduced package pricing in the bank card business years ago, whereby customers are allowed to conduct an unlimited number of card purchases irrespective of transaction value after paying nothing more than the annual card fee. Obviously, if – contrary to the current practice – customers were charged not only the annual card fee but also fees for the individual card payments, there would have been no steady rise in the volume of such payment transactions of 20–25 per cent annually in recent years, and contactless payment, which expedites low-value card purchases, would not have enjoyed the tremendous success it does today.

An important condition for the continued optimal development of Hungarian electronic payments is that, as part of the basic service, banks should allow all Hungarian retail customers, in the case of credit transfers as well, to initiate transactions of an unlimited number and value without extra costs in exchange for the monthly account management fee. We believe that from the perspective of the development of Hungarian payments, the best method for achieving this goal would be if banks unilaterally waived the current fees directly linked to the transactions that are processed by the rules of instant credit transfers for all account products used by retail customers, and they did not charge such a fee for the account products to be introduced later. This step is greatly facilitated by the new pricing policy of GIRO Zrt. and the 2019 change in terms of the transaction tax. Following the fee reductions in previous years, GIRO Zrt. switched to using a package-type fee from 1 January 2019, which better supports the increase in the volume of credit transfers, to further promote electronic payments. This means that the fees charged are not directly linked to individual transactions, as GIRO Zrt. sets an annual system usage fee for system participants. And the fact that the government decided to exempt credit transfers below HUF 20,000 from the transaction tax from 1 January 2019, was a welcome measure.

Elimination of the transaction fees linked to credit transfers also tallies with the interest of banks, because by enhancing their competitiveness they benefit from this much more over the medium term than they lose in the short run due to the small contraction in their payment revenues. The MNB's analyses show that Hungarian retail customers use payment services at a higher price than people abroad, and waiving the fees directly linked to credit transfers could contribute to reducing this, while cutting the payment fee income of the banking sector by 4–7 per cent (Chart 34). After the amendment to the Act on the Transaction Tax in 2019, banks can clearly be expected to eliminate transaction fees in the case of the retail credit transfers of under HUF 20,000, and it would still be in their interest in the case of the transactions over HUF 20,000. This is mainly because even though they would feel the effect of the revenue loss, competition is expected to increase considerably in the near future, due to the challenges posed to traditional banks by fintech and bigtech companies, which typically offer solutions with a low or non-existent transaction fee. With their current pricing structure, Hungarian banks should expect to see their market share shrink considerably against their new competitors, especially among younger consumer groups that are open to innovative technologies, which may significantly influence the strength of banks' customer relations and the composition of their customer base.

[24] https://www.ecb.europa.eu/pub/conferences/shared/pdf/20171130_ECB_BdI_conference/payments_conference_2017_academic_paper_hartmann_hernandez_plooij_and_vandeweyer.pdf

Chart 34
Annual fee income of the banking sector related to credit transfers
(2018)



Widely used package pricing as a result of waiving the fees related to transactions would also foster the financial awareness of Hungarian households, by creating transparency and comparability across bank account products. From the perspective of customers, the beneficial effect of this change would also be seen by customers in that – instead of the current highly complex and convoluted pricing structures – banking fees would be much easier to compare. This change can therefore improve Hungarians' financial awareness, support account choice decisions and boost competition between payment service providers.

5 Material and practical issues of the new Payment Service Directive and the related guidelines and recommendations

The new Payment Services Directive entered into force on 13 January 2018. The most important rules complementing the new Payment Services Directive include the regulatory technical standards on secure communication and strong customer authentication (Strong Customer Authentication RTS). The rules of the Strong Customer Authentication RTS will apply in Hungary from 14 September 2019. In the transitional period between the two dates, payment service providers have to comply with certain provisions concerning the security of payments in different ways.

The introduction of strong customer authentication and third-party provider access to customer accounts, representing one of the greatest changes in the new Payment Services Directive, is approaching completion. During the transitional period, account-servicing payment service providers need to provide access for the new third-party providers, such as payment initiation service providers and account information service providers, to the customer account, but not necessarily in line with the rules of the Strong Customer Authentication RTS. The rules of the Strong Customer Authentication RTS apply from 14 September 2019, and accordingly payment service providers need to provide an application programming interface (API) for their systems. The availability of the API needs to match the availability of the interfaces where account servicing banks enable their customers to initiate payment transactions and see their payment account balance via banks' online platforms. Account servicing payment service providers shall make available for licensed/registered third-party providers the API documentation at no charge from 14 March 2019, or if the API is launched after 14 September 2019, then six months before its planned launch date, and also to those who have already started their registration/licensing procedure. The summary of the documentation must be publicly available on banks' websites. Furthermore, payment service providers need to provide the API connection and operational testing facility by these deadlines. Use of the API may not be subject to the condition that a legal relationship exist between the third-party provider and the account servicing payment service provider. Out of the account servicing payment service providers, three had not disclosed their API documentation on their websites by the end of May 2019. Accessing the published documentation did not go smoothly in all cases, as in some situations they were unavailable due to some error in March, in the days directly following the disclosure deadline. The account servicing payment service providers that did not meet their obligation by the specified deadline can expect to be fined.

If the account servicing payment service providers implement the API as a dedicated interface (dedicated API), a contingency mechanism should also be provided, but the MNB may grant an exemption from this. The aim of introducing the fall-back mechanism was to prevent account servicing payment service providers from disadvantaging the new third-party providers by the weaker performance or quality of the dedicated API. Therefore, if the availability of the dedicated API falls below a specific level, the third-party provider can still access the customer's payment account information through the contingency mechanism. The MNB may, at the payment service providers request, grant an exemption from the requirement to set up a contingency mechanism if the conditions for such exemption described in the Strong Customer Authentication RTS are met. No exemption was granted up until the end of May 2019, because no such request was received by the MNB. The account servicing payment service provider loses the exemption if the dedicated API fails to satisfy the parameters related to the required availability and performance for over two subsequent weeks.

The entry of innovative non-bank players to the market is expected to greatly improve the quality of service offered to customers, but a new approach to security risk management will be necessary, which will be monitored by the MNB. Access to the customer accounts and electronic payment transactions need to be secure to avoid data theft and fraud. In addition to strong customer authentication, the establishment of appropriate fraud monitoring is also important, to enable the detection or prevention of unauthorised or fraudulent payment transactions by payment service providers. Modern fraud monitoring

systems rarely comprise a single tool: instead, they are a solution that integrates various modern technologies while also being consistent with market best practices and the latest market requirements. Generally, these solutions need to take into account the new generation of end-users and third-party providers, the new and more complex types of attacks, security risks and the changing regulation as well. Moreover, payment service providers need to have in place an appropriate operational and security risk management framework related to the payment services they offer. To this end, the European Banking Authority (EBA) published detailed guidelines that determine the requirements for establishing, implementing and monitoring security measures for managing operational and security risks related to payment services. The EBA guidelines have been applicable since 13 January 2018. To foster the appropriate implementation of the guidelines, following consultation with market participants, the MNB issued an MNB recommendation,[25] which has applied since 1 November 2018. In accordance with this, an efficient risk management procedure in line with the risk rating of operational and security incidents and a corresponding testing framework must be created. Furthermore, procedures for enhancing customers' awareness of security risks and risk-reducing measures (e.g. customer information, security awareness training) must also be designed.

Box 4
Usability of the information obtained during the account information service

Third-party providers may access all personal and payment data related to the payment account within the framework of the account information service. This may provide an opportunity for fraud; thus the account information service provider shall not request sensitive payment data linked to the payment account. With respect to the activities of the account information service provider, the name of the account owner and the account number and all other data that are necessary for the provision of the account information service required by the customer do not constitute sensitive payment data. The scope of sensitive payment data should be examined with respect to the substance of the account information service in question. The account information service provider shall not use, access and store any data for purposes other than the provision of the account information service explicitly requested by the customer, in accordance with the European data protection rules. It is especially important that customers obtain an accurate, comprehensive description of the data which the account information service provider accesses and the purposes for which it uses such data. The aggregated online information on the customer's payment account and accessed via online interfaces by the account information service provider may be shared with other legal or natural persons or used by the account service provider for other services irrespectively of the account information service if customers give their explicit consent to such sharing and use.

The MNB provides help in strengthening the risk awareness of the service users through its analyses of the relevant new, more detailed reporting. In 2018, payment service providers had to comply with new, more detailed reporting requirements as the new Payment Services Directive was introduced, but the overhaul of reporting was not completed. Nevertheless, the detailed reporting requirements related to major incidents, authentication and exception management, the assessment of operational and security risks as well as non-refunded payment transactions and fraud should not be regarded as an extra burden, but more as a tool for maintaining customer confidence and strengthening risk awareness. Providing regular information to customers on the risks affecting them in relation to the provision of payment services is primarily the task of payment service providers, but this may also be supported by the official statistics published on the MNB's website based on the reporting. Thanks to the information from the reporting, which is shared with European supervisory authorities, supervisors obtain an accurate, detailed picture about payment service providers, the use and risks of the relevant services as well as the trends, the publication and clarification of which helps to provide information to service users on the potential risks affecting them related to the provision of payment services. With this information, supervisory authorities and legislators have the chance to fine-tune the current regulation, which may further reduce fraud.

On the part of payment service providers, the accurate and timely fulfilment of the reporting requirements is crucial, and this is continuously monitored by the MNB. In general,

[25] Recommendation No. 26/2018 (VIII.16.) of the Magyar Nemzeti Bank on the security issues related to the operational and security risks of payment service providers.

the inspections found that some payment service providers did not take seriously their obligations to submit the above-mentioned reporting documents. One of the most severe infringements was that they did not submit their updated and comprehensive assessment of the operational and security risks and on the adequacy of the mitigation measures and relevant control mechanisms implemented in response to those risks by the prescribed deadline of 13 January 2019. The payment service providers concerned are requested by the MNB to fully meet their reporting requirements or face penalties. The establishment of new reporting documents and the overhaul of the existing ones has entered into the final phase, and the process will conclude by the end of 2019. After that, payment service providers can fulfil their reporting requirement in a more transparent, integrated and adequately flexible data structure, in the breakdown and structure consistent with the new international data requirements.

Box 5
Payment service providers' liability for unauthorised payment transactions

The revised liability rules of the new Payment Services Directive are now considerably more stringent regarding payment service providers' liability for unauthorised payment transactions. In such cases, the payment order was not initiated by the authorised account holder or cardholder, but the payer's payment service provider executed it. The Payment Services Act allocates the loss arising from the execution of the unauthorised payment transactions to the payer's account servicing payment service provider, even if the payment order was initiated through a payment initiation service provider. If the latter is liable for the loss, the payment initiation service provider shall immediately compensate the payer's account servicing payment service provider for the losses incurred or sums paid as a result of the refund to the payer. In the case of the loss, theft or misappropriate use of a cash-substitute payment instrument, the account servicing payment service provider of the consumer or the microenterprise may exempt from this strict liability only if it has reasonable grounds that the loss caused by the unauthorised payment transaction was due to the customer acting fraudulently or failing to fulfil the obligations stipulated in the Payment Services Act with intent or gross negligence. For instance, the account servicing payment provider needs to prove that the customer kept the PIN code next to its payment card or saved its Internet banking user name and password to its mobile phone or disclosed these personal security credentials to a third party.

The account servicing payment service provider shall refund the customer the amount of the unauthorised payment transaction immediately, or no later than by the end of the following business day after being informed of the transaction and restore the debited payment account as if the unauthorised transaction had not taken place. If the payment service provider has reasonable grounds to suspect fraud and reports these grounds to the MNB in writing, the account servicing payment provider is exempted from the one-business day refund obligation. However, reporting its fraud suspicion does not exempt the payment service provider from its liability for the unauthorised payment transaction, it merely receives more time based on the prevailing provisions on handling complaints to refund the losses incurred or prove that the customer acted fraudulently or with intent or gross negligence.

Account servicing payment service providers are required to examine all complaints on a case-by-case basis, and thus general exclusion of their liability in the framework contract is prohibited. They are required to investigate the circumstances of the unauthorised payment transaction with due care, collect evidence, and send to the customer a reply letter on the merits of a case detailing the acceptance or rejection of the complaint together with the available evidence, paying attention to the relevant deadlines (sending the response letter no later than 15 or up to 35 business days).

When providing evidence, the account servicing payment service provider needs to take into account that in and of itself the use of cash substitute payment instrument does not prove that the customer acted fraudulently, authorised the payment transaction in question or violated the obligations pertaining to the cash substitute payment instruments with intent or gross negligence.

King Louis I (‘the Great’)

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

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

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

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

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

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

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

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