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Nothing is free: A survey of the social cost of the main payment instruments in Hungary

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MAGYAR NEMZETI BANK

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The views expressed here are those of the authors and do not necessarily reflect the official view of the central bank of Hungary (Magyar Nemzeti Bank).

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Nothing is free: A survey of the social cost of the main payment instruments in Hungary

(Semmi sincs ingyen: A főbb magyar fizetési módok társadalmi költségének felmérése)

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Abstract

The study applies two approaches for the estimation of the social costs of main payment instruments (cash, debit card and credit card transactions, credit transfers, direct debits, business-to-business direct debits, postal inpayment money orders, postal outpayment money orders for pensions) used in Hungary in 2009. The first approach is based on the current payment structure, while the second approach is based on a more modern, hypothetical payment structure involving less cash, with no use of paper-based methods. In the first approach, the social cost amounts to HUF 388 billion, i.e. 1.49% of the GDP, while in the second approach, such cost amounts to HUF 285 billion, i.e. 1.09% of the GDP. In this context, social cost means the use of all resources (time, materials and money) necessary for the execution of payments, calculated as a net value (i.e. exclusive of fees paid for payment services). Thus, HUF 103 billion could be saved in social costs if the use of payment instruments were to be modified.

JEL: D12, D23, D24.
Keywords: private cost, social cost, net private cost, unit cost, social savings, cash transactions, debit card transactions, credit card transactions, paper-based credit transfers, electronic credit transfers, direct debits, business-to-business direct debits, postal inpayment money orders, postal outpayment money orders for pensions.

Összefoglaló

A tanulmány a Magyarországon használt főbb fizetési módok (készpénzes, betéti és hitelkártyás műveletek, átutalások, csoportos beszedések, felhatalmazói levélen alapuló beszedések, készpénz-átutalási megbízások, nyugellátási utalványok postai kifizetése) 2009. évi társadalmi költségének becslését tartalmazza, két megközelítésben. Az egyik megközelítésben a jelenlegi forgalmi szerkezet alapján, míg a másikban egy korszerűbb, a készpénzt kevésbé és a papíralapú megoldásokat egyáltalán nem használó hipotetikus forgalmi szerkezet alapján. Az első megközelítésben a társadalmi költség 388 milliárd forintra, azaz a GDP 1,49%-ára, míg a második megközelítésben 285 milliárd forintra, azaz a GDP 1,09%-ára tehető. A társadalmi költség alatt értve a fizetési módok lebonyolításához szükséges összes erőforrás igénybevételét (idő, eszköz és pénz felhasználását) nettó módon (azaz a pénzforgalmi szolgáltatásokért fizetett díjak nélkül). Társadalmi szinten tehát 103 milliárd forintot lehetne megtakarítani, ha a fizetési módok használata módosulna.

Summary

With the involvement of the parties concerned, the MNB has carried out a comprehensive survey to estimate the social cost of the most frequently used payment instruments used in Hungary: cash, debit and credit card transactions, paper-based and electronic credit transfers, direct debit and business-to-business (B2B) direct debits, postal inpayment money orders (postal "yellow cheques"), postal outpayment money orders for pensions. The social cost includes all resource requirements arising in the payment chain, i.e. the cost of all stakeholders of the payment chain (central bank, cash-in-transit companies, payment service providers and customers), excluding any fees paid by the stakeholders to each other within the payment chain.

We prepared the estimate using two approaches: on the one hand, based on the current structure, and on the other hand, based on the payment structure characteristic for northern European countries, where cash is used to a lesser extent and paper-based instruments have been practically completely substituted with electronic instruments. In the first approach, the social cost amounts to HUF 388 billion, i.e. 1.49% of GDP, while in the second approach, the cost is estimated at HUF 285 billion, i.e. 1.09% of GDP. This clearly indicates that a more intensive use of electronic payment instruments would result in annual social cost savings amounting to HUF 103 billion, i.e. approximately 0.4% of GDP. The unit cost of the specific payment instruments would also change: debit card transaction, direct debit and electronic credit transfer transactions would be much cheaper, and these transactions would even have the lowest social cost, while cash transactions would become more expensive.

The difference between the two approaches results from the different cost structure – the share of fixed and variable costs – of the specific payment instruments. In line with international results, the domestic estimate also shows that the share of variable costs is much higher in relation to cash and cash-based payments (postal inpayment money orders and postal outpayment money orders for pensions), while the share of fixed costs is dominant for electronic payment instruments linked to payment accounts. Therefore, variable costs will be the dominant factor in the case of a shift in the use of payment instruments. The share of variable costs in cash, paper-based and postal payment instruments is so high that their substitution with electronic transactions would result in social cost savings.

Table 1
Social cost of main domestic payment instruments and attainable savings

	In current situation	In hypothetical situation	Savings*
Social costs (HUF billion)	387.81	284.50	–103.31
Social costs/GDP (%)	1.49	1.09	–0.40
Unit costs for payment instruments (HUF)			
Cash transactions	73.66	87.81	14.15
Debit card transactions	201.13	45.63	–155.49
Electronic credit transfers	174.15	80.47	–93.68
Direct debits	100.39	47.66	–52.74
Total	106.01	77.78	–28.23

Note
** with – sign: decrease in costs*
without sign: increase in costs
Source: MNB.

This is the current direction of the structural evolution of the use of payment instruments, but the pace is slow. It would be justified to accelerate the process to improve the level of social welfare and realise the potential savings as early as possible. The MNB has initiated a dialogue on these issues with the regulators, service providers and users.

In the course of the survey, we not only quantified the social costs related to the payment instruments, but also the fee revenues and fee payments linked to the payment instruments by stakeholders. We established that payment service providers cross-subsidise certain payment instruments. In other sectors (households, corporates, public sector), the costs relating to payments are always higher than the revenues, as the revenues are not generated from payments; only their costs can be reduced through the selection of payment instruments.

1 Background, introduction

In recent years, numerous studies have been published in Europe and elsewhere on the (social and private) cost of payment instruments used in certain countries. (In Europe, the Norwegian, Swedish, Belgian and Portuguese central banks conducted such surveys.) In early 2009, the ECB launched the preparation of a pan-European survey based on a uniform methodology. In reaction to these developments, the MNB decided to carry out the analysis – in accordance with the pan-European survey[1] – with respect to the most frequently used domestic payment instruments.

Experts are well aware that the execution of payments involves substantial costs and the payment market is a network market. Hence, the execution of payments assumes the establishment of networks and cooperation between service providers which are in competition with one another. On this market, market mechanisms in their own right do not necessarily lead to achieving maximum welfare. Moreover, the use of cash in Hungary is excessive, as indicated by the 8% GDP-proportionate ratio of cash in circulation, which is high even on an international scale. In addition to the assessment of the current conditions, the chief motive of the MNB was to analyse the possibilities and outline possible ways to achieve higher efficiency.

The MNB proceeded along the lines laid down by the ECB in relation to data collection, but completed the survey and the analysis in a wider scope and over a shorter period. In addition to cash, payment card transactions, credit transfers and direct debit transactions, we also analysed postal inpayment money orders ("yellow cheques"), which are widely used for domestic payments, and the postal outpayment money orders for pensions. Within the framework of the household survey, we also collected information on the places, quantities and amounts paid with prepaid vouchers (food vouchers, recreation vouchers, etc.) and loyalty cards, and on why these instruments were used for payment. We exceeded the common minimum requirements set by the ECB for the survey, and our analysis also covered total corporate payments and household payments. Overall, we assessed the cost of the most frequently used domestic payment instruments on the basis of data provided by 12 credit institutions, 3 cash-in-transit companies, Magyar Posta Zrt. (Hungarian Post Ltd.), GIRO Elszámolásforgalmi Zrt. (hereinafter "Giro Zrt."), several hundred corporates, over 1,200 households and the in-house data of the MNB.[2]

In Chapter 2 of the study, we present turnover data to illustrate payment instruments currently used in Hungary. Chapter 3 summarises the methodology of the survey, with a focus on issues pertaining to all or most of the payment instruments. In Chapter 4 we describe the payment process and the participants for each payment instrument and the current cost position (the latter in a breakdown by stakeholders, as well). Chapter 5 quantifies the potential savings resulting from a substantial substitution of various cash- and paper-intensive payment instruments. In Chapter 6 we summarise the results of the main foreign cost surveys, discuss in a greater detail the regulatory initiatives relating to the improvement of the efficiency of payment instrument selection and the main directions and findings of international research relating to retail payments. Chapter 7 examines statutory regulations restricting/impeding the efficient selection of payment instruments. And in Chapter 8 we briefly summarise the steps which – depending on consultations in progress with the parties concerned and the integration of such steps into general economic policy – may lead to a socially more efficient use of payment instruments.

[1] Currently, 14 other central banks (10 euro area and 4 non-euro area central banks) are taking part in the pan-European survey.

[2] The quantity of data we processed approximates 1 million and all data providers operating as legal entities compiled information for us from thousands of data. A survey of such depth has never been conducted in Hungary; as a result of multiple data reconciliation and cross-checks, our analysis could be launched on adequately reliable foundations.

The study has 5 annexes. Annex 1 contains the questionnaires used in the survey (only in Hungarian). Annex 2 lists the credit institutions and cash-in-transit companies participating in the survey. Annex 3 contains the target and actual numbers for corporate sampling, while Annex 4 shows the actual results of the household consumer sampling. In Annex 5 we detail the estimate relating to the distribution of cost types which is important in terms of quantifying the savings, showing the distribution of the social cost of payment instruments based on fixed and variable costs. The list of references is provided at the end of the study.

2 Turnover data for the main domestic payment instruments

Our analysis focused on non-time critical payments, and therefore we did not deal with either interbank payments or other payments which are transacted through the real time settlement system (VIBER).[3] Non-time critical payments can each reach several million forints, although their value is typically much less, and therefore these are often referred to as retail payments in the literature.

The table below shows turnover data of the main payment instruments, based partly on existing statistics and partly on the surveys and estimates prepared for the purpose of this project. The information in the rows of the table on cash transactions is derived from macro and micro level estimates, which we discuss under point 4.1.2. Statistics are available in relation to debit and credit card transactions. Statistics provided by Giro Zrt. are available in relation to credit transfers, prompt collections and direct debits; these, however, only contain transactions between the customers of two banks, and thus these had to be supplemented with items based on estimates, i.e. transactions between two customers of the same bank. Moreover, as a result of legislative amendments, busines-to business (B2B) direct debit was introduced as a new payment instrument in 2009, and estimates were required for this item as well; see details under points 4.3.2., 4.4.2. and 4.5.2. Statistics are available for all three postal items (postal inpayment money orders, postal outpayment money orders for pensions and postal outpayment money orders for social benefits and other purposes). We estimated payments related to prepaid vouchers on the basis of the household survey conducted for the purpose of this project.

It is clear from the above table that the share of cash transactions is highest in terms of quantity (76.08%), while credit transfers show the highest share (86.02%) in terms of value.

Table 2
Estimated turnover data of main non-time critical domestic payment instruments for 2009

	Payment instruments	Number	Value	Share (%) based on	
		(in millions)	(HUF billion)	number	value
1.	Cash transactions	2,834.82	51,454.18	76.08%	12.20%
2.	Debit card transactions	150.25	1,050.35	4.03%	0.25%
3.	Credit card transactions	24.57	200.42	0.66%	0.05%
4.	Credit transfers, of which	277.23	362,772.29	7.44%	86.02%
a)	paper-based	47.13	61,671.29	1.26%	14.62%
b)	electronic	230.10	301,101.00	6.18%	71.40%
5.	B2B direct debits	0.86	507.43	0.02%	0.12%
6.	Direct debits	77.00	639.97	2.07%	0.15%
7.	Postal inpayment money orders	271.48	2,990.43	7.29%	0.71%
8.	Postal outpayment money orders for pensions	22.00	1,541.93	0.59%	0.37%
9.	Postal outpayment money orders for social benefits and other purposes	15.98	440.80	0.43%	0.10%
10.	Prepaid (food and recreation) vouchers	52.08	118.35	1.40%	0.03%
Total		**3,726.26**	**421,716.15**	**100.00%**	**100.00%**

Source: MNB.

[3] It constitutes the property of the MNB.

Among the payment instruments listed in the table, two of these are used exclusively through (so-called point-of-sale type) transactions involving a physical connection (cash transactions, prepaid vouchers). Six instruments are used exclusively in payment situations involving remote payments (credit transfer, B2B direct debit, direct debit, postal inpayment money order, postal outpayment money order for pensions, postal outpayment money order). Finally, credit and debit card transactions are used in both cases, but typically in situations involving a physical connection.[4]

Among the ten payment instruments included in the table above, we chose those listed in rows 1-8 for the cost survey. As a key criterion of selection, our analysis covers all payment instruments which are linked to a high amount of payments or which potentially enable substantial savings, assuming a larger shift in the selection of payment instruments.

[4] In relation to remote payments, e.g. Internet purchases.

3 General description of the methodology

We begin the general description of the methodology with the definition of the terms constituting the starting point of the methodology, followed by the description of the particular main elements of the methodology chosen by the ECB and the MNB, highlighting minor differences between the two approaches, where necessary.

3.1 DEFINITION AND PARTICIPANTS OF THE PAYMENT CHAIN

All payments involve the transfer of money between the payee and the payer, which may be made in cash or with scriptural money. Numerous other participants are required to enable performance of the specific payment transaction between the given payee and the payer. Thus, the payment chain first includes participants which take part in the transaction of the given payment instrument (producing, providing service, settling, enabling it), and second the end users of the payment instruments: the customers (households, corporates, public sector: central government and local governments, etc.).

- The central bank, as the issuer bank, issues banknotes and coins, and as the settlement bank, conducts the settlement of the HUF debit and credit positions of Interbank Clearing System members vis-à-vis each other on the given settlement day and settlement between the MasterCard resident member banks, and operates VIBER. (In addition, it naturally also has regulatory and oversight functions relating to payments.)

- The Interbank Clearing System (ICS) conducts the clearing of payment transactions between banks and the customers of banks by integrating the latter in the HUF debit and credit positions of system members vis-à-vis each other on a given day.[5] GIRO Zrt. operates the ICS.

- Credit institutions and Magyar Posta Zrt. (Hungarian Post) provide payment services on behalf of their customers. Credit institutions are also entitled to issue payment cards (credit and debit cards). They carry out payment orders between their own customers within their own settlement system and launch orders for clearing relating to the customers (as payees or payers) of other credit institutions in the ICS or VIBER, depending on the order of the customer. Magyar Takarékszövetkezeti Bank (MTB, i.e. Bank of Hungarian Savings Co-operatives Private Limited Company) plays a special role among credit institutions, providing various services to the integrated savings co-operatives as an umbrella bank. With regard to payments related to saving co-operatives, they play a significant role in filling a clearing function, in cash supply and the issue of cards. (Accordingly, MTB, for example, centrally orders cash required by the savings co-operatives; MTB is the card issuer, while the savings co-operatives are the distributor agents.) MKB also functions as a settlement bank in the case of transactions related to Visa cards.[6]

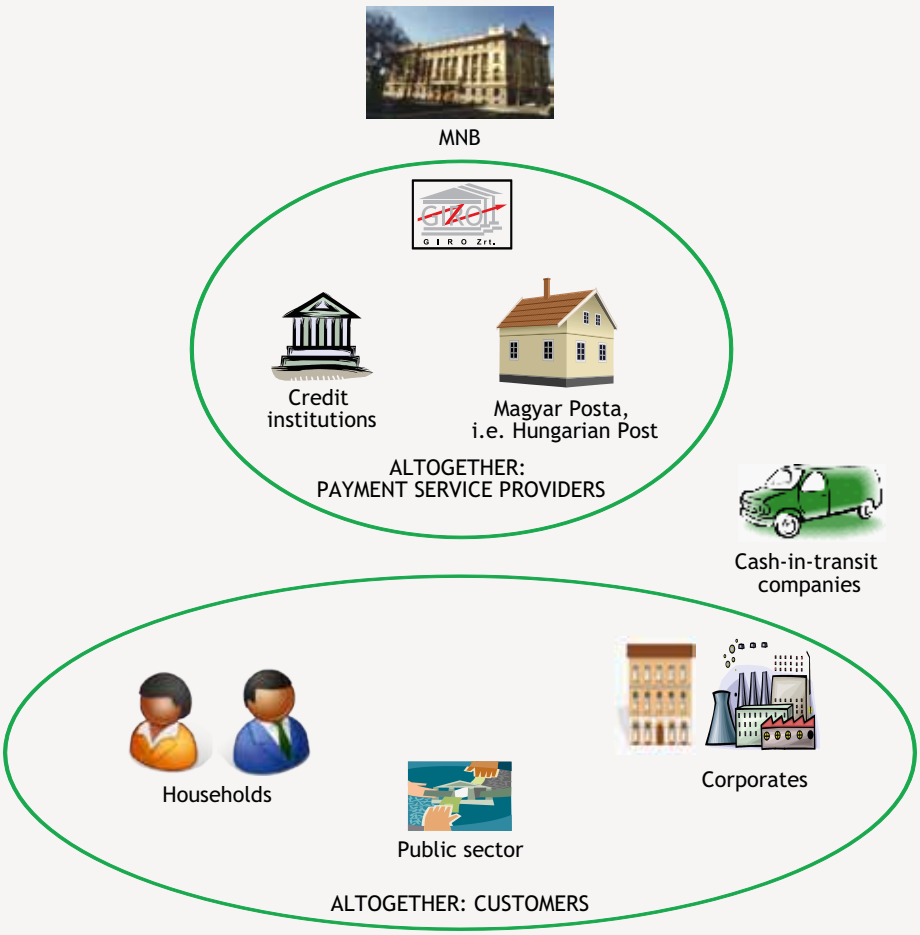
- Cash-in-transit companies provide wide ranging services in Hungary to customers, depending on their orders, including the transportation, safekeeping, processing, exchange, (central) bank cash withdrawal and deposit.

- Customers (natural or legal entities) can send payment orders either to the debit or credit of their payment accounts or transact payments in cash. Accordingly, the customers may be payees and payers.

- The Hungarian State Treasury is a key participant in terms of the entire payment market, as it manages the payment accounts of public participants relating to general government, social security funds and decentralised financial funds,

[5] Transactions conducted with payment cards are not settled in the ICS, but in the card companies' own settlement systems.
[6] Until 27 June 2011.

Chart 1
The payment chain



and transacts payment orders between the given payment accounts and sends payment orders relating to participants outside of this circle. (A separate study[7] examines payment practices in the public sector.) The cost survey contained in this study partly specifies the cost of payments in the public sector (including local governments).

With a view to accepting the sensitivity of individual data, we indicate the results of the cost survey on a consolidated basis; thus the costs and revenues of credit institutions, Magyar Posta Zrt. and Giro Zrt. are jointly shown under the title of payment service providers, even though from a legal point of view, Giro Zrt. is obviously a clearing house and not a payment service provider.

Each of the above participants need not be present in relation to each of the payment instruments; for example, cash-in-transit companies participate in relation to all payment instruments with a cash requirement, but not, for example, in connection with credit transfers, payment card transactions and direct debits. It follows that the payment chain is slightly different in relation to the individual payment instruments.

Participants in the payment chain may explicitly charge/pay fees in certain cases for the provided/used payment service, while in other cases, such fees are only implicitly charged.

3.2 SOCIAL COSTS VS. PRIVATE COSTS

This study focuses on the estimation of social costs, and therefore we begin the definitions with the explanation of this concept.

[7] Divéki et al. (2010).

The social cost represents the total resource requirement arising within the payment chain that is necessary to enable the payment transaction on the basis of the given payment instrument. The social cost reflects how much the production and use of the payment instrument in question "costs" for society as a whole.

The social cost is determined by taking into account only the own costs (work or leisure time, IT, other material costs and related indirect costs) of all stakeholders taking part in the payment chain (similarly to VAT, exclusively on the basis of value added by the given participant). Thus, we ignore any fees and similar items paid by the given participant to the types of organisations which we surveyed in the payment chain. This is necessary, as otherwise the aggregation of sectoral private costs would contain accumulated items, because we would also take into account the fee and the resources behind the fee.

The private cost reflects the quantity of resources required for the production of the given payment instruments from each of the participants taking part at the given stage of the payment chain, i.e. from the central bank, payment service providers, cash-in-transit companies, corporates, households and the public sector. The private cost also includes any resources used by the given participant in kind on the payment transaction or activities necessary for conducting the payment transaction, such as work or leisure time, materials, equipment, etc. In contrast to the social costs, it also includes fees paid by the given participant within the payment chain in relation to the payment services. The sectoral aggregate of private costs may not include any fees paid by participants of a given sector to each other, either, e.g. interchange fees (paid by the issuer bank to the acquirer bank in relation to card-based cash withdrawals, while the acquirer bank pays to the issuer bank in relation to card purchases).

Thus, the fees ignored for the calculation of the social cost are those paid by the participants of the payment chain to each other within the payment chain, in relation to the payment services. Consequently, it follows that the amounts of received and paid fees are equal with each other at the social level, i.e. the fees are netted. The fees in question may be those that are paid by the payment service providers to the central bank and the cash-in-transit companies, by corporates and households to the payment service providers and by companies using cash-in-transit services to cash-in-transit companies (e.g. cash handling fee, account management, credit transfer fee, direct debit fee, fee on postal inpayment money order, annual card fee, merchant fee,[8] cash transportation fee, processing fee). These amounts include discounts with a reversed sign that are provided by a sector to another sector for the purpose of promoting the use of the given payment instrument.

The entire calculation process includes numerous estimates which we discuss in the following parts of this chapter and in Chapter 4. Additional terms used in our analysis are summarised in a separate box.

Box 1
Private, own production, net private and social costs

Own production costs are the difference between private costs and paid fees, while net private costs are the difference between private costs and received fees. Own production costs and net private costs are identical at the social level, as the sum of paid and received fees, fee-type items are identical at the social level, hence these are netted at the social level. The own production costs calculated at the sector level reflect the quantity of social resources used by the given sector in relation to the particular payment instrument, while the net private costs calculated at the sector level reflect the extent to which the revenues of the given sector relating to the particular payment instrument cover its resources ("costs") used in relation to the particular payment instrument. In this sense, own production costs come closest to being synonymous with the social costs.

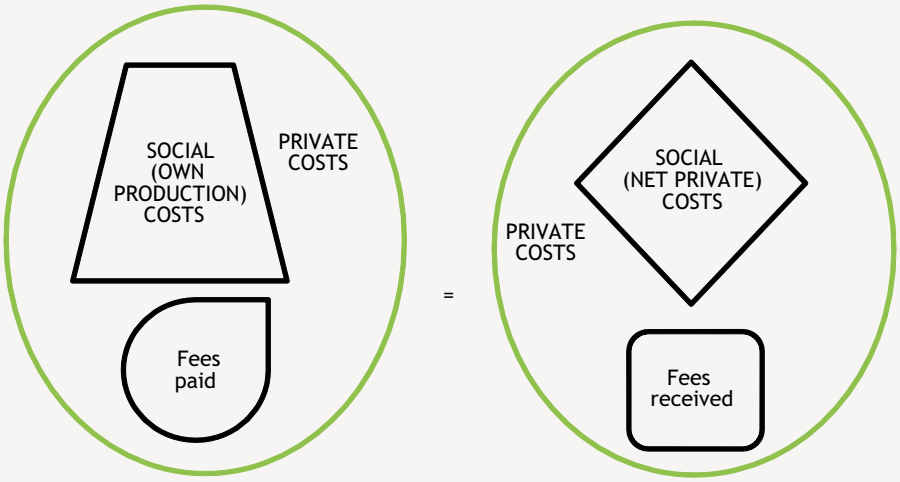
The chart below illustrates the connection between the terms.

[8] The amount charged by the merchant's bank to the customer of the card acceptor.

Table 3
Concept and definition

Concept	Definition
Private costs	All resources (time, input, money) used by sectors in relation to payment instruments in gross manner (including paid fees)
Own production costs/ social costs	All resources (time, input, money) used by sectors in relation to payment instruments in net manner (without paid fees)
Net private costs/ social costs	All resources used by sectors in relation to payment instruments to the extent they are financed by the revenues stemming from the production and use of payment instruments
Fees	Fees related to payment instruments, cash handling fee, fees for account keeping, credit transfers, direct debits, postal inpayment money orders, annual card fees, merchant fees, fees for transporting and processing cash, surcharges, discounts, (seigniorage, loss on cash holdings)

Chart 2
Private, own production, net private and social costs and correlation between fees



Notes:
AT THE LEVEL OF SOCIETY: *∑ OWN PRODUCTION COSTS = ∑ NET PRIVATE COSTS =* ***∑ SOCIAL COSTS***
AT THE LEVEL OF SOCIETY: *∑ Fees paid = ∑ Fees received*
BOTH AT THE LEVELS OF SOCIETY AND SECTORS: *Private costs – Fees paid =* ***OWN PRODUCTION COSTS***
BOTH AT THE LEVELS OF SOCIETY AND SECTORS: *Private costs – Fees receieved =* ***NET PRIVATE COSTS***
Source: MNB.

The fees, including for example the bank cash handling, account management, merchant fees or fees for cash processing, transportation fees, and the discounts relating to the use of the payment instrument, only constitute an income transfer between the participants of the payment chain, therefore these shall not be considered in the calculation of the social costs.

Payment service providers provide payment services, while cash-in-transit companies provide auxiliary financial services, and thus their costs relating to such services are effected in their fees. The public sector, corporates and households use[9] such payment and auxiliary financial services; their revenues originate from their core activities and not from payment services. Consequently only from the point of view of payment services, the net private costs of the public sector, corporates and households show always a positive value, but this value can be lower or higher, depending on their choice of used payment instruments.

It is necessary to know both private and social costs, as beyond business policy or marketing purposes, the private costs motivate the fee and pricing policies of payment service providers, cash-in-transit companies, merchants and other companies, because as business enterprises they need to ensure the recovery of their costs over the long term. Consequently, the private costs indicate the extent to which we can rely on the payment service providers and merchants/companies for the mediation of messages formulated as the conclusion of the research, the acceptance of proposed policy measures and the extent to which these organisations are easily able to adapt to the changes.

[9] Only corporates.

3.3 DESCRIPTION OF THE METHODOLOGY CHOSEN BY THE ECB AND THE MNB

Following the definition and explanation of the terms constituting the premise of the methodology under points 3.1 and 3.2, in the table below we summarise the key elements of the methodology. Hereinafter we describe the methodology along the lines of these key elements, by focusing on issues relating to all or most of the payment instruments and provide supporting details in conjunction with these, and discuss payment instrument specific elements in Chapter 4.

3.3.1 Payment instruments and transactions

The domestic survey only applied to HUF transactions, irrespective whether the forint payment was transacted to or from a HUF or foreign exchange account or in cash. (The pan-European questionnaire was also based on a survey of the costs of payments transacted in the respective national currency.)

The cost survey was conducted in relation to 2009 in the case of both the ECB and the MNB. In relation to households, the survey of transactions and time expenditures described under point 3.3.5 was conducted in 2010, on the basis of facts existing at the time.

The ECB basically would have liked to separately survey credit card and debit card transactions. The methodological description of the ECB, however, clearly stated that the survey focused on costs relating to payments and did not cover the lending costs relating to credit cards. Consequently, we applied a breakdown of credit cards and debit cards in the

Table 4
Summary of the key elements of the ECB and MNB methodology

	Items	ECB	MNB
1.	Theoretical selection of payment instruments	Cash + each non-cash payment instrument with at least 5% market share in terms of volume	
2.	Pragmatic selection of payment instruments	Cash, (credit and debit) cards, cheques, credit transfers, direct debits	Cash, (credit and debit) cards, (paper based and electronic) credit transfers, direct debits, B2B direct debits, postal inpayment money orders, postal outpayment money orders for pensions
3.	Type of payment transactions	Non-time critical payments	
4.	Maximum value of payment transactions	E.g. EUR 50,000	None
5.	Stakeholders (sectors) covered/to be covered	Central bank, credit institutions, interbank infrastructure providers, merchants, corporates	
			+cash-in-transit companies, Magyar Posta (i.e. Hungarian Post), households
6.	Stakeholders (sectors) that may be covered	Optional: cash-in-transit companies	Covered: cash-in-transit companies
7.	Turnover data	Volume and value data in covered sectors by payment instruments	
8.	Selection of activities for the basis of cost estimates	Joint minimum	Expanding the joint minimum
9.	Method of cost assessments in case of central bank, credit institutions, cash-in-transit companies and interbank infrastructure providers	Activity-based costing (so-called ABC), direct and indirect costs, allocation keys, revenues	
		Elasticity of changes in total costs, fixed and variable costs	Elasticity of changes in total costs and costs per activities to get approximation for fixed and variable costs
10.	Method of cost assessments in case of corporates	Working time input (time spent) and fees paid in relation to payments	
11.	Method of cost assessments in case of households	None	Time input (spent) in relation to payments
12.	Method for sampling	Representative	
13.	Method for extrapolation	Free to choose	Combined: revenue, volume of transactions, macro-statistical data
14.	Method for estimation the volume and value of cash transastions	Free to choose	Combined: macro estimates and micro surveys

Source: MNB.

cost survey only on the issuer side; in all other cases (i.e. on the acquirer side in the banking sector and in the corporate and household sector), we handled payment cards on a combined basis. This is partly attributed to the fact that for the preparation of the considered interchange fee regulation, we required credit institution costs in a breakdown of card types on the issuer side, and the breakdown of either credit institution or corporate costs was not possible on the acquirer side.

In view of the domestic payment habits, we considered it important to also analyse the widely used postal inpayment money orders and the postal outpayment money orders for pensions. As shown in Table 2, postal inpayment money orders account for 7.3% of the number of non-time critical payments; the share of postal outpayment money orders for pensions is significantly lower, but not negligible (0.6%).

For the purpose of simplicity and efficiency, we did not set a separate value limit for payment transactions. We eliminated the possible distorting effect of large-value transactions by emphasising that the same scope of transactions is requested to be covered in relation to transactions (with respect to both their number and value) as in the case of costs.

In relation to corporates and households, we aimed at surveying total incoming and outgoing payments – naturally, only on the side of payment services. Accordingly, in the case of corporates, we also collected information – as part of total payments – on payments between corporates and also on outgoing and incoming payments via-á-vis the public sector. In the case of households we so collected information – as part of total payments – on payments in relation to the public sector. (We did not conduct a separate cost survey in relation to public sector payments, but projected cost estimates produced from the corporate survey to the public sector as well.) This approach has significantly exceeded the common pan-European minimum requirements, as they did not require a household survey, and secondly, the focus was on payments vis-à-vis consumers in relation to corporates.

3.3.2 From the side of stakeholders in the payment chain

In addition to surveys of the central bank, credit institutions, interbank infrastructure, retailers, and companies required by the ECB, we expanded the MNB survey to include cash-in-transit companies, Magyar Posta Zrt. and households. It was necessary to include cash-in-transit companies because not only credit institutions, but also larger corporates (even 80%-90% of respondents in the 1st round of sampling covering 334 corporates, partly or entirely) outsourced cash transportation and other related cash transactions (e.g. withdrawal, deposit, safekeeping, processing) in Hungary.

The integration of Magyar Posta Zrt. was necessary in relation to the cost survey pertaining to postal inpayment money orders and postal outpayment money orders for pensions. (To ensure the confidential management of individual cost data, credit institution data are indicated as data of payment service providers jointly with the data of Magyar Posta Zrt. and Giro Zrt.)

The participation of households in the survey was principally necessary to estimate the number of cash transactions. Although the ECB recommended several possible methods for this purpose, it mostly proposed the consumer survey. As an additional result of the household survey, the MNB was afforded insight into the payment habits of households and the motives behind the choice of payment instruments, including the effect of socio-demographic factors on habits and choices.[10] We wish to note that on the basis of currently available information, in addition to the MNB, 2-3 countries have launched consumer/household surveys in the framework of the pan-European project, as other countries have already completed the survey[11] or did not take part in the pan-European survey.

3.3.3 From the side of activities related to payment instruments

The definition of activities relating to particular payment instruments was important, as this enables data providers (see sampling criteria under point 3.3.7) included in the sample to provide expenditures related to payment instruments in accordance with common principles.

[10] A separate study was written on this topic (Takács, 2011).

[11] E.g. the German, Dutch and Portuguese central bank (Source: Deutsche Bundesbank, 2009; Jonker-Kosse, 2009; Banco de Portugal, 2007).

The definition of activities varied, depending on the method of the cost survey (see points 3.3.4-3.3.5 for details) and basically the type of data providers. In accordance with the ECB recommendation, we used the questionnaires prepared by the ECB as a common minimum and aimed at adjusting these to Hungarian conditions and partly to the purpose of our project,[12] in line with the preliminary requests and proposals of the data providers.

With respect to the central bank questionnaire, we ultimately limited ourselves to completing the July 2010 version of the more consolidated ECB questionnaire which has since been modified by the ECB in the meantime. Thus, in order to avoid unnecessary work, we waived completion of the more detailed table constructed by us, because it was certain that all central bank cash costs were taken into account, even without the recourse to the more detailed questionnaire.

With respect to the payment service provider questionnaire, in consideration of the comments of the domestic credit institutions surveyed, we aimed at preferably applying a breakdown of equal depth in relation to all payment instruments, naturally taking into consideration the characteristics of the payment instrument in question. Thus, all payment instruments were also assessed based on service contracts, management of fraud, managing damages derived from fraud, customer service, advertising and marketing, filing procedures, management and monitoring, etc., as the costs relating to such activities also had to be allocated to the given payment instrument. Naturally, we were aware in advance that it is not these activities, but the activities relating to the essential function of the given payment instrument, e.g. receipt, processing, clearing of payment orders, management of authorisations, mandates etc., which tie up most of the resources, but this approach nevertheless ensured that the cost survey – within the possible limits – is of equal depth in relation to each data provider.

Similarly to the survey of payment service providers, activities directly related to the core function – collection/transportation, handling, processing, exchange of cash – were more relevant in the case of cash-in-transit companies as well, but most of the aforementioned general activities were also included.

In relation to corporates, we surveyed labour input relating to the following core activities.

Table 5
Labour input of activities relating to the payments of corporates

	Items	Cash	Payment card	Credit transfers	Direct debits	Postal inpayment money order
1.	Time needed for payments	*	*	*	*	*
2.	Time for activites needed for maintaining continuity in payments	*	*			
3.	Supplementary control and administration in relation to payments	*	*	*	*	*
4.	Time needed for returning and refunding unduly received money			*	*	*
5.	Time needed in relation to own instruments used in payments	*	*			

Source: MNB.

[12] We distinguished orders submitted on paper and electronically in the course of requesting costs data relating to both the receipt of orders and the processing of credit transfers. (Such distinction was included in the final version of the pan-European questionnaire.)

In relation to households, we only surveyed time inputs relating to the following three activities.

Table 6
Time inputs of activities relating to the payments of households

Items		Cash	Payment card	Credit transfers	Direct debits	Postal inpayment money order
1.	Time needed for face-to-face transactions at credit institutions/post (including inbound and outbound trips)	*		*	*	*
2.	Time needed for remote transactions at credit institutions			*	*	
3.	Time spent on checking bank/payment account	*	*	*	*	

Source: MNB.

Based on the household data relating to payment transactions and the related measurements for transactions, we estimated the time spent on the settlement of purchase price depending on the payment instrument used (i.e. cash or payment card). (See points 4.1.6 and 4.2.5 for details.) On the basis of bank data and transaction numbers per household, we estimated the time spent on mandates (limit modifications) relating to credit transfers and direct debit orders (see points 4.3.6 and 4.4.6 for details).

3.3.4 The ABC method

In relation to the MNB, payment service providers (i.e. credit institutions, Giro Zrt. and Magyar Posta Zrt.) and cash-in-transit companies, the cost survey was based on so-called activity based costing (ABC). In general terms,[13] by jointly determining in advance the activities (see point 3.3.3 above) necessary for the production of the given payment instrument (or any other product/service), the data provider assesses/estimates the types and amount of resources used to conduct the relevant activity. Notwithstanding the differences in accounting systems, joint definition of the activity helps the participants to provide data to effectively take into account their total costs relating to the production of the given payment instrument. For the same purpose, we requested that costs per activity be given not only as an aggregate figure, but also in a breakdown of direct and indirect costs.

We requested that all amounts be taken into account as direct costs, which are clearly related to or may be assigned with the help of an allocation key to the given payment instrument and activity, and that other costs related to the given payment instrument and activity be defined as indirect costs. We provided only examples of what may be included among direct and indirect costs and of the kinds of allocation keys the data provider may or should use.

For example, direct costs may include the cost of the purchase of printed forms that may only be used for a given payment instrument or fees paid by the data provider to an external organisation in relation to a given payment instrument, wages, salaries – jointly with the related other payments to personnel and taxes on wages – which it pays to employees who deal exclusively with the given payment instrument. Such direct costs may also include the cost of an IT system which is introduced and operated exclusively in connection with the given payment instrument. The time, transaction, revenue proportionate or other such divided amount of these costs is also deemed to be direct costs if the employees deal with several payment instruments or with other duties, or the given IT system supports other payment instruments and other tasks. We were and are aware that, naturally, this distribution required expert estimation which had to be performed individually by each data provider on the basis of the transaction number or the varying complexity of the transactions or other consideration (e.g. realised sales revenue).

[13] In literature, according to the basic logic of activity based costing, the production of the products uses activities, and the organisation uses its resources to conduct such activities (Source: Dankó and Szegedi, 2006).

Indirect costs contain the costs of supporting activities that are also necessary for the given payment instrument and can be calculated by the data providers with the help of the allocation keys deemed appropriate by them (such as costs related to the management of the organisation, real estate lease fees, etc.).

The cost data per activity and information relating to the volume and value of conducted transactions enabled us to check consistency in both the circles of payment service providers and cash-in-transit companies. We compared the unit costs (including costs in relation to units of HUF 100 in the cash transactions of credit institutions, in the case of cash), cost structures among the participants of the given sector and managed to reduce a large part of the differences through bilateral consultations.

In line with the ECB methodology, we requested value data inclusive of VAT in all cases where this was appropriate.

For the purpose of estimating social costs, in relation to each activity, we requested the respondents to indicate separately the amounts paid to types of stakeholders, which we separately surveyed within the payment chain. This ensured that the final calculation does not include accumulation and both private and (own production costs, i.e.) social costs are equally available.

It was important to obtain estimates from all of the above data providers as to the amount of changes in costs if the transaction volumes increase or decrease. We went beyond the methodological recommendation of the ECB – involving a request for a quantified estimate of changes in total costs – and also asked the MNB and all payment service providers whether the costs relating to particular activities increase in proportion to the volume of transactions or to a lesser extent, or whether they are independent of the volume. We received substantial qualitative information; on the basis of such information, we estimated the share of fixed and variable costs per payment instrument which is necessary for the quantification of potential savings resulting from large-scale substitution of cash and paper-based payments with electronic payment instruments. (The method is described in Chapter 5.)

3.3.5 Cost survey based on time inputs

In relation to other sectors, there was no realistic possibility or necessity of requesting cost data based on the ABC method. However, similarly to the ABC method, it was possible to determine the time needed for any activities that are repeated or frequently repeated in connection with the traffic of payments, or are assumed to be of a significant quantity (see Tables 5 and 6). In this process, we strived to only request times that are actually measurable/estimable by the given type of data provider. As a result, we also relied on synergies, as all payments are executed between two parties, and the payment process has a stage – the settlement of the purchase price – that has the same time requirement for both the seller and the buyer. (For control purposes, we also carried out measurements in relation to the latter.)

In relation to both corporates and households, we expressed time expenditures with the forint value of the per capita annual average net income of households in the year 2007 (with HUF 875,837 and its value for 1 work minute: HUF 7.18, also taking into account transaction numbers where necessary). We considered this necessary firstly because in the course of calculations, the most recent data available from the KSH (Központi Statisztikai Hivatal, i.e. Central Statistical Office) related to the year 2007, and secondly, because net income is acceptable for both corporates and households, as our primary objective is the survey of the social cost, and net income more effectively approximates such cost than gross income from the side of corporate wage costs as well. The details are elaborated in Chapter 4 for each payment instrument.

3.3.6 Addition to the cost survey based on time inputs

In relation to corporates, in addition to work time inputs, we surveyed the following main cost elements, principally on the basis of direct data requests.

Table 7
Additional cost elements relating to corporate payments

	Items	Cash	Payment card	Credit transfers	Direct debits	Postal inpayment money order
1.	Banking fees	*	*	*	*	*
2.	Fees for the use and maintenance of instruments used in payments	*	*			
3.	Fees for outsourcing in relation to payments	*	*	*	*	*
4.	Losses in relation to the use of the payment instrument	*	*			
5.	Discount given for the use of the payment instrument	*	*	*	*	*

Source: MNB.

At the same time, we also compared the fees paid by corporates to banks, cash-in-transit companies and the Post with the fees charged by the given service provider(s) and sales revenue data received from them.

In the case of households, in addition to time inputs, we estimated the fees paid to credit institutions based on the relevant transaction numbers and distributed these among the appropriate payment instruments. Finally, we added the (loss and) risk relating to cash holding to the costs of households and the risk relating to the holding of payment cards. (See Chapter 4 for details.)

3.3.7 Method of data collection, sampling, extrapolation, allocation

In accordance with points 3.3.1–3.3.5, the survey was basically conducted by the MNB, but GfK Hungária Kft. participated in conducting the survey of corporates and households. The MNB concluded a framework contract with the company in 2009 on public opinion poll services.

Annex 1 contains the questionnaires serving as basis for the surveys (available only in Hungarian).

As shown in Table 8, data were collected – with the exception of the central bank, clearing house and the Post – with the sampling procedure.

In relation to credit institutions, we aimed at convincing all major participants of the payment market to take part in supplying data. This was somewhat facilitated by the fact that all active participants in payments are members of the Payment System Council, co-chaired by the MNB and the Banking Association, but in addition to the major participants,

Table 8
Method of data collection and sample size

Stakeholders		Survey carried out by	Size of sample	Basis of survey	Way of providing response
MNB		MNB	1	Questionnaire	self-filling in
Cash-in-transit companies			3	Questionnaire	self-filling in
Payment service providers (credit institutions, Magyar Posta, i.e. Hungarian Post, Giro)*			10-14	Questionnaire	self-filling in
Corporates:	first round	GfK Hungária	334	Questionnaire	self-filling in
	second round		15	Questionnaire	deep interview
Households:	first round		921	Diary	self-filling in
				Questionnaire	interview
	second round		300	Questionnaire	interview

** The number was somewhat different depending on the payment instrument.*
Source: MNB.

we considered it important to include two smaller credit institutions (two savings co-operatives) in the survey. With the exception of one savings co-operative, all of the credit institutions agreed to participate, and a total of 12 credit institutions completed the questionnaire (Annex 2 contains a listing).[14] Depending on the payment instrument, we managed to reach a market share of 61%-97%. We basically carried out sectoral level extrapolation in proportion to transactions; details relating to the particular payment instruments are discussed in Chapter 4.

With respect to cash-in-transit companies, all three large companies (a list of these is also contained in Annex 2) agreed to participate in the survey, and thus we managed to completely cover the market, obviating the need for extrapolation. At the same time, it was necessary to distribute the surveyed costs among four payment instruments, as cash is required not only for purely cash transactions but also for the use of postal inpayment money orders and postal outpayment money orders for pensions, and even postal outpayment money orders for social benefits and other purposes which were not included in our analysis. (See point 4.1 for details.)

Sampling consisted of two rounds in relation to corporates. With the cooperation of GfK Hungária, in the first round we targeted a sample of 300 with a survey based on self-completion of the questionnaire. In the course of determining the theoretical background of sampling, we applied a disproportional sampling jointly with GfK. Costs relating to payments affect corporates much more significantly, as revenues and expenditures for these entities consist of many, relatively smaller amounts. We therefore determined a disproportional sample by over-representing the corporates complying with this criterion among the selected corporates. Unfortunately, the response rate was generally moderate and particularly low in the case of larger retailers, public utility providers which are very relevant to our survey, and the quality of replies was not satisfactory in all respects either; therefore an additional survey was necessary. In this additional survey, we targeted a much smaller sample (15 corporates), and chose to use the interview method (the interviews were held on the basis of the original questionnaire). We mainly used the results of the second round survey for cost estimation. (Annex 3 contains the two samples with the target and actual numbers.)

We carried out sector level extrapolation partly in proportion to sales revenue, for which we used the item "Net sales revenue" contained in the tax declaration of corporates applying double-entry accounting (HUF 76,632.34 billion),[15] adjusted with the weighted average VAT rate[16] used by the MNB for the calculation of the consumer price index, as we collected gross sales revenue data for the interviews, in accordance with the ECB methodology. Data relating to 2008, available in complete and final form, was most recent during the calculations, and due to the crisis, we may assume that the aggregate nominal value for 2009 would not show a significant change. In relation to VAT, however, we used the higher average rate for 2009 (20.3%). Consequently, the gross sales revenue calculated for the year 2009 corresponded to HUF 92,196.89 billion, so we had to use a 118.51 multiple in the sample of 15 and a 319.76 multiple in the sample of 300. For extrapolation we also used the transaction numbers, where this served a purpose (e.g. payment card purchases and postal inpayment money orders), or other macroeconomic information. We made a choice on a case-by-case basis, with the aim of receiving a more reliable result. (See details in Chapter 4 for each payment instrument.)

Sampling also consisted of two rounds in relation to households/consumers. A household survey was more promising for accessing the "main payer" of the household; therefore, in the first round, we used a two-week diary[17] combined with a single questionnaire for 921 households (the actual number of participants based on the request for 1,000 households). In view of the fact that the diary results – in consultation with GfK – fell short of the quantity[18] determined in advance with

[14] The entire questionnaire or a part of it focusing on the key payment instruments.

[15] Source: MNB. From a methodological point of view, however, it is questionable that the data contains the net sales revenue of the credit institutions, but, on the one hand, due to its total rate of 3.0% (HUF 2,315.30 billion), and on the other hand, the fact that we interviewed the credit institutions as payment service providers and not as businesses, we eventually used the total corporate sales revenue data thus calculated for extrapolation.

[16] Source: MNB.

[17] The diary meant that the households participating in the survey recorded their spending on paper each day for two weeks (including the submitting yellow cheques {postal inpayment moeny orders}, cash deposits and cash withdrawals), with indication of the value, the place/type of payment, the payment instrument and the reason for the choice of the given payment instrument.

[18] Average transaction number per day and per household for 1 member households: 1.19 (as opposed to the 1-2 transactions recorded in the list of requirements); for 2-member households: 1.56 (as opposed to 2-3 transactions); for 3-member households: 1.72 (as opposed to 2-4 transactions); for 4-member households: 1.87 (as opposed to 4-5 transactions); for 5-member households: 1.92 (as opposed to 5-6 transactions); for 6-member households: 1.92; 1.86 for 7-member households, while for minimum 8-member households: 3.29 (as opposed to the 6-7 transactions for minimum 6-member households in the list of requirements).

respect to transaction numbers, GfK conducted an additional round of survey based on a (socio-demographically based representative) sample of 300, in which there was a prominent focus on micro payments.[19] (International experience also suggests that unfortunately, small-value cash transactions are frequently forgotten.[20]) This second survey was basically a personal interview, but the interviewers also inquired about the daily spending of the members of a given family over the age of 14, being home at the given time, and the daily spending and spending plans of absent family members.

Annex 4 contains the two samples. The territorial distribution of the two samples was roughly the same and closely matches KSH data. In relation to the 1,000 sample, we inquired about data on the person recording the household diary, and therefore we did not focus too much on the analysis of representativeness, as the selection of the family member recording the diary may also affect conformity with representativeness. In line with our expectations, in the 1,000 sample, the vast majority were women (77.52%) who agreed to complete the diaries, while the situation was reversed in relation to the 300 sample: the share of men was higher than of women (56.33% « 43.67%). The size of the households also varies in relation to the two samples; in the 1,000 sample, there are fewer 1-member households and significantly more 3- to 5-member households than in the 300 sample. In this respect, the 300 sample more closely approximates national data. There is a difference between the two samples in relation to age as well; there is a higher rate of 40-59 year olds in the 1,000 sample, while there are more over 60 year olds in the 300 sample. In this respect, the 300 sample again more closely approximates national data. The two samples hardly show any differences in relation to the highest level of education (8 grades: approximately 17%; secondary level education: over 60%; higher education: approximately or moderately under 20%). With respect to annual net income per capita, the value of the 1,000 sample is lower (HUF 716,353) than the one in the 300 sample (HUF 736,829), but even the latter one does not reach the national average published in the KSH statistics. We eliminated this distorting effect by using the national net income per capita in the analysis.[21]

In line with our expectations, the second round of survey produced more accurate results in relation to small-value, basically cash transactions, therefore we combined the results of the two surveys for estimating cash costs and generally used the results of the first survey with respect to the other payment instruments. We essentially carried out sector level extrapolation on the basis of the first sample – according to the number of 3,809,431 households published by the KSH for 2008 – with a projection rate of 0.02418% for the entire population, and then for the whole year, based on the relevant time period.[22]

In addition to the foregoing, among central bank costs, it was necessary to distribute some of the VIBER costs among the payment instruments and the costs of Giro Zrt. also had to be distributed among the given payment instruments.

Table 9
Extrapolation and allocation requirement by stakeholder

Stakeholders	Extrapolation	Allocation
MNB		*
Giro		*
Credit institutions	*	
Magyar Posta		
Cash-in-transit companies (CiTs)		*
Corporates	*	
Households	*	

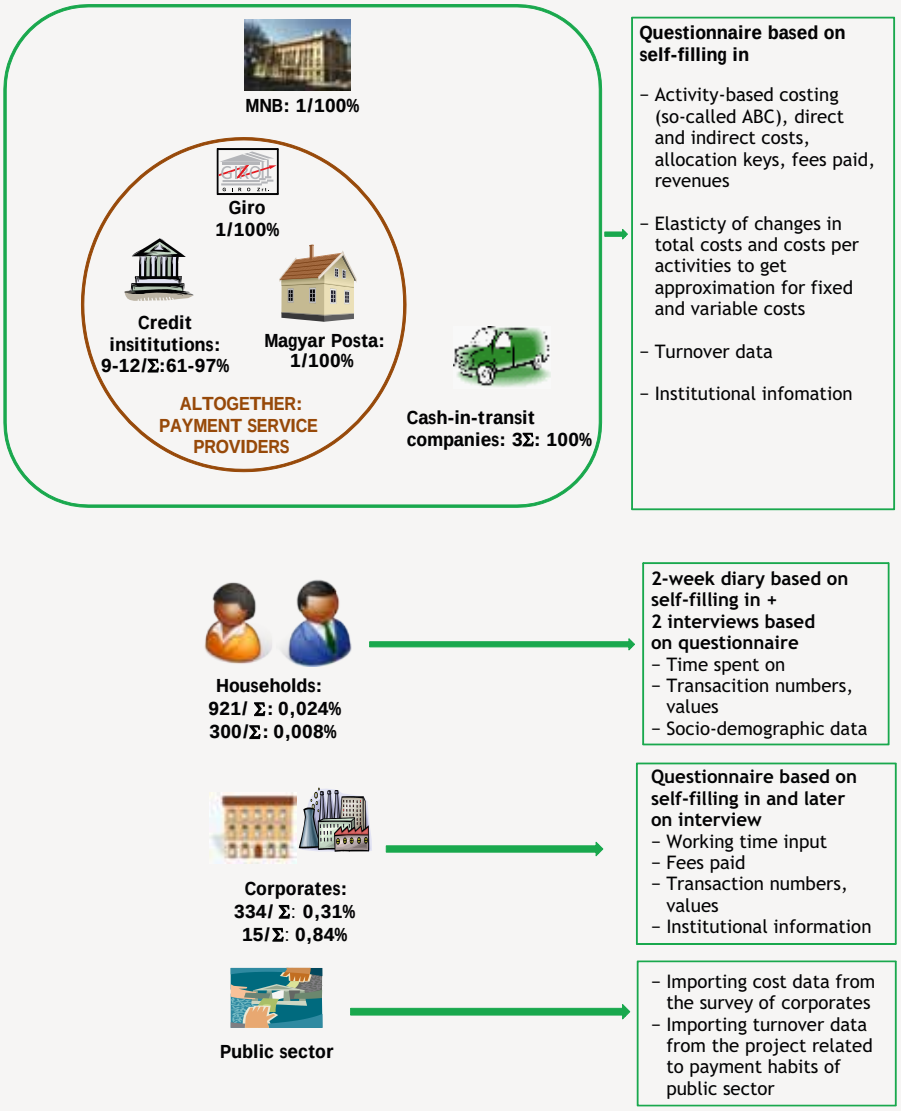
Source: MNB.

[19] See question A2 of questionnaire 2 linked in Annex 1.5: "Did you conduct any other transactions today? Please think it over again. It would be very important to record everything, regardless of the amount or type of the payment." (in Hungarian only).
[20] Source: Jonker and Kosse (2009).
[21] Source: KSH Stadat table. 2.2.6. Annual per capita receipts and incomes by sources (2000–)
[22] A 2-week diary and personal interviewing relating to a period of one month in the case of the first round survey and a survey relating to one day in the case of the second round of survey.

3.3.8 Micro data used for the cost survey and summary of sampling

As a conclusion to the chapter on methodology, in the following we summarise the sampling and data collection in a chart in relation to the payment chain. The sample size is provided below the name of the payment chain participants and we indicate the extent to which it covers the whole of the sector. In relation to credit institutions and cash-in-transit companies, this basically indicates the market share linked to the given payment instrument, as credit institutions participate in the transactions of almost all surveyed payment instruments; therefore, in their case, we are able to provide aggregate information only within a relatively wide range. In relation to households, we indicated the share of the number of the two samples to the number of households registered by the KSH, and in the case of corporates, we indicated the share on the basis of gross sales revenue. The chart also contains indirect data collection relating to the public sector.

Chart 3
Micro data used for the cost survey and summary of sampling



Source: MNB.

4 Current cost situation

In this chapter we present the current cost situation for each payment instrument and in a sectoral breakdown, which we begin in each case with the summary of the payment chain relating to the given payment instrument and, where necessary or possible, information on the transaction numbers and values.

4.1 CASH

4.1.1 Payment chain and process in relation to cash transactions

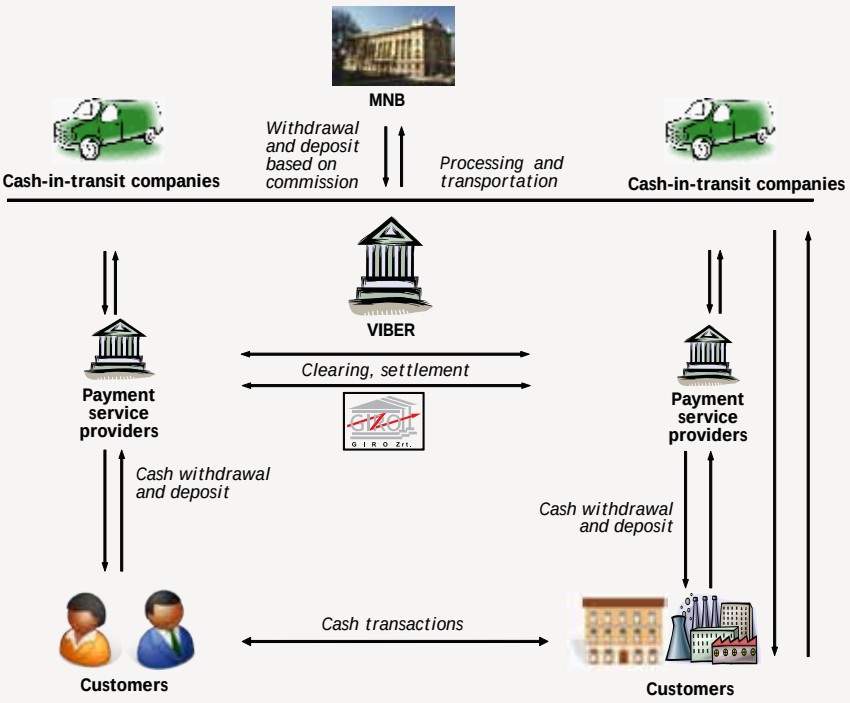
Cash is circulated from the issuer MNB to household, corporate and other customers (e.g. local governments) usually through the cash-in-transit companies in physical terms and the payment service providers (credit institutions and Magyar Posta Zrt.) in legal terms. Customers can withdraw cash[23] from their bank accounts (payment accounts) and they can partly receive wages, benefits and revenues in cash. Cash can be circulated several times among customers even without payment service providers, but it may also be returned to payment service providers (in relation to corporate customers, most commonly physically returned with the participation of cash-in-transit companies) through cash deposits. Cash is transferred from the payment service providers either to the customers through new cash withdrawals, or it is exchanged on the interbank cash market between the payment service providers, or surplus quantities are returned to the MNB from where fit currency flows back into the economy. Cash continues its above circulation as long as it retains its fitness, because once it becomes unfit, the banknotes and coins are returned to the MNB, the former for destruction and the latter for melting to be ordered.

Magyar Posta Zrt. has a unique function within the payment chain. Magyar Posta conducts its cash-related activity partly as an agent through the transaction of payments to the debit of the customer accounts kept at credit institutions and the receipt of payments to the credit of such customer accounts, and it also provides its own cash-based payment services, such as the transaction of postal inpayment money orders and postal outpayment money orders for pensions (as well as postal outpayment money orders for social benefit and other purposes not included in our analysis). Thus, we do not indicate postal costs among costs closely related to cash, as the costs of agency activity are quantified at credit institutions and postal costs relating to the other two products are shown in connection with the given products.[24]

[23] In line with the international methodology, cash withdrawals made with payment cards are also listed in this section.

[24] We ignored that recently Magyar Posta Zrt. became the cash supplier of the Hungarian State Treasury (HST), as the HST orders cash directly from Magyar Posta Zrt. and transfers its price through VIBER to Magyar Posta Zrt., providing surplus quantities also to Magyar Posta Zrt. (which receives the price through VIBER). (The volume is not large because approximately 3 million outgoing cash payments were made in 2009 in the case of the central budget.)

Chart 4
Payment chain and process related to cash



Source: MNB.

4.1.2 Estimation of the number and value of cash transactions

No data are available on the precise number and value of purely cash payment transactions, which are highest in number in the economy, as accurate statistics on these cannot be prepared due to the decentralised and generally traceless nature of such transactions. It is therefore necessary to estimate the value and number of these transactions with various procedures. In this study, we generally applied two methods:

- a macro level ("top-down") estimate that produces the value of cash transactions based on the macro level statistics of the KSH and MNB,

- and an estimate based on a micro level ("bottom-up") survey that extrapolates from the household and corporate samples drawn from the surveys for the estimation of the number and value of the cash transactions of households and corporates.

Since neither estimate can be used independently without control, we used the combination of the two methods, where we quantified the number of cash transactions on the basis of all methods and compared the two results. The range of macro statistics used consists of national level statistics available to the MNB, relating to the use of non-cash payment instruments, and the figures of the KSH relating to the consumption expenditures of households, retail turnover and the gross sales revenue of companies. Beyond its broad scope, the accuracy of the estimate is further weakened by the not insignificant size of the hidden economy[25] in Hungary which is not fully measured in the initial statistics or the micro surveys and thus remains partly hidden from the analyst. Thus, the estimates below presumably underestimate the number and value of cash transactions actually occurring in the economy.

4.1.2.1 General considerations applied to the estimates

An estimation of the value exchange in the formal economy through cash payments is difficult, and it is even more difficult to determine the number of cash transactions, as in this regard, the macro statistics, which are commonly available in

[25] For details, see Odorán and Sisak (2008), Bódi-Schubert (2010), Sisak (2010).

values, do not provide any support in themselves. Accordingly, in the process of estimating the number of cash transactions, we used the data of the two household and corporate surveys conducted by the company GfK Hungária on behalf of the MNB, and aimed at selecting the most probable estimate within the intervals resulting from such surveys.

In view of the fact that our purpose was to quantify domestic forint (HUF) transactions, we needed to estimate the number of transactions in 3 economic sectors (households, corporates, public sector). Since a transaction always involves two sides, the payer and the payee (i.e. the party receiving the cash), we needed to make a choice in the selection of the two sides as a premise. The surveys of the MNB approached the estimate from the payer side, thus they surveyed outgoing cash transactions made by the subjects and sectors covered.

4.1.2.2 Number of cash transactions by households

As indicated in Chapter 3, the GfK conducted two household surveys on behalf of the MNB. The first survey was conducted with a gross 1,000 household sample, which was representative of Hungary and based on the diary methodology, and within the framework of which spending, cash withdrawals and deposits were recorded over a period of two weeks. The households participating in this survey recorded a total of 14,452 outgoing cash payments, which by extrapolation indicates 1,554 million cash payments annually, covering the total number of Hungarian households.

According to the second survey, by applying the same extrapolation method, the result is 2,794 million outgoing cash payments by households on an annual, national basis. It is particularly noteworthy that the two household survey produced roughly the same average transaction amount in relation to cash payments: HUF 2,893 (1,000 sample) and HUF 2,906 (300 sample) (the two combined: average of HUF 2,900).

These two surveys present a considerably wide interval (1.55 and 2.79 billion payments) in relation to the number of outgoing cash payments made by households, therefore we also relied on the macroeconomic statistics of the KSH and the payments statistics of the MNB to make a selection between the two extreme values. Similarly to the macro estimate relating to the above value, our logical approach was as follows.

According to the KSH,[26] in 2009 the domestic consumption expenditure of households amounted to HUF 13,907.4 billion. By filtering this value from consumption paid with wages in kind, on the one hand, and imputed consumption on the other hand, which we estimate to equal HUF 685 billion, based on the most recent available data relating to 2008, we estimate that total consumption settled in cash by resident and non-resident households in Hungary amounts to HUF 13,222 billion. Considering that we have statistics and estimates available in relation to non-cash payment instruments used by households, by deducting the value of credit transfers (which we estimate at HUF 883 billion based on the survey), direct debits (HUF 640 billion), payment card purchases (HUF 1,250 billion) and postal inpayment money orders (HUF 2,885 billion) sent by households from the value of consumption expenditure, the residual value of cash payments is HUF 7,563.2 billion. If we divide this value with the HUF 2,900 average value of household cash transactions resulting from both surveys, the number of outgoing cash payment transactions made by households is HUF 2,608 million (2.6 billion transactions). This number falls within the above very wide interval, although it much more approximates the second HUF 2.8 billion transaction value resulting from the second, solely interview-based survey than the 1.55 billion number resulting from the first survey. (This confirms our assumption that the smaller transaction number resulting from the first survey, applying the diary methodology, does not produce the true total number of cash transactions.)

We estimated the number of cash transactions in the household sector at 19.13 million, as the diary also contained a question as to whether any cash payments were made to private individuals outside of the household beyond the purchase of goods and services.

As we estimated public sector payments in conjunction with the public sector payment project, see point 4.1.2.4 for details.

[26] KSH Stadat tables (3.1.14 Actual household consumption by sources, 3.1.15 Household consumption expenditure by the durability of goods).

4.1.2.3 Number of cash transactions by corporates

Expenditures of corporates are predominantly composed of the settlement of purchase price for procurements, and wage and tax payments. In view of the fact that in Hungary corporates practically do not pay taxes in cash (taxes are paid with other payment instruments, mostly by credit transfers, to a smaller extent by postal inpayment money orders, and even less so by direct debit), with the exception of wages paid in cash, the cash payments of corporates are mainly made to other corporates. In relation to corporates, there are no definitively useful macro statistics on the expenditure side (existing ones do not allow for aggregation of the gross expenditures of resident corporates). Therefore, in this case we had to use the data of the corporate survey conducted on behalf of the MNB. Estimation of outgoing cash transactions by corporates is further complicated by the fact that a portion of the actual cash transactions are made in the grey or hidden economy (hence, they are made in cash), and thus they appear neither in the surveys nor in the official statistics. The precise estimation of transactions and payment habits in the hidden economy does not constitute the object of this study; therefore, we have to rely on the estimation of cash transactions of corporates operating entirely in the formal economy. While in the case of professional corporates, the use of cash in inter-company payments is likely to be motivated exclusively by necessity or the concealment of transactions, in the case of companies operating in the formal economy, we expected a much lower number of cash transactions than conducted by households.

Of the two corporate surveys, in relation to the outgoing cash transactions of the corporate sector, the data from the 300-member sample corporate survey seem much more useful,[27] owing to higher representivity. In the 300-member corporate sample, 131 corporates responded that they do not use cash for outgoing payments in their business. The remaining 203 corporates use cash for outgoing payments; approximately 60% of these do not pay wages in cash, while 40% do.

The corporates (providing a response to the question) included in the sample made a total 258 thousand cash payments in 2009. By extrapolating this figure with the share between the total national gross sales revenue and the sales revenues of the sampled corporates, the result is 88.3 million corporate cash transactions. Since we considered this value to be a lower estimate, we carried out estimation by separating corporates that pay wages in cash and those that do not. If we assume in relation to the former group that the corporation pays the wage of each of its employees in cash over 12 months, we examined on an individual basis the minimum number of outgoing cash payments made annually by corporates. If the minimum number of outgoing cash payments calculated in this manner was higher than the estimate of the corporate relating to the total annual number of cash payments, we used this figure, otherwise the estimate of the corporate. In relation to corporates not paying work wages in cash, we used the estimates provided by the given corporate.

With this approach, the number of cash transactions estimated within the sample increased to 296 thosuand, resulting in a sector level estimate of 177 million payments if extrapolated on the basis of sales revenue. Owing to the presumably large size and cash intensity of the hidden economy, the figure relating to the legal economy in any case underestimates the actual number of corporate cash transactions; therefore we chose the higher of the two figures, and thus we will assume 177 million cash payments on the corporate side in 2009.

4.1.2.4 Number of cash transactions by the public sector

We used the outgoing cash payments of the public sector[28] from the public sector payment project survey,[29] applying the estimates relating to payments made by the own cashier offices of the institutions concerned. On the premise that the total number of outgoing cash payments effected by the own cashier offices of the institutions concerned amounted to 21.5 million payments in the value of HUF 620 billion, while the incoming cash payments were estimated with volume of 12.3 million transactions and a value of HUF 520 billion, we divided incoming and outgoing payments by expert estimation into the corporate and household sectors. We assumed that households accounted for 75% of quantity and 50% of value,

[27] The completion and presumably the quality of survey based on interviewing 15 corporates, was better, the sample, however, is relatively small and mainly represents the retail sector. Considering that in the sample, two companies with very high sales revenues responded that they do not make any cash outgoing payments, the sales revenue based extrapolation produced a very low figure, which cannot hold true even in relation to the formal economy.

[28] Including local governments.

[29] Divéki et al. (2010).

while corporates accounted for 25% of quantity and 50% of value, irrespective whether they were incoming or outgoing payments.

4.1.2.5 Number and value of cash transactions per sector

The table below summarises our estimate relating to the quantity and value of cash transactions. (Cash withdrawals and deposits are not listed as separate transactions in the table, as these indirectly serve the conduct of payment transactions.)

Table 10
Number and value of cash transactions in 2009
(not including bank transactions)

1. Number (in millions)

From	To households	To corporates	To public sector	Total
Households	19.13	2,608.00	9.20	2,636.32
Corporates	19.02	154.92	3.07	177.00
Public sector	16.13	5.38	0.00	21.50
Total	54.27	2,768.29	12.26	2,834.82

2. Value (HUF billion)

From	To households	To corporates	To public sector	Total
Households	55.47	7,563.20	260.00	7,878.67
Corporates	1,332.67	41,362.84	260.00	42,955.51
Public sector	310.00	310.00	0.00	620.00
Total	1,698.14	49,236.04	520.00	51,454.18

Source: MNB estimate.

Box 2
Seigniorage[30] and loss on cash holding

In accordance with the request of the ECB and international practice, we analysed and quantified seigniorage and loss of interest incurred by economic participants on cash holding. The results are also summarised by the table in this box.

Szalkai[31] defines seigniorage as the "profit of countries from the issue of money", and adds as explanation that "in other words, it means the profit of the chamber, signifying the Middle Age practice, where the sovereign made a profit from minting".

On the side of the MNB, the value of cash in circulation is known, and we could have calculated the figure as the average of daily data, but since only quarterly data was available in relation to the corporate sector, we estimated cash stocks in circulation and held by credit institutions also on the basis of quarterly data. Corporate data are traditionally derived from reports submitted to the APEH (tax authority), while household data are determined according to the residual principle. Accordingly, corporate data refer to cash stocks in the legal economy. On the basis of the household survey conducted for the purposes of the project, we obtained a clearer picture as to the quantity of cash held by households, which if multiplied by the number of households, produces the cash stocks held by households: HUF 129.42 billion [see row 5. b) of Table 11]. In contrast, the cash holding of households estimated according to the residual principle is HUF 1,630.02 billion higher (see row 6 of the table).

By multiplying the relevant holding values by the average central bank base rate for the year 2009 (8.65%), we receive the seigniorage revenue of the MNB (HUF 193.08 billion) and the loss of interest incurred by market participants. Since the term covers profit from the issue of money, it is reasonable to quantify it with the base rate of the MNB (the yield of the MNB bond with two-week maturity). In theory it would be possible to quantify the loss on cash holding on the side of households and corporates not using the central bank

[30] The spelling of the term has two forms (seigniorage, seignorage) in literature; we use the spelling adopted by the ECB, IMF and Szalkai, i.e. seigniorage.
[31] Source: Szalkai (1995).

base rate, but rather, for example, using the average of the interest rate on sight deposits and current account deposits, or deposits with maturity of up to one year, for households and corporates.[32] We believe, however, that calculation with the base rate is a more professional approach.

The amount of HUF 1,603.02 billion corresponds to 73% of the value of cash in circulation; we do not have accurate information available as to where this cash is. (Presumably it is partly held by corporates, partly by households, but predominantly linked to the hidden economy.) This information deficit is also reflected by the fact that the estimated private cost of households related to cash transactions is HUF 37.39 billion (if we ignore the loss of interest on cash holding) and HUF 188.89 billion (if we consider the loss of interest on cash holding). Moreover, depending on the value (HUF 461,862.03 or HUF 34,238.37) we use from the given survey in relation to the average value of cash held by a household, a different value is produced also for the risk of households related to cash holding.

Table 11
Seigniorage revenue of the MNB and loss of interest incurred by market participants due to cash holding in 2009

Items		Value of stocks (HUF billion)	Loss of interest (HUF billion)	Seigniorage of MNB (HUF billion)
1.	**Banknotes and coins in circulation**	2,232.19		193.08
2.	Held by payment service providers (credit institutions and the Hungarian Post)	165.79	14.34	
3.	Held by corporates	304.18	26.31	
a)	other financial intermediaries	1.62	0.14	
b)	additional financial service providers	0.30	0.03	
c)	insurance companies, funds	0.26	0.02	
d)	other non-financial companies	302.00	26.12	
4.	Held in public sector	2.78	0.24	
a)	central government	1.03	0.09	
b)	social security funds	0.01	0.00	
c)	local governments	1.75	0.15	
5.	Held by households			
a)	based on the remaining amount (1–2–3–4)	1,759.43	152.19	
b)	based on survey	129.42	11.19	
6.	Not sure (5. a)–5.b))	1,630.02	141.00	

Source: MNB.

4.1.3 Cash-related costs at the central bank

The total cash-related costs of the MNB amounted to HUF 7.85 billion in 2009. In view of the fact that such costs serve all payment instruments requiring cash, it was necessary to distribute the HUF 7.85 billion among the payment instruments in question. We chose the value-based share as the method of distribution, as we regard it to be more relevant in terms of storage and handling, but the use of the volume-based share would not have produced a major difference either.

[32] In relation to 2009, this equalled 2.83% and 9.24% for households and 2.70% and 8.14% for corporates.

Table 12
Shares relating to the allocation of the private costs of the MNB and cash-in-transit companies

	Based on number (%)	Based on value (%)
Cash transacations	90.2	91.2
Postal inpayment money orders	8.6	5.3
Postal outpayment money orders for pensions	0.7	2.7
Postal outpayment money orders for social benefits and other purposes	0.5	0.8

Source: MNB.

As a result of the above-mentioned, a cost of HUF 7.16 billion is incurred by the MNB in relation to cash transactions. In the case of the MNB, there is no difference between private and (own production costs, i.e.) social costs, considering that the MNB does not pay a fee to anyone within the payment chain. The bulk of the amount (96.04%) is related to the procurement of banknotes and coins; the costs of the central bank are principally determined by the cash demand of the economy and the price at which the two companies owned by the MNB (Pénzjegynyomda Zrt. [Hungarian Banknote Printing Ltd.] and Magyar Pénzverő Zrt. [Hungarian Mint Ltd.]) are able to satisfy such demand.[33]

Table 13
Costs of the MNB relating to cash transactions in 2009

	Items	Sum (HUF billion)	Share
1.	Design, security features, quality control and preparatory work	0.02	0.33%
2.	Procuring banknotes	4.59	64.18%
3.	Procuring coins	2.28	31.86%
4.	Cashier's transactions, processing, storing and and destroying cash	0.26	3.58%
5.	Protection and combating counterfeiting	0.00	0.04%
6.	Outsourcing of cash services	0.00	0.00%
a)	Cash handling by third parties	0.00	0.00%
b)	Recycling of banknotes by third parties	0.00	0.00%
Total		7.16	100.00%

Source: MNB.

4.1.4 Cash-related costs of cash-in-transit companies

In 2009 the total cash-related costs of cash-in-transit companies amounted to HUF 17.57 billion, with pure cash transactions – according to value based distribution shown in Table 12 – costing HUF 16.02 billion. In the case of cash-in-transit companies, there is a minimal difference between private and (own production costs, i.e.) social costs, considering that they only pay fees to the MNB within the payment chain (in the amount of HUF 0.1 billion). The bulk of the amount (91.23%) is related to the collection and transportation, handling, processing and exchange of cash, the running, operation and maintenance of ATMs and cash deposit machines, and the cost of the prevention of fraud and damage resulting from fraud.

[33] In view of the fact that central bank costs include expenditures of VIBER operations relating to central bank cash transactions, we did not separately quantify the costs, expenditures of the clearing and settlement infrastructure.

Table 14
Private and social costs of cash-in-transit companies related to cash transactions in 2009

	Items	Private costs (HUF billion)	Social costs (HUF billion)	On the basis of social costs (share)
1.	Service contracts	0.10	0.10	0.60%
2.	Collection/transportation	7.91	7.91	49.41%
3.	Cash handling, processing and exchanging	4.00	3.99	24.92%
4.	Cash safekeeping and storage	0.22	0.22	1.40%
5.	Network maintenance and management of ATM and cash deposit machines	1.37	1.37	8.57%
6.	Production of cards	0.00	0.00	0.00%
7.	Settlement and clearing	0.06	0.06	0.38%
8.	Fraud prevention and managing the damages derived from fraud	1.33	1.33	8.33%
9.	Management and monitoring of activities	0.78	0.78	4.86%
10.	Other acticivities	0.24	0.24	1.52%
Total		16.02	16.01	100.00%

Source: MNB.

4.1.5 Cash-related costs of payment service providers

The private costs of payment service providers amounted to HUF 76.84 billion (not including loss incurred on cash holding) in 2009. We obtained the data by assuming that the level and structure of the costs of banks and savings co-operatives involved in the survey may be projected to the rest of the sector as well. We extrapolated cost data stemming from the group of contacted banks to the sector level in proportion to fees paid to the MNB (88.1%), while data originating from the savings co-operative were extrapolated in proportion to the value of its cash turnover in comparison with that of Magyar Takarékbank Zrt. (MTB, i.e. Bank of Hungarian Savings Co-operatives Private Limited Company). (The payments of MTB transacted with savings co-operatives, namely, are of a small number, but of a large value. Naturally, for extrapolation we ignored the transaction fee paid to the MTB.) In the aggregation process we ignored the interchange fee (HUF 2.94 billion) paid by the issuer credit institution(s) to the acquirer credit institution(s) that is received by the acquirer credit institution if it pays cash via the payment cards of the customers of other credit institutions through ATMs or POSs.

In respect of payment service providers, there is a substantial difference between private and (own production costs, i.e.) social costs, considering that they pay fees both to the MNB and the cash-in-transit companies within the payment chain (in the total value of HUF 9.98 billion). (In accordance with the ECB methodology, we indicate loss incurred on cash holding in a separate row, in the amount of HUF 12.82 billion. The method of calculating the loss on cash holding is discussed in Box 2). The table under point 4.1.9 on the flow of fees relating to cash transactions shows the sectoral breakdown of fees.

Table 15
Private and social costs of payment service providers related to cash transactions in 2009

	Items	Private costs (HUF billion)	Social costs (HUF billion)	On the basis of social costs (share)
1.	Service contracts	1.15	1.15	1.73%
2.	Collection/transportation	8.76	3.87	5.79%
3.	Withdrawals, of which	15.25	15.15	22.66%
	from an ATM	6.17	6.17	9.22%
	over the counter at credit institutions or at post offices/POS	5.76	5.76	8.61%
4.	Deposits, of which:	15.23	15.13	22.63%
	via an ATM	2.35	2.35	3.51%
	over the counter at credit institutions or at post offices/POS	11.51	11.51	17.22%
	via a cash deposit machine	0.00	0.00	0.00%
	via night and 24 hour safe, and central vaults of credit institutions	0.32	0.32	0.48%
5.	Fees paid to VISA/MasterCard/Amex in relation to cash deposits and withdrawals by means of payment cards	1.43	1.43	2.14%
6.	Money laundering control	1.02	1.02	1.52%
7.	Cash handling, storing and processing	11.79	6.90	10.32%
8.	Fraud prevention and managing the damages derived from fraud	3.46	3.46	5.18%
9.	Procedures for suspicious (false) notes	0.06	0.06	0.09%
10.	Customer services	0.43	0.43	0.65%
11.	Analytical work and planning	0.97	0.97	1.46%
12.	Exchange between denominations	0.19	0.19	0.29%
13.	Advertising and marketing	0.33	0.33	0.49%
14.	Filing procedures (archive)	0.31	0.31	0.47%
15.	Management and monitoring of activities	3.31	3.31	4.95%
16.	Other acticivities	13.13	13.13	19.64%
17.	Loss on cash holdings	12.82	0.00	0.00%
Total (1–17)		89.66	66.86	100.00%
Total (1–16)		76.84	66.86	100.00%

Source: MNB.

Over half (50.5%) of the total social cost thus estimated is related to the collection, transportation, withdrawal and deposit, handling, storage and processing of cash.

4.1.6 Costs of using cash in the corporate sector

We estimated that the costs of corporates amounted to HUF 144.14 billion (without loss incurred on cash holding) in 2009. We obtained the data by assuming that the level and structure of the costs of the 15 interviewed corporates may be projected to the rest of the sector as well. We extrapolated data – with the exception of separately specified cases – to the whole of the sector, in proportion to gross sales revenue. We present the costs in a triple breakdown: in relation to incoming and outgoing payments and cash management.

The difference is also substantial between private and (own production, i.e.) social costs in relation to corporates. Within the payment chain, they pay fees to both cash-in-transit companies (row 15 of Table 16) and credit institutions (row 17 of Table 16). (Moreover, corporates also incur losses of interest due to the cash they hold, as indicated by row 20 of Table 16.)

Table 16 shows that incoming payments and amounts relating to cash management play a key role in terms of costs (in terms of social costs, at 63.69% and 35.89%, respectively).

Table 16
Private and social costs of corporates related to cash transactions in 2009

Items		Private costs (HUF billion)	Social costs (HUF billion)	On the basis of social costs (share)
A) Incoming payments		62.03	62.03	63.69%
1.	Cost of time spent on cash transactions	4.06	4.06	4.16%
2.	Preparation of cash registers	3.37	3.37	3.46%
3.	Change of rolls of cash registers	2.08	2.08	2.13%
4.	Emptying and balancing cash registers	8.16	8.16	8.38%
5.	Handling unfit and suspicious (counterfeit) banknotes	0.09	0.09	0.09%
6.	Depreciation or purchaser's price of certain instruments	25.55	25.55	26.24%
	Cash registers	24.78	24.78	25.44%
	UV lamps	0.78	0.78	0.80%
7.	Leasing fees of certain instruments	0.00	0.00	0.00%
8.	Fees paid for maintenance of certain instruments	18.61	18.61	19.11%
9.	Cost of time spent on maintenance of certain instruments	0.11	0.11	0.12%
10.	Discount given for cash transactions	0.00	0.00	0.00%
11.	Visiting customers exclusively due to accepting cash payments*	0.00	0.00	0.00%
B) Outgoing payments		0.41	0.41	0.42%
12.	Cost of time spent on paying wages and salaries	0.41	0.41	0.42%
C) Cash management		108.01	34.95	35.89%
13.	Analytical work and planning	12.93	12.93	13.28%
14.	Preparing cash deposits and order	16.41	16.41	16.85%
15.	Fees paid to cash-in-transit companies (CiTs)	4.96	0.00	0.00%
16.	Cost of time spent on cash logistics	1.49	1.49	1.53%
17.	Cash handling fess paid to credit institutions	41.79	0.00	0.00%
18.	Depreciation of safes	2.13	2.13	2.19%
19.	Leasing fees of safes	0.00	0.00	0.00%
20.	Loss on cash holding	26.31	0.00	0.00%
21.	Fraud not covered by insurance	1.01	1.01	1.04%
22.	Insurance fees	0.98	0.98	1.00%
Total (1–22)		170.45	97.39	100.00%
Total (1–19)+(21–22)		144.14	97.39	100.00%

** The data is not visible due to its small value (HUF 4.6 million).*
Source: MNB.

By examining the rows of the table, the first item is the cost of the time of cash payment. According to our own measurements based on an average of 123 cash purchases, 12.24 sec, i.e. 0.20 minutes, is the average duration of cash payment, from the point when the cashier tells the buyer the payable amount until the cashier places the purchase price into the cash register, including the payment of the returning change due to the buyer. On the basis of the macro level estimation of the number of cash purchases (2,768.3 million), corporates incur a cost of HUF 4.06 billion due to the duration of cash payment (see row 1 of Table 16). Preparation of the cash registers and replacement of their paper rolls relate to both cash and payment card transactions, and therefore we distributed the estimated expenditures incurred in the corporate sector between the two payment instruments in question (allotting 92.3% to cash). In relation to the depreciation of cash registers, we distributed 20% of the book value in proportion to transactions conducted with cash and payment card payment instruments. We did not account for depreciation in relation to the UV lamps, as corporates charge their full cost in the year of purchase in their accounts. We approximated total annual purchases at 20% of the total book value of the UV lamps in the sample (with extrapolation on a sector level). The sample did not contain any corporates which rented cash registers, UV lamps or other banknote authentication devices, and thus we did not account for any lease fees in the whole of the sector. In line with our expectations, there were no corporates which provided discounts for cash payments in comparison to electronic payments.

Despite our efforts, we were unable to estimate the cost of customer visits related to the sole aim of making cash payments in a breakdown of incoming and outgoing payments. It was clear that on an annual level, there were only approximately 400 cases of exclusively payment related visits in the 15-member sample; due to the low incidence and relatively low time demand (total of 90 hours), however, this item does not constitute a substantial cost within the corporate sector (HUF 4.6 million) even after extrapolation, and therefore it cannot be seen in the table. On the basis of macro level estimates, we may assume that wages are paid in cash 19.0 million times annually in the corporate sector; by counting 3 minutes per payment, the total cost equals HUF 0.41 billion.

We estimated costs relating to cash management partly through labour input and partly through actually paid fees, loss of interest and the risk on cash holding. We approximated the depreciation on safes at 20% of the book value of company safes contained in the sample, assuming 5-year depreciation. (There were no cases of safe rental in the sample, thus we did not account for such fee in the whole of the sector.) We substituted data relating to the cash-in-transit fee and the bank cash handling fee with data derived from other sectors because we judged those to be more reliable. The 3 cash-in-transit companies indicated that they receive a total of HUF 4.96 billion in revenue from corporates; this amount is listed in row 16. We estimated the total cash-related revenue of payment service providers at HUF 59.7 billion (as a result of extrapolation); after deducting the proportionately calculated annual payment card transaction fee (HUF 13.1 billion), we regarded the 89.6% of the residual to be the bank revenue originating from the corporate sector. (The 89.6%, namely, is the rate of the value of cash transactions made from and to corporates in comparison to cash transactions within the entire economy estimated at HUF 51.5 thousand billion; see Table 10 for basic data.) In connection with the risk of cash holding, we indicated insurance fees and losses arising from uncovered damage resulting from crimes related to cash (obviously, if a company did not have such insurance, the total amount of damage is stated).

4.1.7 Costs of using cash in the household sector

We estimated that the private costs of Hungarian households amounted to HUF 37.39 billion (without loss incurred on cash holding) in 2009.

Table 17
Private and social costs of Hungarian households related to cash transactions in 2009

	Items	Private costs (HUF billion)	Social costs (HUF billion)	On the basis of social costs (share)
1.	Cost of time spent on cash transactions	3.82	3.82	19.13%
2.	Loss of holding the instrument	151.55	0.05	0.23%
a)	Loss on cash holding	151.51	0.00	0.00%
b)	Cardholders' losses in relation to cash withdrawals (accordig to card fraud statistics)	0.05	0.05	0.23%
3.	Risk of holding the isntrument owing to	9.65	9.65	48.33%
a)	burglary	8.89	8.89	44.53%
b)	pickpocketing	0.67	0.67	3.35%
c)	occurence of counterfeit banknotes	0.09	0.09	0.45%
4.	Cost of time spent on cash withdrawals (inbound and oubound trips are included)	5.03	5.03	25.19%
5.	Cost of time spent on cash deposits (inbound and oubound trips are included)	0.52	0.52	2.60%
6.	Cost of time spent on checking bank/payment account	0.90	0.90	4.52%
7.	Banking fees	17.42	0.00	0.00%
Total		188.89	19.97	100.00%
Total [without 2. a)]		37.39	19.97	100.00%

Source: MNB.

Examining Table 17 row by row, the actual cost of the transaction of cash payments is as follows: multiple of the 12.24 second average transaction time resulting from our own measurement, the number of cash transactions made to merchants and companies (2,608 million payments) and net average income.

We allocated the HUF 0.5 billion as a share of cardholder loss (total value of damage incurred), determined by card statistics, on cash withdrawals to the loss on cash holding (see payment card payments under point 4.2.6 for more details). (This item also includes loss of interest presumably incurred on amounts held by households, as noted in Box 2, which we reduced with loss of 1 day's interest on the annual amount of postal inpayment money orders effected by households.)

We approached the risk on asset holding through the probability of burglaries and pickpocketing. On the basis of the analysis of the Ministry of Justice and Law Enforcement,[34] it was known that 19,253 home burglaries were committed in Hungary in 2009. On the basis of the above, we assumed that in the burglarised households (i.e. 0.51% of all Hungarian households) the total cash holding of the given household was stolen. The number of pickpocket thefts committed in a few counties[35] in the first three quarters of 2010 was known; on the basis of facts for Borsod-Abaúj-Zemplén[36] county, we extrapolated data for 2008[37] accessed from the crime geographical information system on a national level (considering the differences in the geographical distribution of crime), and on the basis of such data we assumed that the per capita cash holding of a given household was stolen from the victims of pickpocketing (i.e. from 0.04% of the total Hungarian population). Depending on whether we use the average size of household cash holdings based on the residual value (HUF 461,862.03) or on the result of household survey conducted for the purpose of the project (HUF 34,238.37), the outcome is HUF 8.89 billion (or HUF 0.62 billion) in burglary risk and HUF 0.67 billion (or HUF 0.02 billion) in pickpocketing risk, respectively.

We priced the risk resulting from the occurrence of counterfeit banknotes as the multiple of the number[38] of counterfeit banknotes seized from circulation and the related denomination.

We estimated the duration of cash withdrawal on the basis of the household survey conducted for the purpose of the project. With respect to the number of ATM cash withdrawals, we compared data produced from the sample to the national card statistics, and compared time estimates of bank or postal OTC (non-ATM) cash withdrawals to the statistics we received from 2 banks in relation to the average cash waiting and service times. As a result of the comparison, we increased the number of ATM cash withdrawals produced from the sample by 45% and accounted for a total of 126.1 million cash withdrawals. We used 8.89 minutes – indicated by bank statistics – as the minimum time of OTC cash withdrawal.

We calculated the time of cash deposits on the basis of the sample, where we also used the 8.89 minutes derived from bank statistics as the minimum time of OTC cash deposit. The number of cash deposits exceeded 7.6 million; deposits were predominantly made OTC, i.e. ATM deposits were rare and there were no deposits made through a cash deposit machine.

We determined the time spent on checking the bank account/payment account on the basis of the household survey and charged it to cash in proportion (by 28.74%) to transactions related to the bank account.

We estimated bank fees – in accordance with point 4.1.5 – on the basis of the total revenue of payment service providers originating from cash. One of the items was the transaction-proportionate annual fee (HUF 13.1 billion) of payment cards, while the other item was 9.3% of total bank revenue originating from cash, corresponding to the value based shares of outgoing and incoming cash transactions of households compared to the estimated HUF 51.5 billion value of cash transactions conducted in the entire economy (see Table 10 for basic figures).

[34] Source: Igazságügyi és Rendészeti Minisztérium (Ministry of Justice and Law Enforcement) (2010).
[35] Source: Police Headquarters of Somogy, Borsod-Abaúj-Zemplén and Zala counties.
[36] Due to locations referred to multiple times in Internet news reports.
[37] Source: Bűnözésföldrajzi Információsrendszer (Crime Geographical Information System of Hungary).
[38] Source: MNB.

4.1.8 Costs of using cash in the public sector

In relation to the Hungarian public sector, we estimated costs relating to cash on the basis of transaction numbers and corporate unit costs. (We estimated incoming cash payments at 12.3 million payments and the number of outgoing payments in relation to entrepreneurs at 5.4 million and in relation to private individuals at 16.1 million.)

The private cost (without loss incurred on cash holding) of the public sector relating to cash transactions was HUF 1.94 billion in 2009.

Table 18
Private and social costs of the Hungarian public sector related to cash transactions in 2009

	Items	Private costs (HUF billion)	Social costs (HUF billion)	On the basis of social costs (share)
A) Incoming payments				
1.	Cost of time spent on cash transactions	0.02	0.02	1.26%
B) Outgoing payments				
2.	Cost of time spent on making payments to entrepreneurs	0.06	0.06	4.06%
3.	Cost of time spent on making payments to individuals (per diem and other purposes)	0.35	0.35	24.47%
C) Cash management				
4.	Other costs	1.00	1.00	70.20%
5.	Fess paid to cash-in-transit companies (CiTs)	0.00	0.00	0.00%
6.	Cash handling fess paid to credit institutions	0.52	0.00	0.00%
7.	Loss on cash holding	0.24	0.00	0.00%
Total (1–7)		2.18	1.42	100.00%
Total (1–6)		1.94	1.42	100.00%

Source: MNB.

4.1.9 Total social cost of transacting cash payments

In summary of the above, we detail below the costs and fees related to cash transactions according to the participants of the payment chain. (Private costs and fees calculated in consideration of seigniorage are indicated in a separate box; it is clear that seigniorage is not relevant either in terms of own production costs calculated for each sector or in terms of total social costs.)

Table 19
Costs and fees (without seigniorage) relating to cash transactions in 2009
(in HUF billion)

	Stakeholders	Private costs	Fees paid	Own production costs	Fees received	Net private costs
		(1)	(2)	(3)=(1)–(2)	(4)	(5)=(1)–(4)
1.	MNB	7.16	0.00	7.16	0.21	6.95
2.	Payment service providers	76.84	9.98	66.86	59.72	17.12
3.	Cash-in-transit companies	16.02	0.01	16.01	14.74	1.28
4.	Corporates	144.14	46.75	97.39	0.00	144.14
5.	Households	37.39	17.42	19.97	0.00	37.39
6.	Public sector	1.94	0.52	1.42	0.00	1.94
Total		283.49	74.67	208.82	74.67	208.82

Source: MNB.

Box 3
Private costs and fees relating to cash transactions (including seigniorage and loss of interest incurred on cash holding)

In accordance with the ECB methodology, we indicate below the private costs and fees relating to cash transactions (including seigniorage and loss of interest incurred on cash holding). The loss of interest incurred on cash holding substantially increases the private costs of payment service providers, corporate, households and the public sector and the fee type amounts equal HUF 265.55 billion instead of the HUF 74.67 billion indicated in Table 19. On the side of net private costs, the position of the MNB changes, as due to seigniorage, the MNB collects substantial revenue which covers its cash-related expenditures many times over. The own production cost (social cost) is the same in both tables by definition.

Table 20
Costs and fees (with seigniorage) relating to cash transactions in 2009
(in HUF billion)

Stakeholders		Private costs	Fees paid	Own production costs	Fees received	Net private costs
		(1)	(2)	(3)=(1)−(2)	(4)	(5)=(1)−(4)
1.	MNB	7.16	0.00	7.16	191.08	−183.93
2.	Payment service providers	89.66	22.80	66.86	59.72	29.94
3.	Cash-in-transit companies	16.02	0.01	16.01	14.74	1.28
4.	Corporates	170.45	73.06	97.39	0.00	170.45
5.	Households	188.89	168.92	19.97	0.00	188.89
6.	Public sector	2.18	0.76	1.42	0.00	2.18
Total		474.37	265.55	208.82	265.55	208.82

Source MNB.

Aggregate own production cost, calculated without fees, constitutes social cost. Thus, cash transactions at the social level amount to HUF 208.82 billion, i.e. consuming 0.80% of annual GDP in 2009. The predominant share of social costs and expenditures is borne by corporates, households (jointly HUF 56.2%), payment service providers, cash-in-transit companies (the 2 sectors combined: 39.7%), while the remaining 4.1% is shared between the central bank and the public sector.

Chart 5
Sectoral breakdown of social cost related to cash transactions in 2009

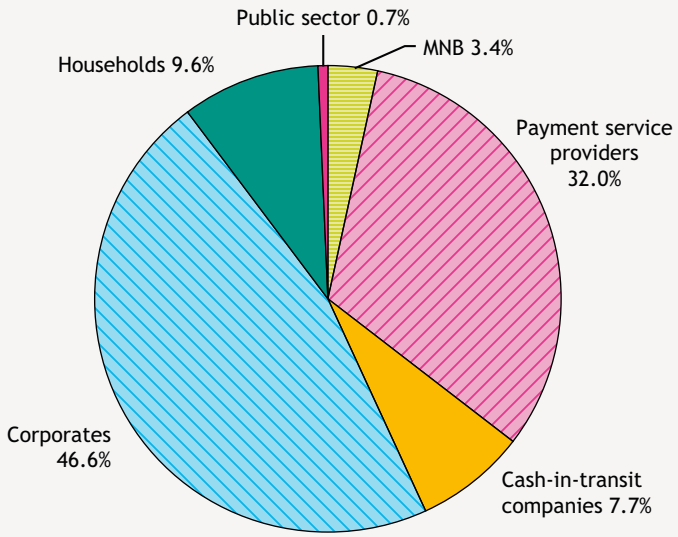


Table 19 (without seigniorage) shows that cash produces a loss for all stakeholders, as net private cost reveals a positive figure in relation to all sectors, that is, expenditures exceed revenues (in terms of the production and use of the payment instrument). The cash-in-transit companies roughly break even in relation to purely cash transactions. (Not only their costs, but also their received fees needed to be allocated for the calculation of social cost for each payment instrument.) Fees account for 26.3% of aggregated private costs, not including seigniorage, therefore it is useful to separately examine who pays these fees to whom and in what value.

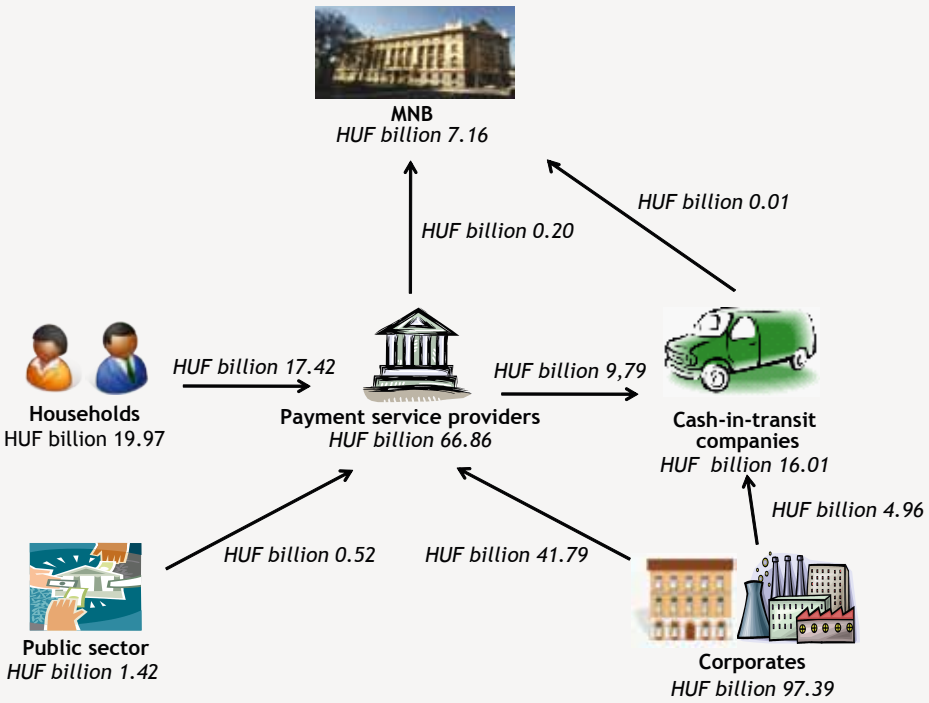
Table 21
Fees (without seigniorage) relating to cash transactions in 2009
(in HUF billion)

From	To MNB	To cash-in-transit companies	To payment service providers	To corporates	To households	To public sector	Total
MNB	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Cash-in-transit companies	0.01	0.00	0.00	0.00	0.00	0.00	0.01
Payment service providers	0.20	9.79	0.00	0.00	0.00	0.00	9.98
Corporates	0.00	4.96	41.79	0.00	0.00	0.00	46.75
Households	0.00	0.00	17.42	0.00	0.00	0.00	17.42
Public sector	0.00	0.00	0.52	0.00	0.00	0.00	0.52
Total	0.21	14.74	59.72	0.00	0.00	0.00	74.67

Source: MNB.

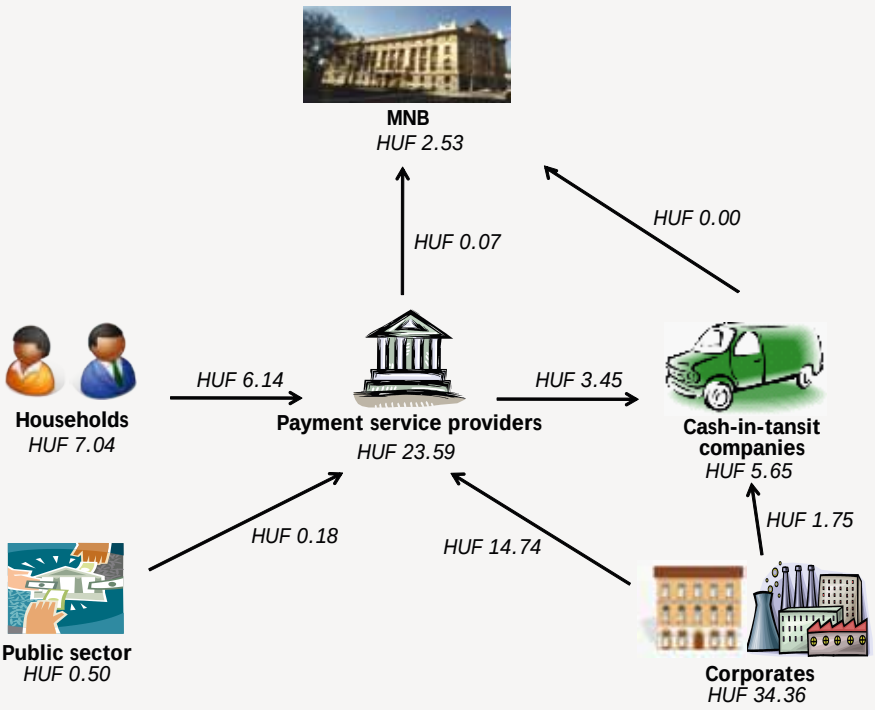
Charts 6 and 7 show the costs and flows of fees related to cash transactions in terms of aggregate value and value per transaction. Own production costs, i.e. social costs, are indicated for the particular stakeholders, the flow of fees is shown by the arrows and the direction of the arrows indicates who pays the given fee to whom. (The amount of the fees is exclusive of both loss of interest incurred on cash holding and seigniorage.)

Chart 6
Total cost, flow of fees related to cash transactions in 2009



Source: MNB.

Chart 7
Unit cost, flow of fees related to cash transactions in 2009



Source: MNB.

The social cost of one cash transaction equalled HUF 73.66 in 2009. The chart below shows the social cost of one transaction in each sector and the flow of fees related to one transaction.

4.2 PAYMENT CARDS (DEBIT AND CREDIT CARDS)

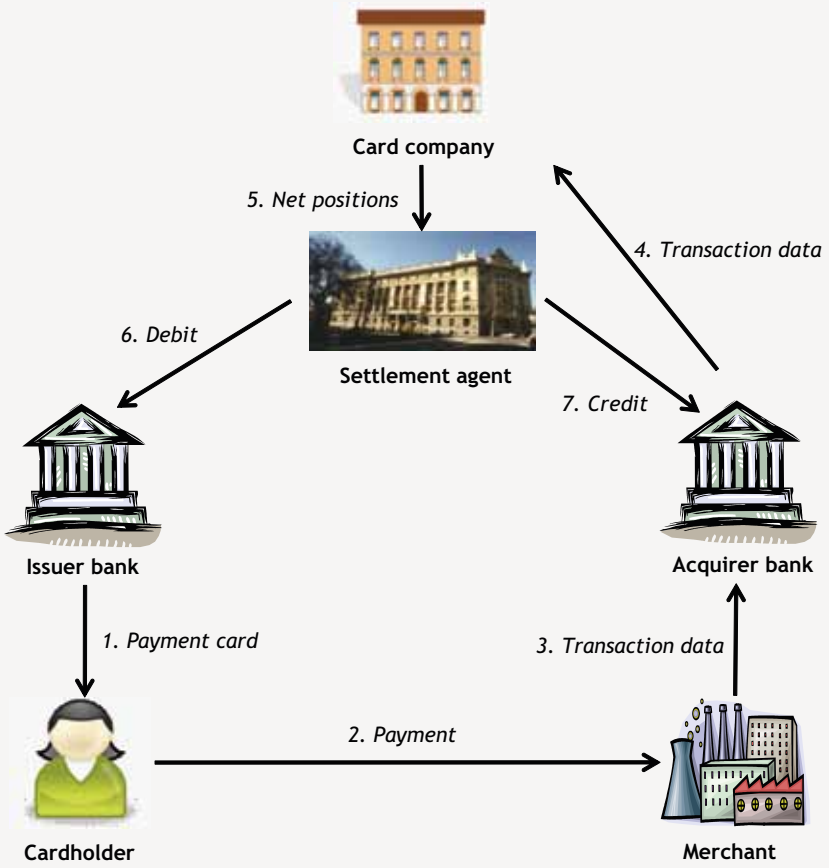
In this study, we analyse payment cards and the costs thereof only in relation to purchase transactions and ignore other transactions conducted with payment cards (e.g. cash withdrawal and credit transfer), as those are indicated among the costs of the relevant payment instruments. The term "payment card" is used collectively and thus also covers various debit and credit cards.

4.2.1 The payment chain and process in relation to payment card transactions

Initiation of the payment process is conditional on the availability of a cardholder, a payment card and an acceptance point (POS terminal). The cardholder receives the payment card from the bank, with which it can initiate purchases/ payment transactions at the merchant or other acceptance point (e.g. catering, local government, etc.) (hereinafter collectively "merchant"). In the course of this process, the merchant swipes the payment card at the POS terminal. An automatic authentication request message is launched from the merchant with indication of the amount of the purchase and data relating to the cardholder through the acquirer bank to the card company which forwards it to the issuer bank. The issuer (or its authorised service provider) checks whether there is sufficient funds on the payment account linked to the payment card and sends back the authorisation (or block) of the transaction to the merchant through the same route.

Commonly, at the end of each day, the merchant sends data relating to all payment card transactions it conducted to its bank (acquirer bank) which forwards these to the clearing and settlement system operated by the card companies (e.g. MasterCard, Visa). The card companies calculate the net positions of the individual issuer and acquirer banks (the net debt or receivables of the bank), including the interchange fee and other card company fees. The interbank settlement of bank

Chart 8
Payment chain and process related to card payments in the four-party card system



net positions provided by the card companies is performed on the accounts managed by the settlement bank.[39] Depending on whether the issuer and the acquirer bank is the same or different during the given purchase/payment transaction, there are three or four-party card systems. The chart below shows the payment process conducted in a four-party card system, i.e. when there are 2 banks, 1 cardholder and 1 merchant.

4.2.2 Transaction data relating to debit and credit card payments

In 2009, a total of 150.2 million debit and 24.6 million credit card payments were in Hungary in the value of HUF 1,050.4 billion and HUF 200.4 billion, respectively (data relate to payments transacted with domestically issued payment cards). The payments were transacted with 7.3 million debit and 1.5 million credit cards at nearly 60,000 POS terminals.[40]

Although the study surveys the cost of payments transacted in 2009, in terms of the development potential of the domestic business, we consider it important to show the trend of domestic payment transactions relating to the preceding five years and to apply a European comparison.

[39] In Hungary, in the case of MasterCard, settlement is performed within the real time gross settlement system (VIBER) through the MNB, while MKB Bank is the settlement bank of Visa. In relation to MasterCard, the debit and credit positions are booked in VIBER by account transfer. In relation to Visa, all banks in a debit position send the amount of debt by Giro credit transfer and MKB Bank credits the amounts to the banks in a credit position by Giro credit transfer.

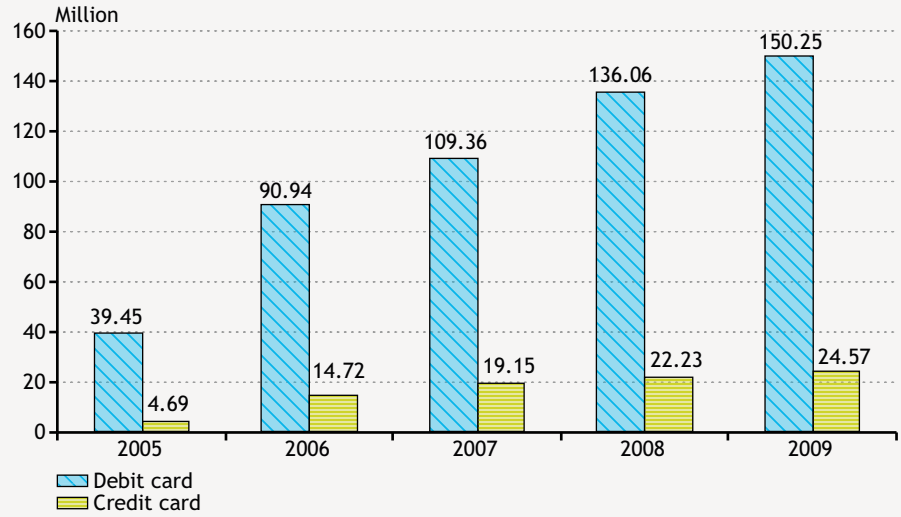
[40] In addition to EFTPOS (Electronic Funds Transfer at Point of Sales) terminals, including mechanical devices that are typically installed in stores with low turnover or used as backup in the event of operational disruptions. (There are only 714 mechanical devices.) The data include devices installed at merchants and other organisations (e.g. catering, local governments), but not bank branch or postal POS terminals.

Table 22
Basic data on payment card business in 2009

	Number of cards (million)	Payment transactions	
		Million transactions	HUF billions
Debit card	7.27	150.25	1,050.35
Credit card	1.52	24.57	200.42
Number of POS terminals at merchants	59,115		

Source: MNB.

Chart 9
Number of domestic payment transactions
(2005–2009)



Source: MNB.

The chtart above illustrates the continuous development of the domestic business, even though Hungary still lags behind by a large margin in international comparison:

Table 23
Comparison of domestic and international data relating to the payment card business
(2009)

	European Union	Euro area	Hungary
Number of cards with payment function per capita	1.45	1.45	0.88
Number of POS terminals per million inhabitants (thousand)	17.1	19.53	7.08
Number of payment transactions per card	41.21	38.12	20.38

Note: In the case of Hungary, POS devices installed in post offices and bank branches are included in the data.
Source: ECB.

4.2.3 Particular aspects of surveying the cost of payment card payments

We were only able to quantify costs separately in relation to debit and credit cards in the payment service provider sector and exclusively on the issuer side. Accordingly, we distributed costs relating to payment card payments on the acquirer side in the payment service provider sector and in the entire corporate and household sectors, aggregated on a sector level, between debit and credit cards, on the basis of the quantitative distribution of domestic payment transactions. (In accordance with data contained in Table 22, debit cards accounted for 85.95% of costs and credit cards for 14.05%.) When

applying the ratio, we made the assumption – confirmed by the major acquirer banks – that there is no difference between debit and credit card transactions in terms of the acceptance costs.

4.2.4 Costs relating to payment card payments in the payment service provider sector

In accordance with the point above, we surveyed costs separately on the issuer and acquirer side of the payment service provider sector. Since the payment service providers do not pay any fees to the other two sectors – corporate and household sector – participating in the payment chain, the private and social costs are identical in relation to the payment service provider sector.

4.2.4.1 Costs relating to debit card payments in the payment service provider sector on the issuer side

Within the payment service provider sector, we estimated costs relating to debit card payments in 2009 at HUF 16.64 billion on the issuer side. In view of the fact that the number of domestic payments transacted with the debit cards of payment service providers included in the sample amounted to 97% of total payments in 2009, we used this ratio to multiply the costs of the credit institutions in the sample.

Table 24
Costs relating to debit card payments in the payment service provider sector on the issuer side

	Items	Private/social costs (HUF billions)	On the basis of social costs (share)
1.	Acquiring new customers	1.80	10.82%
2.	Risk analyses	0.11	0.67%
3.	Issuance of cards	2.27	13.64%
4.	Transaction (non-payment) processing	2.50	15.05%
5.	Domestic interbank clearing and settlement costs	1.12	6.72%
6.	Fraud prevention and management, and fraud loss management at payment transactions	0.39	2.37%
7.	Costs of additional services for customers	1.35	8.09%
8.	Visa/MasterCard/Amex licences and other fees	1.75	10.50%
9.	Customer services	1.04	6.22%
10.	Management and monitoring of activities	1.95	11.7%
11.	Advertising and marketing	0.27	1.63%
12.	Document management and archiving	0.20	1.18%
13.	Money laundering monitoring	0.08	0.46%
14.	Other activities	1.82	10.95%
Total (1–14)		16.64	100.00%

Source: MNB.

The processing (authorisation) of non-payment transactions, card issuing, customer acquisition and the conclusion of service contracts comprise a large portion (approximately 40%) of the above total costs. The cost of one debit card payment on the issuer side amounts to HUF 110.74.

4.2.4.2 Costs relating to credit card payments in the payment service provider sector on the issuer side

In the payment service provider sector, we estimated that the costs relating to credit card payments in 2009 amounted HUF 17.35 billion on the issuer side. In view of the fact that the number of domestic payments transacted with the credit cards of payment service providers included in the sample amounted to 91% of total payments in 2009, we used this ratio to multiply the costs of the credit institutions in the sample.

Table 25
Costs relating to credit card payments in the payment service provider sector on the issuer side

	Items	Private/social costs (HUF billions)	On the basis of social costs (share)
1.	Acquiring new customers	3.83	22.08%
2.	Credit risk analyses	1.01	5.81%
3.	Issuance of cards	0.65	3.77%
4.	Transaction (non-payment) processing	0.58	3.36%
5.	Domestic interbank clearing and settlement costs	0.21	1.20%
6.	Fraud prevention and management, and fraud loss management at payment transactions	0.38	2.16%
7.	Costs of additional services for customers	1.48	8.55%
8.	Visa/MasterCard/Amex licences and other fees	1.48	8.55%
9.	Customer services	0.96	5.53%
10.	Management and monitoring of activities	3.39	19.56%
11.	Advertising and marketing	0.44	2.55%
12.	Document management and archiving	0.29	1.65%
13.	Money laundering control	0.04	0.26%
14.	Other activities	2.60	14.97%
Total (1–14)		17.35	100.00%

Source: MNB.

Customer acquisition and auxiliary services provided to customers account for a significant share of total costs (over 30% combined). The cost on the issuer side equals HUF 706.15 per transaction.

4.2.4.3 Comparison of issuer side unit costs relating to debit and credit card payments

In view of the fact that the unit cost of credit card transactions on the issuer side is over six times the cost of debit card transactions, we compared the unit costs of individual activities.

Table 26
Unit cost elements of one debit and one credit card transaction arising at the issuer bank

	Items	Debit card (HUF)	Credit card (HUF)
1.	Acquiring new customers	11.98	155.94
2.	Credit risk analyses	0.74	41.00
3.	Issuance of cards	15.10	26.61
4.	Transaction (non-payment) processing	16.67	23.74
5.	Domestic interbank clearing and settlement costs	7.44	8.47
6.	Fraud prevention and management, and fraud loss management at payment transactions	2.62	15.28
7.	Costs of additional services for customers	8.95	60.36
8.	Visa/MasterCard/Amex licences and other fees	11.63	60.34
9.	Customer services	6.89	39.08
10.	Management and monitoring of activities	12.97	138.14
11.	Advertising and marketing	1.80	18.04
12.	Document management and archiving	1.30	11.62
13.	Money laundering control	0.51	1.83
14.	Other activities	12.13	105.70
Total (1–14)		110.73	706.15

Source: MNB.

The table shows that the unit cost of credit cards is higher than that of debit cards in relation to all activities. Economies of scale is a contributing factor (7.27 million debit cards and 1.52 million credit cards); as a result, for example, the unit cost of one plastic card is higher in relation to card issuance due to the printing of the cover letters. We discuss below the largest differences and their reasons.

- The costs of customer acquisition are significantly increased by the education of potential credit card holders in know-how relating to credit card products.

- Credit risk analysis is much more thorough than the common risk analysis relating to debit cards.

- Obviously, due to the higher number of services provided to customers, costs related to credit cards are significantly higher than in the case of debit cards.

- Card company fees are also higher in connection with the issuance of credit products (e.g. credit card module licence).

- The cost of customer service is increased by information provided in relation to credit repayment (amount of debt, the amount to be repaid, etc.).

- Credit and collection monitoring, for example, increases the cost of management and monitoring.

- Issuer banks spend more on the advertisement of credit cards than debit cards, considering that the issue of credit cards is much more profitable than debit cards.[41]

4.2.4.4 Costs relating to payment card payments on the acquirer side in the payment service provider sector

Table 27
Costs relating to debit and credit card payments in the payment service provider sector on the acquirer side

Items		Private/social costs (HUF billions)		Share on the basis of social costs	
		Debit card	Credit card	Debit card	Credit card
1.	Acquiring new customers	0.50	0.08	6.30%	6.32%
2.	Risk analyses (merchants)	0.06	0.01	0.77%	0.77%
3.	Transaction (non-payment) processing	0.39	0.06	4.89%	4.90%
4.	Domestic interbank clearing and settlement costs	1.08	0.18	13.59%	13.62%
5.	Fraud prevention and management, and fraud loss management at payment transactions	0.20	0.03	2.57%	2.57%
6.	Costs of additional services for customers	0.08	0.01	0.96%	0.96%
7.	Visa/MasterCard/Amex licences and other fees	1.13	0.18	14.17%	14.20%
8.	Customer services	0.16	0.03	2.06%	2.06%
9.	Management and monitoring of activities	1.03	0.17	12.93%	12.96%
10.	Advertising and marketing	0.01	0.00	0.14%	0.14%
11.	Payment transaction management (without interchange and fees paid by cooperative bank branches)	0.44	0.07	5.53%	5.34%
12.	POS management	2.26	0.37	28.44%	28.49%
13.	Document management and archiving	0.10	0.02	1.21%	1.21%
14.	Money laundering control	0.05	0.01	0.65%	0.65%
15.	Other activities	0.46	0.08	5.80%	5.81%
Private and social costs of payment card acceptance		7.94	1.30	100.00%	100.00%

Source: MNB.

[41] This is so even if we take into account that in relation to credit cards, the payment service providers must also cover their crediting costs (provisioning, net crediting loss, collection cost, capital cost).

In the payment service provider sector, we estimated that the costs relating to payment card payments in 2009 amounted to HUF 9.24 billion on the acquirer side. Extrapolation was not necessary in this case, as the credit institutions participating in the sample fully cover the domestic acquirer business. We did, however, distribute costs among credit and debit product groups in proportion to transactions (85.95%–14.05%), in accordance with point 4.2.3.

On the acquirer side, the largest cost items are POS management (28.4% and 28.5%),[42] fees paid to card companies (14.2%) and the cost of domestic interbank clearing and settlement (13.6%). The unit cost of a transaction for an acquirer bank is HUF 52.80 in relation to both debit and credit products.

4.2.4.5 Total costs relating to debit and credit card payments in the payment service provider sector

Summarising the costs incurred on the issuer and acquirer side, it can be established that a total cost of HUF 43.23 billion arose in the payment service provider sector in relation to payment card transactions; nearly 57% of such cost is linked to debit cards.

Table 28
Total costs relating to debit and credit card payments in the payment service provider sector on the issuer and acquirer side

Items		Private/social costs (HUF billions)		Share on the basis of social costs	
		Debit card	Credit card	Debit card	Credit card
1.	Costs of payment card issuance at payment service providers	16.64	17.35	67.70%	93.03%
2.	Costs of payment card acceptance at payment service providers	7.94	1.30	32.30%	6.97%
Costs of payment service providers in connection with payment cards		24.58	18.65	100.00%	100.00%

Source: MNB.

4.2.5 Cost of payment card acceptance in the corporate sector

We accounted purchase transactions conducted in the domestic economy with domestically issued cards as incoming payments – i.e. payments received by merchants – in terms of the merchant. Due to the negligible volume, we ignored the fact that 2% of such transactions – due to business card payments of employees – also appear as outgoing payments in the corporate sector. (Payments on the outgoing side and the costs incurred by business card holders, are stated amount household costs discussed under point 4.2.6.)

We estimated the private cost of the receipt of payment card payments by companies to amount to HUF 20.66 billion in 2009, where HUF 17.76 billion is related to debit cards and HUF 2.90 billion to credit cards, in accordance with distribution carried out in proportion to number of transactions (86%-14%), as indicated under point 4.2.3. In relation to companies, there is no major difference between private and social cost, as they pay fees to the credit institutions in the form of merchant fees and under other titles. Accordingly, the social cost on the corporate side is HUF 3.85 billion in relation to debit cards and HUF 0.63 billion in relation to credit cards.

Examining the table row by row, the first item shows the costs related to company-owned POS terminals which we estimated at HUF 0.7 billion. We estimated that 5% (i.e. 2,955 terminals) of POS terminals operating in the country are company owned (based on the estimate provided by the top 2 resident banks in the payment card acceptance business).

We estimated fees paid as merchant fees and under other titles on the basis of acquirer side revenue data derived from data provided by credit institutions. We assumed that the acquirer bank earns revenue (a total of HUF 16.18 billion in relation to debit and credit cards) exclusively from merchants in the given business.

[42] The minor difference results from rounding.

Table 29
Costs of accepting payment card payments in the corporate sector

Items		Debit card	Credit card	Debit card	Credit card	Share on the basis of social costs
		Private costs (HUF billions)		Social costs (HUF billions)		
1.	Book value of POS terminals if they owned by merchants	0.06	0.01	0.06	0.01	1.65%
2.	Merchant fees and other fees including costs of POS terminals (if they hired)	13.91	2.27			
3.	Maintenance and servicing of POS terminals if they owned by merchants	0.01	0.00	0.01	0.00	0.24%
4.	Cost of time spent on card payments	0.63	0.10	0.63	0.10	16.27%
5.	Cost of time spent on changing paper rolls in terminals and cost of paper rolls	0.10	0.02	0.10	0.02	2.63%
6.	Comparison of transaction slips and cash register data	0.31	0.05	0.31	0.05	8.11%
7.	Printing summary list for payment card transactions	0.05	0.01	0.05	0.01	1.39%
8.	Losses in connection with payment card fraud	0.07	0.01	0.07	0.01	1.84%
9.	Book value of cash registers	0.88	0.14	0.88	0.14	22.83%
10.	Preparation of cash registers	0.24	0.04	0.24	0.04	6.28%
11.	Changing paper rolls in cash registers	0.15	0.02	0.15	0.02	3.87%
12.	Contract fee of cash register maintenance and servicing	1.34	0.22	1.34	0.22	34.68%
13.	Cost of time spent on maintenance and servicing cash registers	0.01	0.00	0.01	0.00	0.21%
Total (1–13)		17.76	2.90	3.85	0.63	100.00%

Source: MNB.

We estimated the maintenance and service fee of company-owned POS devices at HUF 0.01 billion, using as a basis the monthly average of HUF 300/device derived from the corporate survey.

We estimated the cost of time spent on card payments at HUF 0.73 billion. According to our own measurements, based on an average of 17 payment card purchases, 35 sec, i.e. 0.58 minutes, is the average duration of a payment transaction, from the point when the cashier tells the customer the payable amount until the cashier returns the payment card to the customer and hands the customer the purchase receipt. We quantified this value in forints on the basis of the number of transactions and the average wage.

We estimated the total cost of the time spent on the replacement of the paper roll in POS devices and the paper roll at HUF 0.12 billion. According to information derived from the corporate survey, paper replacement in a POS device consumes a daily average of 0.06 minutes, thus the cost of time spent on the replacement of paper in all POS devices in 2009 equalled HUF 8.40 million for merchants. On the basis of information obtained from banks, we estimated the total cost of consumed paper at HUF 109.26 million (in consideration of the average size of the receipt, the number of transactions and the unit price of paper).

We estimated the cost of time spent on the comparison of transaction slips and cash register data – on the basis of time estimates derived from the corporate surveys – at HUF 0.36 billion, while the cost of time spent on the printing of the aggregate list containing payment card payments – on the basis of the same source – was HUF 0.06 billion (value data are aggregated for debit and credit cards).

We estimated the amount of loss arising from payment card fraud suffered by merchants at HUF 0.08 billion, on the basis of bank data provided for card statistics.

In accordance with point 4.1.6, we divided the costs related to cash registers (depreciation of cash registers, preparation of cash registers, replacement of paper rolls in cash registers, maintenance and service fees and time expenditure)

between payment card and cash payments. Payment card payments account for 7.7% of total cash register costs, amounting to HUF 3.04 billion.

4.2.6 Costs relating to payment card payments in the household sector

We estimated the private costs relating to the domestic payment card payments of Hungarian cardholders at HUF 78.15 billion (with HUF 16.27 billion relating to debit cards and HUF 61.89 billion to credit cards). With regard to such costs, merchants in Hungary do not charge a separate fee to cardholders for payment card payments. Thus, private costs consist firstly of the fees charged by the issuer bank, secondly, the forint equivalent of time spent on payment, and thirdly, the amount of losses arising from fraud passed on to customers. Similarly to the corporate sector, there is a substantial difference between private and social costs in relation to the household sector as well. Accordingly, the social cost in the household sector amounts to HUF 1.79 billion in relation to debit cards and HUF 0.29 billion in relation to credit cards.

Table 30
Costs relating to payment card payments in the household sector

Items		Debit card	Credit card	Debit card	Credit card	Share on the basis of social costs
		Private costs (HUF billions)		Social costs (HUF billions)		
1.	Cost of time spent on card payments	0.63	0.10	0.63	0.10	35.03%
2.	Losses in connection with payment card fraud	0.05	0.01	0.05	0.01	2.61%
3.	Fees of card payments	14.48	61.59			
4.	Cost of time spent on checking bank account (share of payment card transactions)	1.12	0.18	1.12	0.18	62.36%
Total (1–4)		16.27	61.89	1.79	0.29	100.00%

Source: MNB.

We estimated the cost of time spent on the transaction of payment card payments to amount to a total of HUF 0.73 billion, which is the multiple of the 35-second average transaction time based on our measurement, the number of payment card transactions at merchants and other organisations (150 and 24 million transactions, respectively) and net average income.

We estimated the amount of loss arising from payment card fraud passed on to cardholders – due to payment card payments – at HUF 0.06 billion. For calculation of this loss,[43] we relied on data provided by banks for card statistics. In 2009, the banks charged a total of HUF 100.56 million in loss to their cardholder customers[44] as a result of payment card fraud; we distributed this amount between cash (45.55%) and payment cards (54.45%), on the basis of the total value of fraudulent transactions.[45]

We estimated total fees relating to payment card payments at HUF 76.07 billion (with HUF 14.48 billion related to debit cards and HUF 61.59 billion to credit cards). Our estimation is based on revenue data contained in the payment service provider questionnaire. The revenue of the issuer bank can originate from two sources in relation to payment card payments: fees collected from cardholders and the interchange fee paid by the acquirer bank for payment transactions. In the aforementioned questionnaire, we requested that revenues originating from debit card issuance and credit card issuance each be indicated in separate rows. In relation to debit cards, the amount of revenue less interchange fees was HUF 14.48 billion in 2009, while the figure for credit cards was HUF 61.59 billion. The latter amount also includes various fees, interest and penalty interest related to crediting.[46]

[43] Loss: amount charged to a participant – in this case, the cardholder – of the card business in the course of 2009, or following the investigation of claims – i.e. the fraudulent transactions – extended from the previous year.
[44] The amount also includes loss written off as a result of fraud related to business cards.
[45] Fraudulent transaction: transaction resulting from fraud (e.g. theft, forgery of payment cards, abuse of card data on the Internet, etc.) occurring in the course of 2009.
[46] This not only distorts household costs, but obviously also the revenues of payment service providers. Since these amounts are evened out, the lack of credit interest filtering does not affect total social costs.

We determined the time spent on the checking of the bank statement on the basis of the household questionnaire and charged it to payment card purchases in proportion (at 41.28%) to transactions related to the bank account.

4.2.7 Social cost of payment card payments

In summary of the above, the costs and fees relating to debit card and credit card payments are distributed among the participants of the payment chain, as indicated in the table below.

Table 31
Costs and fees relating to payment card transactions in 2009
(in HUF billion)

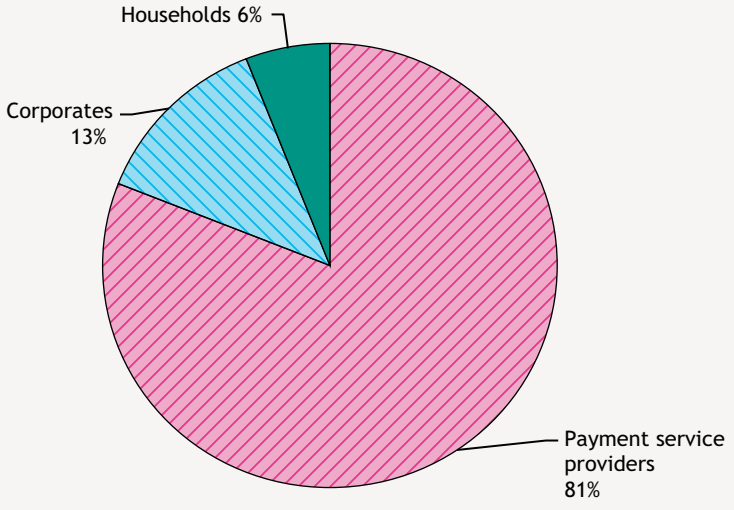
Stakeholders (product name)		Private costs	Fees paid	Own production costs	Fees received	Net private costs
		(1)	(2)	(3)=(1)−(2)	(4)	(5)=(1)−(4)
Debit card						
1.	Payment service providers	24.58	0.00	24.58	28.39	−3.81
2.	Corporates	17.76	13.91	3.85	0.00	17.76
3.	Households	16.27	14.48	1.79	0.00	16.27
Total (debit card)		58.61	28.39	30.22	28.39	30.22
Credit card						
1.	Payment service providers	18.64	0.00	18.64	63.87	−45.23
2.	Corporates	2.90	2.27	0.63	0.00	2.90
3.	Households	61.89	61.59	0.29	0.00	61.89
Total (credit card)		83.43	63.87	19.56	63.87	19.56

Source: MNB.

The total value of own production costs, i.e. social costs [column (3)], indicates that on a social level the 150 million payments transacted with debit cards cost HUF 30.22 billion, while the nearly 25 million payments transacted with credit cards cost HUF 19.56 billion. Thus, payment card payments cost HUF 49.78 billion in 2009, corresponding to 0.19% of annual GDP.

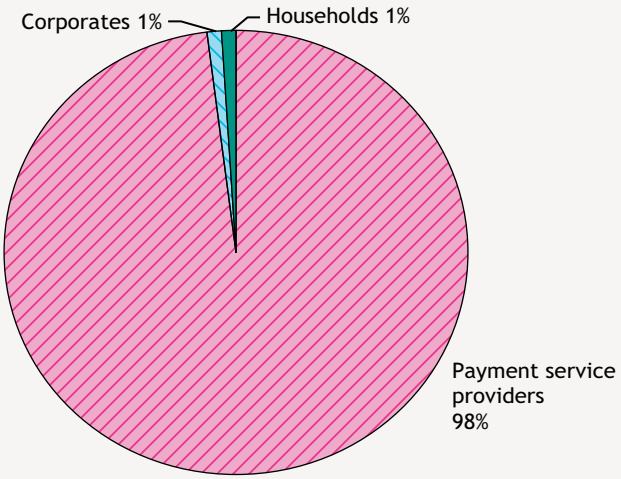
The following two charts show the sectoral percentage distribution of the social cost of debit cards and credit cards.

Chart 10
Sectoral distribution of the social cost of debit cards



Source: MNB.

Chart 11
Sectoral distribution of the social cost of credit cards



Source: MNB.

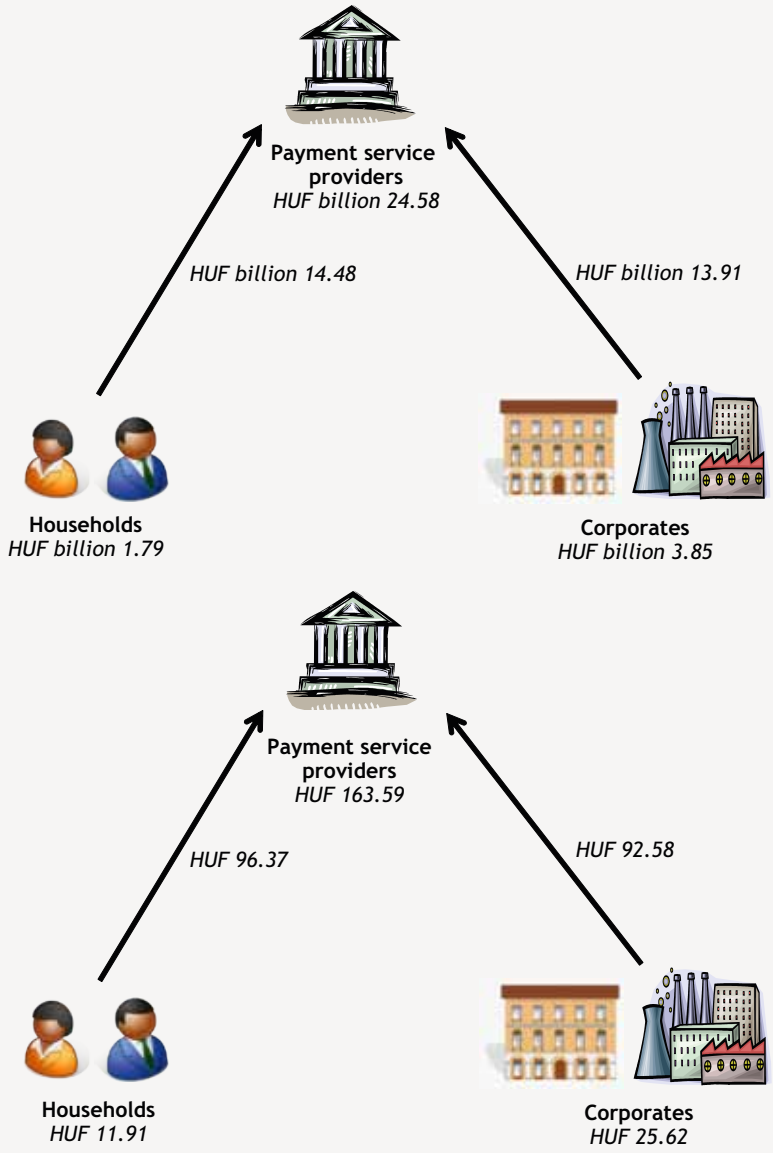
Both charts show that a substantial portion of social costs are incurred by payment service providers. But in relation to net private costs [Table 31, column (5)], the revenues of the sector exceed the costs in relation to both debit and credit cards. The difference is significantly larger in the case of credit cards than for debit cards, as credit interest and possibly penalty interest contributes to the revenues of payment service providers.

The significant difference between the unit social costs of debit and credit card payments and the substantiation of our calculations is confirmed by the results of similar international surveys (point 6.1.3). According to the Belgian cost survey, for example, the unit cost of a debit card transaction is 0.55 EUR, while the cost is 2.62 EUR for a credit card transaction. In the Dutch survey, the cost is 0.49 EUR for debit card transactions and 3.59 EUR for credit card transactions. This substantial difference remains even if we ignore crediting costs relating to credit cards in the payment service sector, as numerous additional costs – as detailed in part 4.2.4.3 – arise in comparison to debit cards which cannot be ignored. Such costs are not directly related to the conduct of the payment transaction, but rather to the issue and the holding of the card; in the process of surveying the costs of payment card transactions, however, these cost elements should not be ignored, as the availability of the payment card is essential for card payments.

Net private costs are the result of the difference between the private costs of individual sectors and the fees received by them. Within the payment service sector as a whole both the debit card and the credit card[47] business is profitable overall, but the figure indicated in relation to credit cards is significantly overstated.[48] The household and corporate sectors are charged under various titles – annual card fee, merchant fee – for the service in which consideration for purchases may be settled with payment cards and payment cards may be accepted as a payment instrument. The household costs indicated in connection with credit cards are overstated, as these also include crediting costs.

[47] Also including crediting revenue, but ignoring the cost of crediting.
[48] The amount of credit card profit is significantly distorted by the fact that we took into account crediting revenue (but not cost).

Chart 12-13
Total costs and fee flows relating to total debit card transactions and to one transaction



Source: MNB.

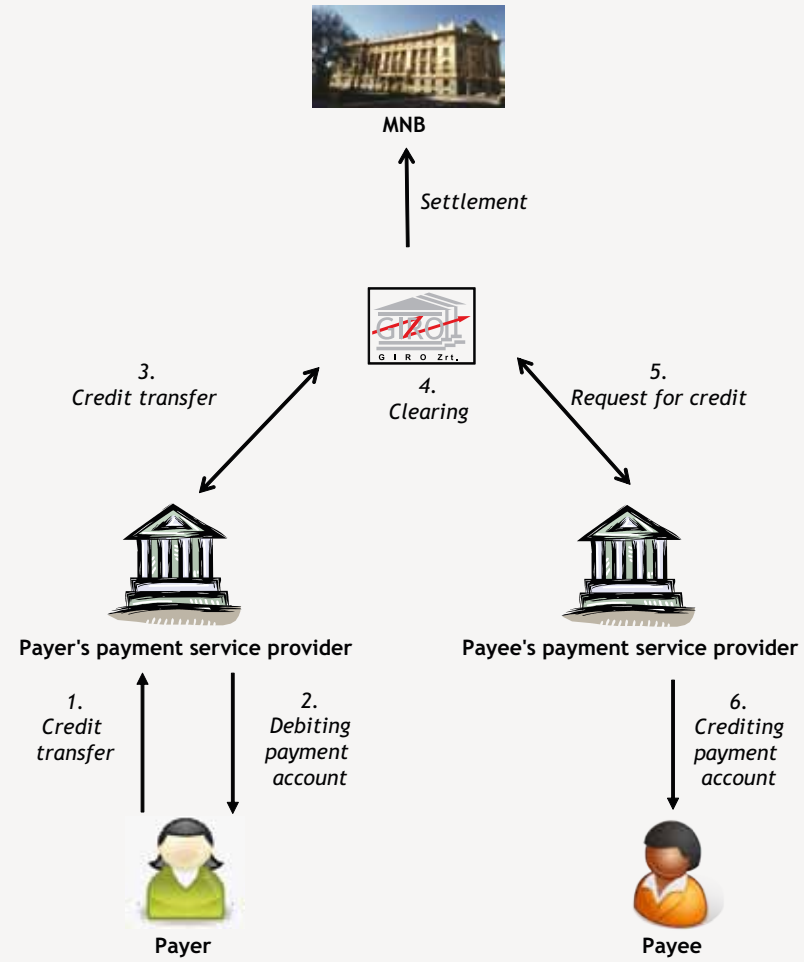
4.3 CREDIT TRANSFERS

4.3.1 The payment chain and process in relation to credit transfers

In a credit transfer there is a flow of funds between payment accounts. In the course of the credit transfer, the payer submits the credit transfer order on paper or electronically to his payment service provider, which forwards it to the clearing house (Giro Zrt.) following the debiting of the customer's account. On the basis of the orders received from the customer's payment service provider and other payment service providers, in the course of the clearing process the clearing house determines the debit and credit position of the payment service providers, submits these positions to the MNB and notifies the payment service providers of the payees of the order. The MNB books the amounts resulting from the clearing positions on the accounts of the payment service providers, i.e. the positions arising as a result of the clearing process are settled. The payment service providers of the payees credit the amounts contained in the orders to the accounts of the payees. The process is simplified if the accounts of both the payer and the payee are managed by the same payment service provider, as in this case the participation of neither Giro Zrt. nor the MNB is necessary.

In relation to batch credit transfers, the process differs from the one above in that the customer submits several credit transfers in batch form to his payment service provider which relate to amounts credited to different payees. Batch credit transfer is typically used commonly by businesses for large volume retail payments (e.g. payment of wages).

Chart 14
Payment chain and process related to credit transfers



Source: MNB.

The credit transfer (and batch credit transfer) process is unique in relation to the savings co-operatives that connect to the Interbank Clearing System (ICS) operated by Giro Zrt. through Magyar Takarékszövetkezeti Bank Zrt. (MTB), as in these cases, an additional level – the MTB – functions between the payment service provider of the payer/payee and Giro Zrt., which forwards the credit transfer orders of participating savings co-operatives to the clearing system and the payee savings co-operatives, or if in the case of a credit transfer order, the target account is also kept by a savings co-operative connected to the MTB, the MTB forwards the credit transfer order to the savings co-operative keeping the target account, thus the order is not forwarded to the ICS for clearing. The MTB participates in the process both as a payment service provider and as a clearing and settlement infrastructure.

4.3.2 Estimation of the number and value of credit transfer and batch credit transfer transactions

Among the non-cash payment instruments, precise data on the number and value of the most frequently used credit transfer/batch credit transfer transactions was only partly available. However, the number of transactions was also necessary for the estimation of social costs. In the course of estimating the number of transactions, in addition to

payments statistics originating from the ICS, we used payments data regularly requested from payment service providers and submitted specifically for the purpose of the project.

With the help of the sources, we estimated 277.23 million credit transfer transactions for domestic, non-time critical forint credit transfers. For the estimation of the number of credit transfers submitted on paper and electronically, we used the 17%-83% ratio available from our earlier analyses (on the basis of data regularly submitted by payment service providers). According to this ratio, 17% of payment orders are submitted on paper and 83% submitted electronically (via Internet, office banking services, mobile phones, etc.) to the payment service providers. We thus estimated a total of 47.13 million transactions on a national level for paper-based credit transfers and 230.1 million transactions for electronic credit transfers. The sector level breakdown of the number of credit transfers, including a submission channel breakdown, was also necessary for the extrapolation of the household and corporate surveys. According to our estimates, the corporate sector conducted a total of 227.23 million transactions, with 207.23 million transactions submitted electronically and 20 million transactions on paper by corporates to the payment service providers. According to our estimates, the household sector submitted 50 million credit transfer orders to payment service providers, with 27.13 million on paper and 22.87 million electronically.[49] In relation to the breakdown of household paper-based and electronic credit transfers, we assumed that households submit more orders on paper than corporates.

Table 32
Estimated number of credit transfers in 2009
(million transactions)

	Corporates	Households	Total
Paper-based credit transfer	20.00	27.13	47.13
Electronic credit transfer	207.23	22.87	230.10
Total	227.23	50.00	277.23

Source: MNB.

We attempted to estimate the aggregate value of credit transfers/batch credit transfers from the regular data provision of credit institutions. The result is HUF 362,772.29 billion, which we distributed in proportion to transactions between paper-based and electronic credit transfers.[50]

In the study, we estimated the combined costs of credit transfers (and batch credit transfers), and therefore we apply the term of credit transfer and batch credit transfer simply as credit transfer.

4.3.3 Costs of credit transfer at the central bank

The credit transfer related costs of the MNB amounted to HUF 0.016 billion in 2009. This amount reflects the fee revenue of the MNB resulting from the settlement of the interbank debit and credit positions calculated in the ICS (in fact, the ICS position matrix) on the accounts of payment service providers. Considering that the pricing of the MNB is cost based, that

Table 33
Distribution of fees (costs) paid to the MNB

	Number of ICS transactions	Distribution of transactions	Distribution of fees
Credit transfer	199,446,553	86.23%	16,063,471
Direct debit	31,131,826	13.46%	2,507,364
B2B direct debit	709,713	0.31%	57,160
Total	231,288,092	100.00%	18,627,996

Source: MNB.

[49] Estimated from ICS statistics.
[50] We wish to note that in the course of extrapolating to a sector level, we did not use value data, as we applied a transaction-linked estimation.

is, the MNB aims at fully recovering its costs, the central bank costs and the fees paid by payment service providers for settlement are the same. The total fees paid by payment service providers to the MNB for the accounting of the ICS position matrix in 2009 did not reach HUF 0.019 billion in total; we distributed this amount in proportion to ICS transactions between credit transfer, direct debit and B2B direct debit.

4.3.4 Costs of credit transfer at payment service providers

The credit transfer related private costs of payment service providers amounted to HUF 42.27 billion in 2009. We obtained the private costs by assuming that the level and structure of the private costs of the surveyed banks and savings co-operatives can be projected to the rest of the sector as well. We extrapolated the cost data originating from the banks in proportion to the ICS transactions to the sector level (the 11 credit institutions in the sample covered 70.34% of the sector); data originating from the savings co-operative sector was extrapolated in proportion to the share of the surveyed savings co-operative in the credit transfer payments of MTB, also in consideration of the fact that MTB conducts its own credit transfer payments. Naturally, we also included the credit transfer costs of Giro Zrt.

In relation to payment service providers, there is no major difference between private and own production costs, i.e. social costs, amounting to HUF 42.25 billion in 2009, as the combined fee paid by the service providers in question to the MNB (for the settlement of interbank clearing positions on the accounts of the banks) is of a negligible amount.

Table 34
Costs of payment service providers relating to credit transfers in 2009

	Items	Private costs (HUF billions)	Social costs (HUF billions)	On the basis of social costs (share)
1.	Service contracts	3.19	3.19	7.54%
2.	Requests for transfers of which	6.49	6.49	15.37%
a)	paper-based	4.00	4.00	9.47%
b)	electronic	2.49	2.49	5.90%
3.	Transfer processing of which	11.06	11.05	26.15%
a)	paper-based	7.56	7.55	17.88%
b)	electronic	3.50	3.49	8.26%
4.	Cancellation and return (of a specific credit transfer)	0.31	0.31	0.73%
5.	Fraud prevention and managing the damages derived from fraud	0.81	0.81	1.91%
6.	Filing procedures (archive)	1.55	1.55	3.67%
7.	Money laundering control	0.82	0.82	1.93%
8.	Customer services	4.13	4.13	9.78%
9.	Advertising and marketing	0.32	0.32	0.75%
10.	Management and monitoring of activities	7.60	7.60	17.98%
11.	Other activities	6.00	6.00	14.19%
Total		42.27	42.25	100.00%

Source: MNB.

In view of the fact that there is a large difference between the costs of paper-based and electronic credit transfers, commonly reflected by bank fees, we divided credit transfer costs into credit transfers submitted on paper and electronically. In terms of volume, 17% of credit transfer orders are submitted to credit institutions on paper and 83% by electronic means (e.g. via Internet, phone, office banking applications, etc.). In view of the above, it is particularly noteworthy that the share of the total cost of the two submission channels is different. The unit cost of paper-based credit transfers already exceeds the unit cost of electronic credit transfers at the level of the payment service providers.

Table 35
Costs of payment service providers relating to paper-based credit transfers in 2009

Items		Private costs (HUF billions)	Social costs (HUF billions)	On the basis of social costs (share)
1.	Service contracts	0.54	0.54	3.44%
2.	Requests for transfers of which	4.00	4.00	25.39%
a)	paper-based	4.00	4.00	25.39%
3.	Transfer processing of which	7.56	7.55	47.95%
a)	paper-based	7.56	7.55	47.95%
4.	Cancellation and return (of a specific credit transfer)	0.05	0.05	0.33%
5.	Fraud prevention and managing the damages derived from fraud	0.14	0.14	0.87%
6.	Filing procedures (archive)	0.26	0.26	1.67%
7.	Money laundering control	0.14	0.14	0.88%
8.	Customer services	0.70	0.70	4.46%
9.	Advertising and marketing	0.05	0.05	0.34%
10.	Management and monitoring of activities	1.29	1.29	8.20%
11.	Other activities	1.02	1.02	6.47%
Total		15.76	15.76	100.00%

Source: MNB.

The private cost of paper-based credit transfers was HUF 15.76 billion in relation to payment service providers and the social cost was also HUF 15.76 billion. The private cost of electronic credit transfers was HUF 26.51 billion in relation to payment service providers, while the social cost amounted to HUF 26.49 billion. (According to our estimates, there were 47.1 million paper-based credit transfers and 230.1 million electronic credit transfers in 2009.)

Table 36
Costs of payment service providers relating to electronic credit transfers in 2009

Items		Private costs (HUF billions)	Social costs (HUF billions)	On the basis of social costs (share)
1.	Service contracts	2,65	2,65	9,99%
2.	Requests for transfers of which	2,49	2,49	9,41%
b)	electronic	2,49	2,49	9,41%
3.	Transfer processing of which	3,50	3,49	13,18%
b)	electronic	3,50	3,49	13,18%
4.	Cancellation and return (of a specific credit transfer)	0,26	0,26	0,97%
5.	Fraud prevention and managing the damages derived from fraud	0,67	0,67	2,52%
6.	Filing procedures (archive)	1,29	1,29	4,86%
7.	Money laundering control	0,68	0,68	2,56%
8.	Customer services	3,43	3,43	12,94%
9.	Advertising and marketing	0,26	0,26	0,99%
10.	Management and monitoring of activities	6,31	6,31	23,80%
11.	Other activities	4,98	4,98	18,79%
Total		26,51	26,49	100,00%

Source: MNB.

4.3.5 Costs of credit transfer in the corporate sector

We estimate that the private costs of credit transfers in the corporate sector were HUF 67.58 billion and social costs amounted to HUF 18.31 billion in 2009. In relation to credit transfers as well, we estimated data using the cost levels of the 15 surveyed corporates (with the exception of fees paid to payment service providers related to credit transfers) on the assumption that the cost level and structure of the surveyed corporates is similar to that of the entire sector and is thereby projectable. We generally extrapolated data to the entire sector in proportion to gross sales revenue; in this case, too, the exception is the fees paid to payment service providers related to credit transfers.

Table 37
Costs of corporates relating to credit transfers in 2009

	Items	Private costs (HUF billions)	Social costs (HUF billions)	On the basis of social costs (share)
1.	Fees paid for the outsourcing credit transfer traffic services to external parties	0.00	0.00	0.00%
2.	Own costs of administration of credit transfer traffic	14.12	14.12	77.09%
3.	Fees paid to payment service providers related to credit transfers (for incoming and outgoing credit transfers)	48.99	0.00	0.00%
4.	Financial costs incurred due to wrong return transactions or transactions wrongly addressed	0.22	0.22	1.19%
5.	Discounts given to credit transfers	0.28	0.00	0.00%
6.	Costs of time related to paper-based credit transfers (time of reaching the payment services provider, time of filling the document)	3.98	3.98	21.72%
Total		67.58	18.31	100.00%

Source: MNB.

There is a major difference between private and social costs in relation to corporates, as the vast majority of private costs consist of fees paid to payment service providers (HUF 48.99 billion), which are not included in social costs.

Examining the table row by row, the first item is the fees paid for the outsourcing credit transfer traffic services to external parties (sending and receiving of credit transfers). The corporates in the sample perform the administration of credit transfer traffic by themselves, and therefore we also estimated 0 for this item at the sector level. Moreover, we did not make further efforts to estimate the first item at the sector level, as the cost relating to the administration of credit transfer traffic is definitely incurred either as a result of outsourcing or conduct of the activity by the corporate (the

Table 38
Costs of corporates relating to paper-based credit transfers in 2009

	Items	Private costs (HUF billions)	Social costs (HUF billions)	On the basis of social costs (share)
1.	Fees paid for the outsourcing credit transfer traffic services to external parties	0.00	0.00	0.00%
2.	Own costs of administration of credit transfer traffic	1.24	1.24	23.71%
3.	Fees paid to payment service providers related to credit transfers (for incoming and outgoing credit transfers)	8.62	0.00	0.00%
4.	Financial costs incurred due to wrong return transactions or transactions wrongly addressed	0.02	0.02	0.36%
5.	Discounts given to credit transfers	0.03	0.00	0.00%
6.	Costs of time related to paper-based credit transfers (time of reaching the payment services provider, time of filling the document)	3.98	3.98	75.92%
Total		13.89	5.24	100.00%

Source: MNB.

second item in the table). Thus, administration of credit transfer traffic can necessarily be included in the cost estimate at the corporate sector level; moreover, this item accounts for the bulk of social costs incurred by corporates.

We extrapolated the fees paid to payments service providers related to credit transfers to the sector level (70.64%) with the help of payment service providers revenues related to credit transfers and also took into account the share of corporates within total credit transfer transactions.

Corporates provided discounts for payments with credit transfers to households and corporates within the sector. The amount of discount provided within the sector, which we estimate to equal HUF 0.28 billion, is not included among private costs.

We estimated the cost of time of paper-based credit transfers by calculating the costs of reaching the payment service provider's branch (by public transportation, on foot, by car) by various means, obviously in consideration of the average distance to the payment service provider's branch (3.7 km),[51] we extrapolated this cost to a sector level, using the number of paper-based corporate orders. We also added the cost stemming from the customer waiting (in line) at the payment service provider. We obtained this figure from the average of the survey conducted by several payment service providers, as the multiple of the waiting time (3:31 minutes) and the average wage per minute. The cost of time and transport cost related to one paper-based credit transfer was HUF 497.1.

Table 39
Costs of corporates relating to electronic credit transfers in 2009

	Items	Private costs (HUF billions)	Social costs (HUF billions)	On the basis of social costs (share)
1.	Fees paid for the outsourcing credit transfer traffic services to external parties	0.00	0.00	0.00%
2.	Own costs of administration of credit transfer traffic	12.87	12.87	98.49%
3.	Fees paid to payment service providers related to credit transfers (for incoming and outgoing credit transfers)	40.37	0.00	0.00%
4.	Financial costs incurred due to wrong return transactions or transactions wrongly addressed	0.20	0.20	1.51%
5.	Discounts given to credit transfers	0.26	0.00	0.00%
Total		53.70	13.07	100.00%

Source: MNB.

We calculated the costs of paper-based and electronic credit transfers from transaction-proportionate corporate cost data, but in relation to the fees paid to payment service providers related to credit transfers we also took into account that banks may charge a higher fee for paper-based orders, due to their higher costs.

Upon comparing the corporate cost tables of paper-based credit transfers and electronic credit transfers, it is clear that in relation to paper-based orders, the time expenditure of credit transfers generates substantial costs chiefly through "shoe leather costs" (going to the bank, waiting, filling out of papers).

4.3.6 Costs of credit transfer in the household sector

The private costs of households related to credit transfers were HUF 25.29 billion, while the social costs amounted to HUF 14.51 billion. There is a substantial difference between private and social costs in the case of households as well, as households also pay a substantial fee to payment service providers for conducting credit transfers.

In examining each of the rows in the table, with a focus on the main items, it is clear that face-to-face credit transfers consume a significant amount of time for households, exclusively attributed to credit transfers submitted on paper.

[51] Helmeczi (2010).

Table 40
Costs of households relating to credit transfers in 2009

	Items	Private costs (HUF billions)	Social costs (HUF billions)	On the basis of social costs (share)
1.	Costs of time of paper-based credit transfers (inbound and outbound trips are included)	13.81	13.81	95.20%
2.	Costs of time of electronic credit transfers	0.33	0.33	2.24%
3.	Fees paid for credit transfers	10.78	0.00	0.00%
4.	Costs of time of checking bank account statement	0.37	0.37	2.56%
Total		25.29	14.51	100.00%

Source: MNB.

Similarly to the corporate estimate, we estimated this cost on the basis of the cost of payment service provider access and waiting time at the payment service provider, using the estimated volume of paper-based household credit transfers for extrapolation.

Similarly to the corporate estimate, we obtained the credit transfers fee from the revenue data of the payment service providers, on the basis of household transaction volume.

We determined the costs of time spent on the checking the bank account/payment account on the basis of the household survey and charged it to the credit transfer in proportion (by 11.81%) to transactions related to the bank accounts.

We ignored the phone and Internet purchase costs and usage fees, because we regarded such cost to be negligible, as the main purpose of the purchase of a phone and the Internet is not the conducting of banking transactions.

Table 41
Costs of households relating to paper-based credit transfers in 2009

	Items	Private costs (HUF billions)	Social costs (HUF billions)	On the basis of social costs (share)
1.	Costs of time of paper-based credit transfers (inbound and outbound trips are included)	13.81	13.81	98.56%
2.	Fees paid for credit transfers	5.85	0.00	0.00%
3.	Costs of time of checking bank account statement	0.20	0.20	1.44%
Total		19.86	14.01	100.00%

Source: MNB.

In relation to remote credit transfers, we took as a basis the average time (2'48") measured by payment service providers for orders submitted by telephone and the time (2 minutes) we estimated for the submitting on the Internet, taking into account the volume sent through these channels. We multiplied this time with the average wage per time unit. The total amount of such cost is charged to credit transfers sent electronically.

Upon analysis of the costs of households' paper-based and electronic credit transfers, it is clear that the social cost of paper-based orders, with a moderately higher volume of paper-based transactions, is significantly higher than the costs of

Table 42
Costs of households relating to electronic credit transfers in 2009

	Items	Private costs (HUF billions)	Social costs (HUF billions)	On the basis of social costs (share)
1.	Costs of time of electronic credit transfers	0.33	0.33	65.72%
2.	Fees paid for credit transfers	4.93	0.00	0.00%
3.	Costs of time of checking bank account statement	0.17	0.17	34.28%
Total		5.43	0.49	100.00%

Source: MNB.

electronically submitted orders; much of the difference is attributable to the transportation and waiting-time costs of face-to-face submission.

4.3.7 Total social cost of conducting credit transfers, social cost of credit transfers per transaction

Summarising the above, in the following we detail the costs and fees related to credit transfers according to the stakeholders of the payment chain. The cost of credit transfers amounted to HUF 75.08 billion at the social level, i.e. equalling 0.29% of annual GDP.

Table 43
Costs and fees relating to all credit transfers in 2009
(in HUF billion)

Stakeholders		Private costs	Fees paid	Own production costs	Fees received	Net private costs
		(1)	(2)	(3)=(1)–(2)	(4)	(5)=(1)–(4)
1.	MNB	0.016	0.000	0.016	0.016	0.000
2.	Payment service providers	42.27	0.02	42.25	59.77	–17.50
3.	Corporates	67.58	49.27	18.31	0.00	67.58
4.	Households	25.29	10.78	14.51	0.28	25.00
Total		135.15	60.07	75.08	60.07	75.08

Source: MNB.

In 2009, the unit cost of credit transfers per transaction was HUF 270.84, with HUF 742.88 related to paper-based credit transfers and HUF 174.15 related to electronically submitted orders. Most of the substantial difference between the two types of channels is attributable to the cost of the face-to-face submission of paper-based credit transfers to the payment service providers.

Table 44
Costs and fees relating to paper-based credit transfers in 2009
(in HUF billion)

Stakeholders		Private costs	Fees paid	Own production costs	Fees received	Net private costs
		(1)	(2)	(3)=(1)–(2)	(4)	(5)=(1)–(4)
1.	MNB	0.003	0.000	0.003	0.003	0.000
2.	Payment service providers	15.76	0.00	15.76	14.47	1.29
3.	Corporates	13.89	8.65	5.24	0.00	13.89
4.	Households	19.86	5.85	14.01	0.03	19.84
Total		49.51	14.50	35.01	14.50	35.01

Source: MNB.

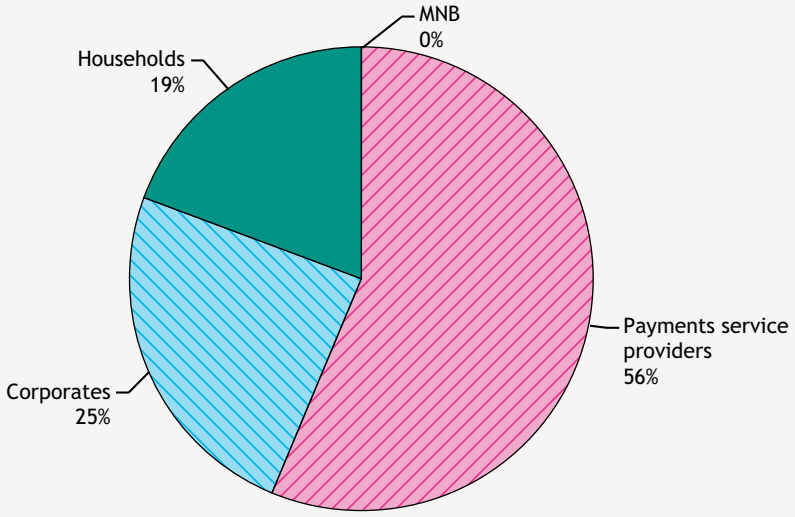
Table 45
Costs and fees relating to electronic credit transfers in 2009
(in HUF billion)

Stakeholders		Private costs	Fees paid	Own production costs	Fees received	Net private costs
		(1)	(2)	(3)=(1)–(2)	(4)	(5)=(1)–(4)
1.	MNB	0.013	0.000	0.013	0.013	0.000
2.	Payment service providers	26.51	0.01	26.49	45.30	–18.79
3.	Corporates	53.70	40.63	13.07	0.00	53.70
4.	Households	5.43	4.93	0.49	0.26	5.17
Total		85.64	45.57	40.07	45.57	40.07

Source: MNB.

The bulk of social costs are borne by payment service providers (56%) and corporates and households (44% combined).

Chart 15
Distribution of the social cost of credit transfers in the payment chain in 2009



Source: MNB.

Fees account for 46% of aggregated private costs, therefore it is important to separately examine who pays these fees to whom and in what value. The table clearly indicates that fees are chiefly paid to payment service providers in the value of HUF 59.77 billion, most of which is paid by corporates and to a lesser extent by households.

Table 46
Fees related to credit transfers in 2009
(HUF billion)

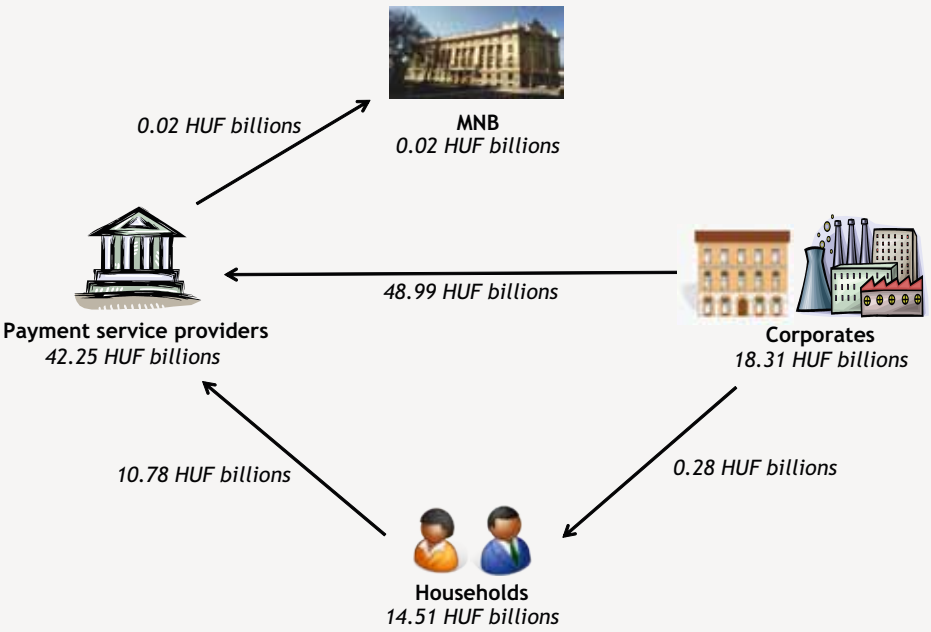
From	To MNB	To payment service providers	To corporates	To households	Total
MNB	–	–	–	–	–
Payment service providers	0.02	–	–	–	0.02
Corporates	–	48.99	–	0.28	49.27
Households	–	10.78	–	–	10.78
Total	0.02	59.77	0.00	0.28	60.07

Source: MNB.

The following two charts show costs and fees flows related to credit transfers in terms of aggregate value and value per transaction; own production costs, i.e. social costs, are indicated for the particular sectors, the flow of fees is shown by the arrows and the direction of the arrows indicates who pays the given fee to whom.

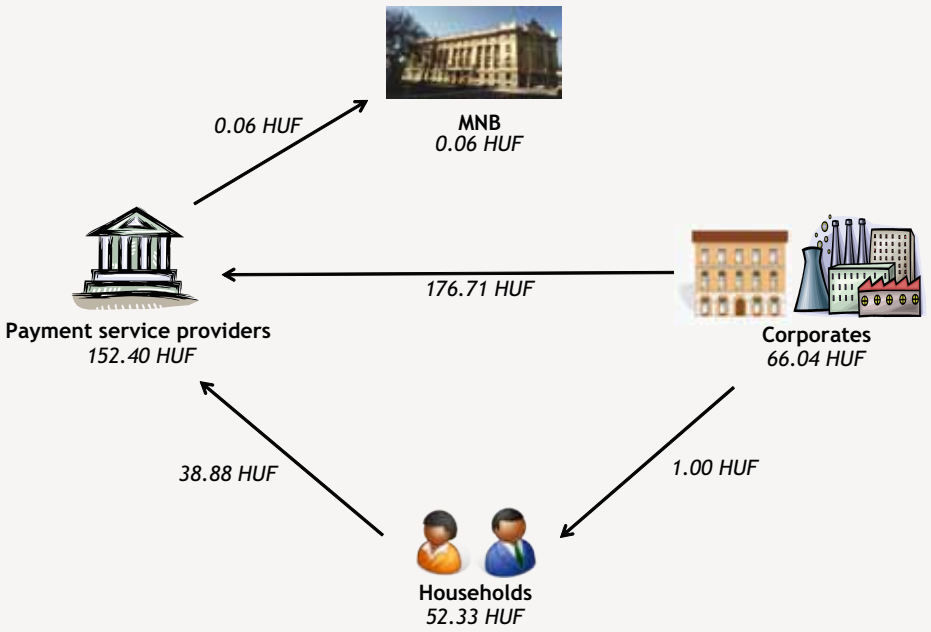
The social cost of one credit transfer was HUF 270.84 in 2009. The chart below shows the social cost of one transaction in each sector and the flow of fees related to one transaction.

Chart 16
Total costs and fees related to credit transfers in 2009



Source: MNB.

Chart 17
Unit costs and fees related to credit transfers in 2009



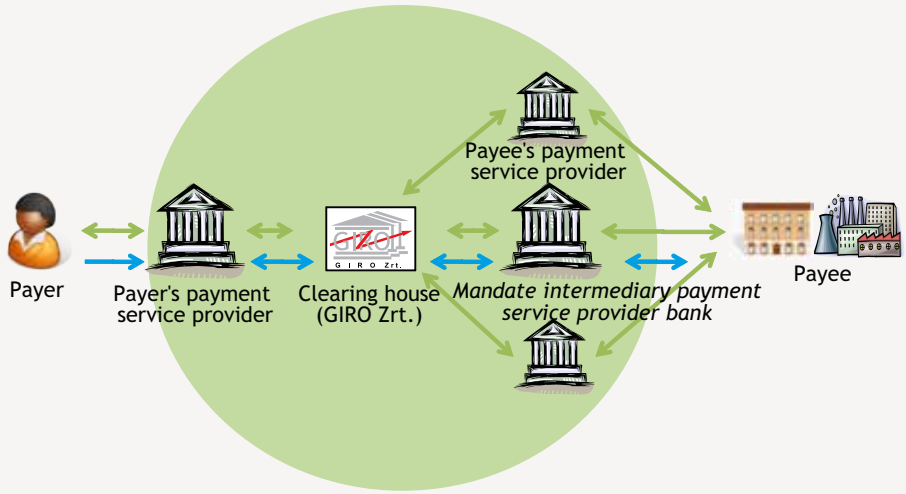
Source: MNB.

4.4 DIRECT DEBITS

4.4.1 The payment chain and process in relation to direct debits

In the direct debit process, the customer (corporate) orders its payment service provider to debit specific amounts from the payment accounts of payers to the credit of the customer. Direct debit is typically used for the collection of regularly arising receivables; accordingly, it is predominantly used by public utilities and insurance corporations to which households pay service fees and insurance premia from time to time. The debit process is preceded by a mandate process. The potential payers submit a debit mandate to their payment service providers, the payment service providers notify the debiting corporate of the above, and if the mandate is successful the corporate will thereafter attempt to collect its receivables from the customers using direct debit. The chart below shows a simplified illustration of the direct debit process. Corporates may use the services of several payment service providers, and therefore the chart shows several payment service providers on the debiting side (the consumer, however, needs to designate a specific account in the mandate, thus only one payment service provider is shown next to the consumer). The payee may submit the debit through any of its payment service providers, but typically it only uses one payment service provider and the other payment service providers are only used with respect to debits at the given payment service provider. As an additional key stakeholder in the process, the clearing house takes part in the clearing of payment orders between payment service providers and the forwarding of mandates.

Chart 18
Payment chain and process related to direct debits



In the chart the blue arrow indicates the mandate process, the green arrow the debit process.
Source: MNB.

The MNB also participates in the payment chain as a settlement payment service provider, the settlement agent of the credit institutions, as the positions arising from clearing are settled through the central bank accounts. And similarly to the credit transfer process, we should note the function of MTB as an infrastructure element that participates in the transaction of direct debits of savings co-operatives connected to it through the ICS.

4.4.2 Estimation of the number and value of direct debit transactions

Precise data were only partly available in relation to the number and value of direct debits as well. However, the number of transactions was also necessary for the estimation of social costs. In the course of estimating transaction number, in addition to payments statistics originating from the ICS, we used payments data regularly requested from payment service providers and submitted specifically for the purpose of the project.

On the basis of the above, we estimated a total of 77 million direct debits. It is necessary to note, however, that our transaction estimate also includes rejected items, as the cost survey covered these as well and rejected items also result in costs. The ratio of rejected items is relatively high in relation to direct debits.

We estimated the payment value[52] for 2009 from regular data provided by the payment service providers, in the amount of HUF 639.97 billion.

4.4.3 Costs of direct debit at the central bank

The distributed direct debit related costs of the MNB amounted to HUF 0.003 billion in 2009. See the table and explanation related to costs and their distribution in part 4.3.3 on credit transfers.

4.4.4 Costs of direct debit at payment service providers

The direct debit related private costs of payment service providers amounted to HUF 6.39 billion in 2009. We determined the private costs by assuming that the level and structure of the private costs of the payment service providers (10 banks) in the sample and the savings co-operative involved in the survey may be projected to the rest of the sector as well. We extrapolated the cost data stemming from the payment service provider sector in proportion to the total direct debit transactions we estimated at the sector level (89.1%), while the data originating from the savings co-operative sector were extrapolated in proportion to the share of the surveyed savings co-operative in the direct debit payments of MTB. Naturally, we also included the direct debit costs of Giro Zrt.

In relation to payment service providers, there is no major difference between private and own production costs, i.e. social costs, which amounted to HUF 6.38 billion in 2009, as the fee paid by the payment service providers to the MNB for the settlement of interbank clearing positions on the accounts of the banks is of a negligible amount.

Table 47
Costs of payment service providers relating to direct debits in 2009

	Items	Private costs (HUF billions)	Social costs (HUF billions)	On the basis of social costs (share)
1.	Service contracts	1.04	1.04	16.32%
2.	Mandate of direct debit (payers and payees)	0.68	0.68	10.72%
3.	Filing procedures (archive)	0.25	0.25	3.86%
4.	Collection procedures and payment processing	0.78	0.78	12.19%
a)	from the payee's perspective	0.37	0.37	5.73%
b)	from the payer's perspective	0.41	0.41	6.46%
5.	Money laundering control	0.00	0.00	0.06%
6.	Fraud prevention and managing the damages derived from fraud	0.11	0.11	1.70%
7.	Customer services	0.15	0.15	2.39%
8.	Advertising and marketing	0.03	0.03	0.42%
9.	Management and monitoring of activities	2.90	2.90	45.44%
10.	Other activities	0.44	0.44	6.91%
Total		6.39	6.38	100.00%

Source: MNB.

4.4.5 Costs of direct debit in the corporate sector

We estimate that the private costs of direct debits in the corporate sector were HUF 4.66 billion and social costs amounted to HUF 0.4 billion in 2009. In relation to direct debits, we estimated data using the cost levels of the 15 surveyed

[52] We wish to note that in the course of extrapolating to a sector level, we did not require value data, as we applied a transaction-linked estimation.

corporates (with the exception of the fees paid to payment service providers related to direct debits), working on the assumption that the cost level and structure of the surveyed corporates is similar to that of the entire sector and is thus projectable. We generally extrapolated data to the entire sector in proportion to gross sales revenue; in this case, too, the exception is the fees paid to payment service providers related to direct debits.

Table 48
Costs of corporates relating to direct debits in 2009

	Items	Private costs (HUF billions)	Social costs (HUF billions)	On the basis of social costs (share)
1.	Fees paid for the oursourcing direct debit traffic services to external parties	0.00	0.00	0.00%
2.	Own costs of administration of debit debit traffic	0.40	0.40	99.98%
3.	Fees paid related to direct debits to payment service providers (for incoming and outgoing direct debits)	2.50	0.00	0.00%
4.	Financial costs incurred due to wrong return transactions or transactions wrongly addressed	0.00	0.00	0.02%
5.	Discounts given to direct debits	1.76	0.00	0.00%
Total		4.66	0.40	100.00%

Source: MNB.

There is a major difference between private and social costs in relation to corporates, as the vast majority of private costs consist of fees paid to payment service providers (HUF 2.5 billion) and discounts given to direct debits (HUF 1.76 billion), which are not included in social costs.

Examining the table row by row, the first item is the fees paid for the outsourcing of direct debit traffic services to external parties (receiving and sending of direct debits); the corporates in the sample conduct the administration of direct debit traffic themselves, and therefore we received 0 for this item at the sector level as well. We did not make further efforts to estimate the first item at the sector level, as the cost related to the administration of direct debit traffic is definitely incurred either as a result of outsourcing or conducting the activity by the corporate (the second item in the table). Thus, the administration of direct debit payments can necessarily be included in the cost estimate at the corporate sector level; moreover, this item accounts for the bulk of social costs incurred by corporates.

We extrapolated the fees paid related to direct debits in proportion to transactions, with the help of payment service providers' revenues related to direct debit, at a sector level (89.1%) and distributed it 50%-50% between corporates and households.

4.4.6 Costs of direct debit in the household sector

The private costs of households related to direct debits were HUF 3.45 billion, while the social costs amounted to HUF 0.94 billion. There is a substantial difference between private and social costs in the case of households as well, as households also pay a significant fee to payment service providers for conducting direct debits.

Examining the table row by row, we can establish that there are two other items in addition to the fees paid for direct debits in relation to households. One item is the costs of time for checking bank account/payment account statement and the other item is the cost of the mandate for direct debits. We estimated the latter on the basis of the costs of accessing the bank branch and the time of waiting there in relation to face-to-face mandates, based on the assumption that approximately 700,000 mandates were conducted face-to-face in 2009. For electronically submitted mandates, we also estimated the volume of electronically submitted mandates (approximately 585,000) and multiplied this volume with the time cost of electronically submitted mandates to obtain the cost of electronically submitted mandates of households for 2009.

Similarly to the corporate estimate, we obtained the fees paid for direct debits by households by extrapolating the revenue data of payment service providers to the sector level and distributing it 50%-50% between corporates and households.

Table 49
Costs of households related to direct debits in 2009

	Items	Private costs (HUF billions)	Social costs (HUF billions)	On the basis of social costs (share)
1.	Costs of mandate for direct debit, cost of time of amendments of limits (inbound and outbound trips are included if they are face to face)	0.37	0.37	39.46%
2.	Fees paid for direct debits	2.50	0.00	0.00%
3.	Costs of time for checking bank account statement	0.57	0.57	60.54%
4.	Fees paid for the usage of internet and telephone	0.00	0.00	0.00%
5.	Purchase costs of telephone and internet	0.00	0.00	0.00%
Total		3.45	0.94	100.00%

Source: MNB.

We determined the cost of time for checking bank/payment account statement on the basis of the household survey and charged it to direct debit in proportion to transactions related to the bank accounts, including cash withdrawals, payment card purchases, credit transfers and direct debits. The share charged to direct debit was 18.18%.

We ignored the phone and Internet purchase costs and usage fees, because we regarded such cost to be negligible, and furthermore, the use of a phone and the Internet is not motivated by the conducting of direct debits.

4.4.7 Total social cost of conducting direct debits, social cost of direct debits per transaction

In summary of the above, we detail below the costs and fees related to direct debits according to the stakeholders of the payment chain. The cost of direct debits amounted to HUF 7.73 billion on a social level, i.e. equalling 0.03% of annual GDP. The unit cost of direct debits per transaction was HUF 100.39 in 2009.

Table 50
Costs and fees relating to direct debits in 2009
(in HUF billion)

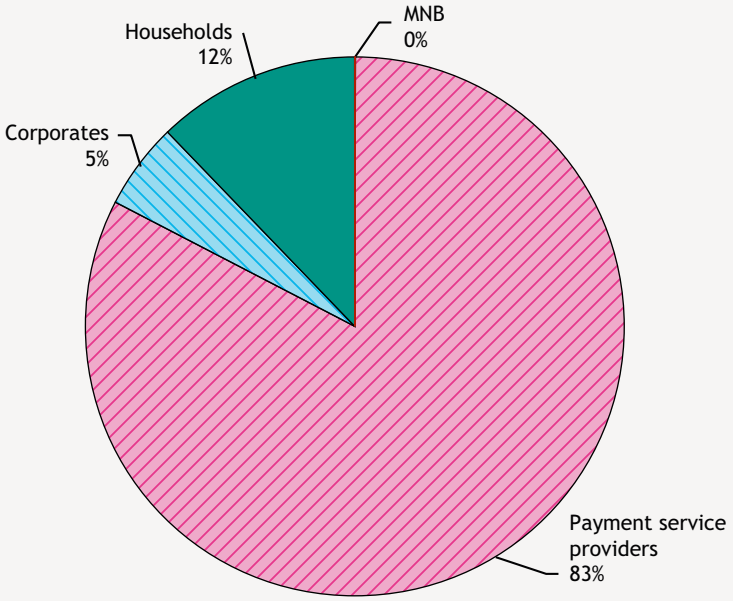
	Stakeholders	Private costs	Fees paid	Own production costs	Fees received	Net private costs
		(1)	(2)	(3)=(1)–(2)	(4)	(5)=(1)–(4)
1.	MNB	0.00	0.00	0.00	0.00	0.00
2.	Payment service providers	6.39	0.00	6.38	5.00	1.38
3.	Corporates	4.66	4.26	0.40	0.00	4.66
4.	Households	3.45	2.50	0.94	1.76	1.69
Total		14.50	6.77	7.73	6.77	7.73

Source: MNB.

The bulk of social costs are borne by payment service providers (83%) and corporates and households (17% combined); the share of the central bank is negligible.

Fees account for 47% of aggregated private costs, and thus it is important to separately examine who pays these fees to whom and in what value. The table clearly indicates that fees are chiefly paid to payment service providers in the approximate value of HUF 5 billion and paid in nearly the same amount by corporates and households. In addition, corporates provided discounts amounting to HUF 1.76 billion to households for payment by direct debit.

Chart 19
Distribution of social costs within the payment chain in 2009



Source: MNB.

Table 51
Fees related to direct debits in 2009
(in HUF billion)

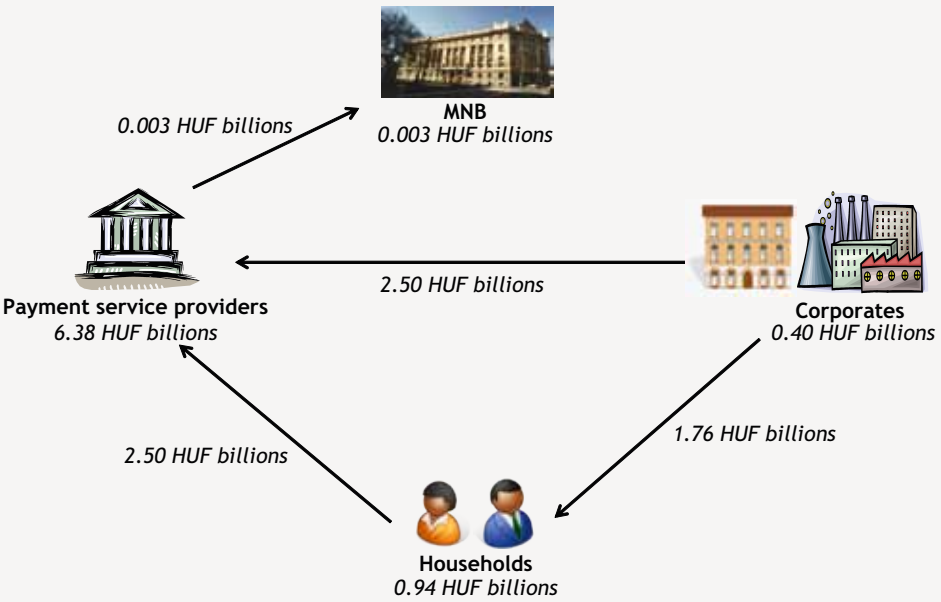
From	To MNB	To payment service providers	To corporates	To households	Total
MNB	–	–	–	–	–
Payment service providers	0.003	–	–	–	0.003
Corporates	–	2.50	–	1.76	4.26
Households	–	2.50	–	–	2.50
Total	0.003	5.00	0.00	1.76	6.77

Source: MNB.

The following two charts show the costs and fee flows related to direct debits in terms of aggregate value and value per transaction; own production costs, i.e. social costs, are indicated for the particular sectors, the flow of fees is shown by the arrows and the direction of the arrows indicates who pays the given fee to whom.

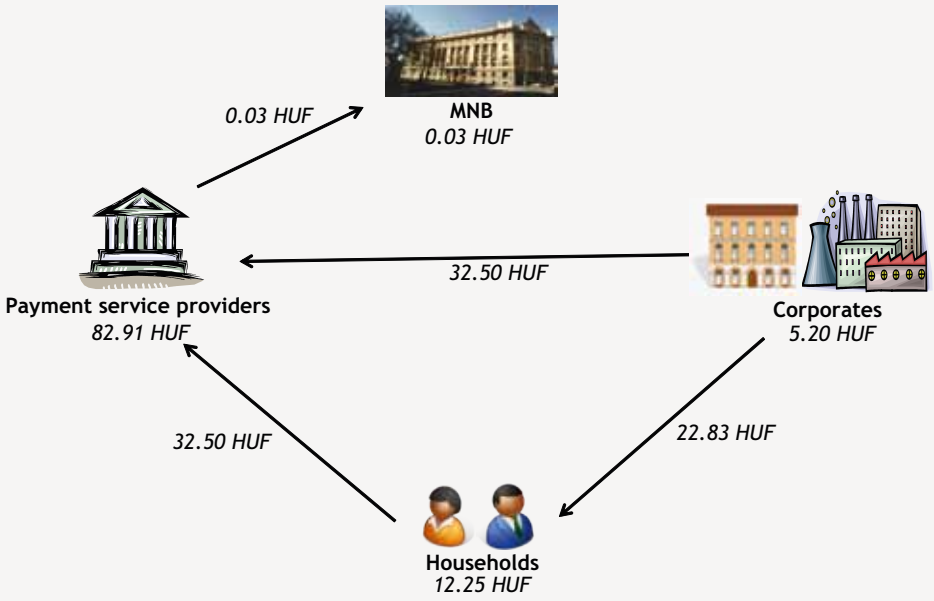
The social cost of one direct debit was HUF 100.39 in 2009. The chart below shows the social cost of one transaction in each sector and the flow of fees related to one transaction.

Chart 20
Total costs and fees related to direct debits in 2009



Source: MNB.

Chart 21
Unit costs and fees related to direct debits in 2009



Source: MNB.

4.5 BUSINESS-TO-BUSINESS (B2B) DIRECT DEBITS

4.5.1 The payment chain and process in relation to B2B direct debits

In the B2B direct debit process, the customer (corporate) instructs its payment service provider to debit specific amounts from the bank account of the payer to the credit of the customer's bank account. Similarly to direct debits, the debit process is preceded by a mandate process. The potential payer submits a debit mandate to its bank which, in possession of the mandate, may perform the B2B direct debit received from the payer in the form of a simple credit transfer if certain conditions are met (e.g. availability of cover). B2B direct debit existed as a type of prompt collection until November 2009.

In view of the fact that our survey targeted the year 2009, we requested the payment service providers to provide data given in relation to this type of prompt collection for business-to-business direct debit and provide data relating to B2B direct debit as of November 2009.

In addition to the customer and the payer and their payment service providers, the MNB also participates in the payment chain as a settlement bank, as the payment accounts of the credit institutions are kept by the MNB, and the positions arising as a result of the clearing process are settled through the central bank accounts. Giro Zrt. takes part in the clearing of the amount following the debit request. The household sector does not participate in the payment chain, as the B2B direct debit is commonly related to the corporate sector.

4.5.2 Estimation of the volume and value of B2B direct debit transactions

To estimate the number and value of B2B direct debits, we used regular data provided by the payment service providers in relation to prompt collection, data requested from payment service providers contained in the sample and ICS payments data related to prompt collections. It caused some difficulty that B2B direct debit has existed only from the autumn of 2009 as a result of a legislative amendment.

On the basis of the foregoing, we estimated a total of 860,225 transactions in relation to B2B direct debits. We estimated payment values[53] at HUF 507.43 billion on the basis of regular data provided by the payment service providers.

4.5.3 Costs of B2B direct debit at the central bank

The distributed costs of the MNB related to B2B direct debits were of a negligible amount in 2009 (HUF 57,160). See the table and explanation related to costs and their distribution in part 4.3.3 on credit transfers.

4.5.4 Costs of B2B direct debit at payment service providers

The B2B direct debit related private costs of payment service providers amounted to HUF 0.79 billion in 2009. We obtained the private costs by assuming that the level and structure of the private costs of the 9 banks in the sample can be projected to the rest of the sector as well. We extrapolated cost data from the payment service sector to the sector level in proportion to the 9 payment service providers in the sample from the payment service provider survey and the total number of B2B direct debit transactions we estimated (61.2%) and added the distributed costs of the clearing infrastructure. There is no major difference between private and own production costs, i.e. social costs, in relation to the combined payment service providers which amounted to HUF 0.78 billion in 2009.

[53] We wish to note that in the course of extrapolating to a sector level, we did not require value data, as we applied a transaction-linked estimation.

Table 52
Costs of payment service providers relating to B2B direct debits in 2009

	Items	Private costs (HUF billions)	Social costs (HUF billions)	On the basis of social costs (share)
1.	Service contracts	0.02	0.02	2.32%
2.	Mandate of direct debit (payees and payers)	0.25	0.25	32.13%
3.	Filing procedures (archive)	0.01	0.01	1.18%
4.	Collection procedures and payment processing	0.21	0.21	26.70%
a)	from the payee's perspective	0.04	0.04	5.47%
b)	from the payer's perspective	0.17	0.17	21.23%
5.	Money laundering control	0.00	0.00	0.29%
6.	Fraud prevention and managing the damages derived from fraud	0.01	0.01	1.03%
7.	Customer services	0.04	0.04	5.04%
8.	Advertising and marketing	0.01	0.01	1.51%
9.	Management and monitoring of activities	0.15	0.15	19.44%
10.	Other activities	0.08	0.08	10.35%
Total		0.79	0.78	100.00%

Source: MNB.

4.5.5 Costs of B2B direct debit in the corporate sector

We estimate that the private costs of B2B direct debits in the corporate sector were HUF 1.261 billion and social cost amounted to HUF 0.005 billion in 2009. In relation to B2B direct debits, we estimated data with the use of the cost levels of the 15 surveyed companies (with the exception of fees paid to payment service providers related to B2B direct debits), working on the assumption that the cost level and structure of the surveyed corporates is similar to that of the entire sector and is thereby projectable. We generally extrapolated data to the entire sector in proportion to gross sales revenue; in this case, too, the exception is the fees paid to payment service providers related to B2B direct debits.

Table 53
Costs of companies relating to B2B direct debits in 2009

	Items	Private costs (HUF billions)	Social costs (HUF billions)	On the basis of social costs (share)
1.	Fees paid for the oursourcing of B2B direct debit traffic services to external parties	0.000	0.000	0.00%
2.	Own costs of administration of B2B direct debit traffic	0.004	0.004	98.01%
3.	Fees paid to payment service providers related to B2B direct debits (for incoming and outgoing B2B debits)	1.256	0.000	0.00%
4.	Financial costs incurred due to wrong return transactions or transactions wrongly addressed	0.000	0.000	1.99%
5.	Discounts given to B2B direct debits	0.000	0.000	0.00%
Total		1.261	0.005	100.00%

Source: MNB.

There is a major difference between private and social costs in relation to corporates, as the vast majority of private costs consist of fees paid to payment service providers (HUF 1.256 billion), which are not included in social costs.

Examining the table row by row, the first item is the fees paid for the outsourcing of B2B direct debit traffic services to external parties (receiving and sending of direct debits); the corporates in the sample conduct the administration of direct debit traffic themselves, and therefore we received 0 for this item at the sector level as well. Own costs related to the administration of B2B direct debit traffic represent the bulk of the social cost arising for corporates.

We extrapolated the fees paid to payment service providers related to B2B direct debits to the sector level in proportion to transactions, on the basis of the revenues of payment service providers contained in the sample.

Although it is not indicated among private costs in the table, corporates provided intra-sector discounts for payments with B2B direct debits; we estimated that this amount was HUF 0.02 billion in 2009.

4.5.6 Total social cost of conducting B2B direct debits, social cost of B2B direct debits per transaction

Summarising the above, we detail below the costs and fees related to B2B direct debits according to the stakeholders of the payment chain. The cost of B2B direct debits amounted to HUF 0.79 billion at the social level, i.e. equalling 0.00003% of annual GDP. The bulk of social costs are borne by payment service providers (99.4%) and to a lesser extent by corporates (0.57%); the share of the central bank is negligible.

The unit cost of B2B direct debits per transaction was HUF 918.75 in 2009. Fees account for nearly 61% of aggregate private costs.

Table 54
Costs and fees related to B2B direct debits in 2009
(in HUF billion)

Stakeholders		Private costs	Fees paid	Own production costs	Fees received	Net private costs
		(1)	(2)	(3)=(1)−(2)	(4)	(5)=(1)−(4)
1.	MNB	0.00	0.00	0.00	0.00	0.00
2.	Payment service providers	0.79	0.00	0.79	1.26	−0.47
3.	Corporates	1.26	1.26	0.00	0.00	1.26
Total		2.05	1.26	0.79	1.26	0.79

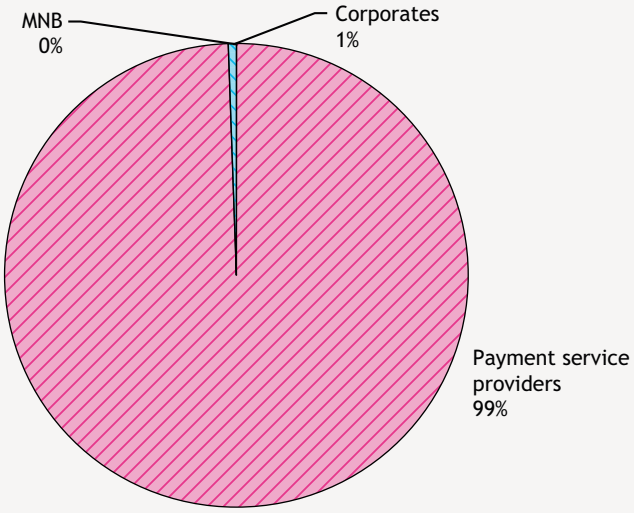
Source: MNB.

Table 55
Fees related to B2B direct debits in 2009
(in HUF billion)

From	To MNB	To payment service providers	To corporates	Total
MNB	–	–	–	–
Payment service providers	0.00	–	–	0.00
Corporates	–	1.26	–	1.26
Total	0.00	1.26	0.00	1.26

Source: MNB.

Chart 22
Distribution of social costs within the payment chain in 2009

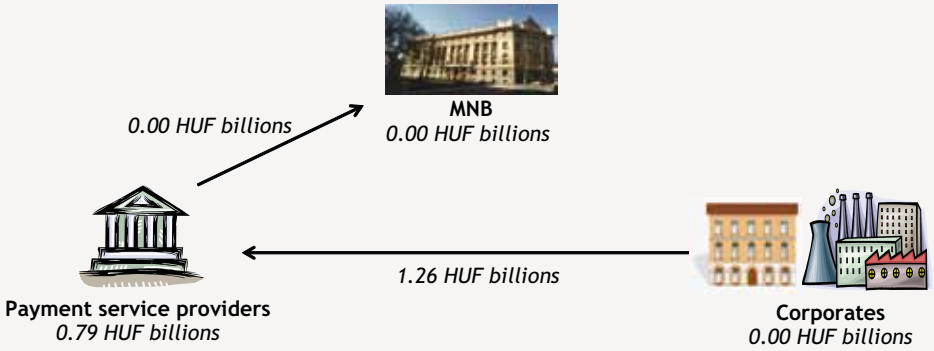


Source: MNB.

Fees account for 61% of aggregated private costs, and therefore it is important to separately examine who pays these fees to whom and in what value. Table 55 shows that fees are predominantly paid to payment service providers in the approximate amount of HUF 1.26 billion.

The following two charts show the costs and fee flows related to B2B direct debit transactions in terms of aggregate value and value per transaction; own production costs, i.e. social costs, are indicated for the particular sectors, the flow of fees is shown by the arrows and the direction of the arrows indicates who pays the given fee to whom.

Chart 23
Total costs and fees related to B2B direct debits in 2009



Source: MNB.

The social cost of one B2B direct debit transaction was HUF 918.75 in 2009. The chart below shows the social cost of one transaction in each sector and the flow of fees related to one transaction.

Chart 24
Unit costs and fees related to B2B direct debits in 2009

Source: MNB.

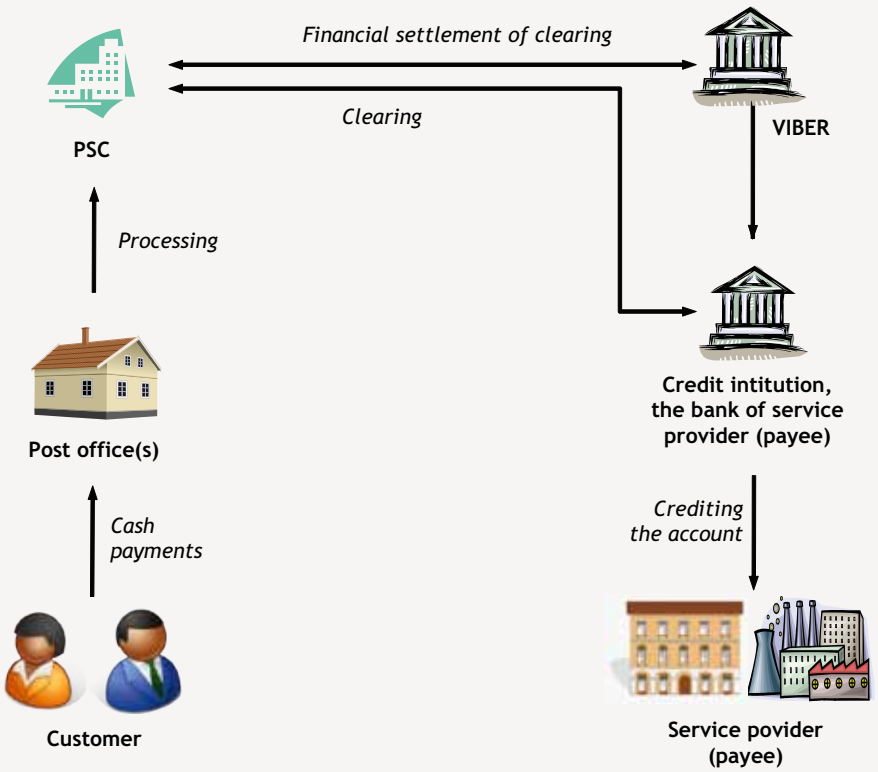
4.6 POSTAL INPAYMENT MONEY ORDERS

In the case of postal inpayment money orders, Magyar Posta Zrt. receives cash payments to be credited to bank accounts/payment accounts and clears these with the credit institutions (with the bank of service providers/payees).

4.6.1 The payment chain and process in relation to postal inpayment money orders

The chart below illustrates the payment process.

Chart 25
Payment chain and process related to the postal inpayment money order



Source: MNB.

As indicated by the chart, the process begins with the customer submitting the postal inpayment money order at the post office[54] (he pays the cash there and receives in exchange the validated receipt). The voucher of the postal inpayment money order received for clearing (and hence paid) is forwarded for processing to the processing centre of the Post (Postal Settlement Centre, PSC), where the Post clears amounts paid by postal inpayment money order on a daily basis, for each credit institution, within the framework of total payments executed with the given credit institution. Magyar Posta Zrt. and the credit institution settle the balance of total payments: the party with a net debit position transfers the net daily balance through VIBER, and finally, the bank of the service provider credits the amount to the bank account/payment account of the service provider.[55]

On the outgoing side, customers may be households or corporates, while on the incoming side, in addition to corporates, the public sector, local governments and even credit institutions are present, while credit institutions participate in the entire process in addition to Magyar Posta Zrt. As shown by the process flowchart, there is a significant difference between the functions of the two types of payment service providers, as the Post receives cash payments from payers and clears these for each credit institution, while the credit institutions credit the amounts received in the form of scriptural money – after the required processing – on the accounts of the payees.[56]

On the side of the payment chain, we analysed the central bank, the cash-in-transit companies, Magyar Posta Zrt., credit institutions, the payer and payee customers (households and corporates as payers, corporates, the public sector and credit institutions as payees).

4.6.2 Turnover data

According to data provided by Magyar Posta Zrt., a total of 271.48 million postal inpayment money orders were submitted in 2009 in the value of HUF 2,990.43 billion. The vast majority of orders were carried out under the normal scheme, within two business days, while the remaining orders were carried out – for a higher fee – in one business day, under the express scheme.

We estimated the sectoral distribution of the outgoing and incoming side with the two rounds of household and corporate surveys, but also used information collected in the framework of the public sector payments project. The first household survey revealed that the 921 households submitted 1,548 postal inpayment money orders in 2 weeks, while the 300 households participating in the second survey sent 37 orders in one day. Upon projection of the above transaction numbers to the entire population, the result is 166.9 million and 129.2 million orders, respectively, on an annual basis (we took the first value as a basis). The 13,500 orders derived from the first corporate survey and the 1,585 orders derived from the

Table 56
Number and value of postal inpayment money orders in 2009 in a breakdown of type and sector

	Number (in millions)	Value (HUF billion)
National data, of which	271.48	2,990.43
Normal	271.21	2,969.11
Express	0.27	21.32
Outgoing side		
Households	264.64	2,885.26
Corporates	6.84	105.16
Incoming side		
Corporates	233.27	2,507.29
Credit institutions	10.86	119.62
Public sector	27.35	363.52

Source: Magyar Posta Zrt., MNB estimate.

[54] Submitting through ATMs only commenced in 2010.
[55] This was the case in 2009. From 2010, however, gross settlement is applied.
[56] Considering the individual data, we list the costs of the two types of service providers combined.

second survey resulted in 4.3 million and 0.2 million orders (in proportion to sales revenue), respectively, when projected to the entire economy. Since the outgoing postal inpayment money order is representative more of smaller corporates than larger ones, we were inclined to use the number derived from the first survey as a basis, considering that it contained a much higher number of smaller corporates. Thus, we used the higher number for both the household and the corporate side. A shortfall of 100.2 million remained, however, which we resolved by distributing this shortfall between the two sectors, in proportion to the data taken as a basis, i.e. at a ratio of 97.5%-2.5%, respectively. In contrast with the incoming side, the 8.1 million and 9.4 million quantities derived from the corporate survey would have resulted in a surplus; therefore we calculated it on the basis of the residual principle, where we estimated (in accordance with an earlier MNB Occasional Paper[57]) 4% for credit institutions in addition to the quantity known for the public sector. We assigned the value data to the quantities on the basis of similar principles.

4.6.3 Costs relating to postal inpayment money orders at the central bank

As noted in point 4.1.3, the total cash-related cost of the MNB amounted to HUF 7.85 billion in 2009; in accordance with the method of distribution defined there, 5.3% of such amount (HUF 0.42 billion) is related to postal inpayment money orders.

Table 57
Costs relating to postal inpayment money orders at the central bank in 2009

Items		Sum (HUF billion)	Share (%)
1.	Design, security features, quality control and preparatory work	0.00	0.33%
2.	Procuring banknotes	0.27	64.18%
3.	Procuring coins	0.13	31.86%
4.	Cashier's transactions, processing, storing and and destroying cash	0.01	3.58%
5.	Protection and combating counterfeiting	0.00	0.04%
6.	Outsourcing of cash services	0.00	0.00%
Total		0.42	100.00%

Source: MNB.

4.6.4 Costs relating to postal inpayment money orders at cash-in-transit companies

As noted in point 4.1.4, the total cash-related costs of cash-in-transit companies amounted to HUF 17.57 billion in 2009; similarly to the MNB, 5.3% of such amount (HUF 0.93 billion) is related to postal inpayment money orders. In relation to cash-in-transit companies, there is a moderate difference between private and (own production, i.e.) social costs, but it is negligible due to the volume.

[57] Source: Turján (2009).

Table 58
Private and social costs of cash-in-transit companies related to postal inpayment money orders in 2009

Items		Private costs (HUF billions)	Social costs (HUF billions)	On the basis of social costs (share)
1.	Service contracts	0.01	0.01	0.60%
2.	Collection/transportation	0.46	0.46	49.41%
3.	Cash handling, processing and exchanging	0.23	0.23	24.92%
4.	Cash safekeeping and storage	0.01	0.01	1.40%
5.	Network maintenance and management of ATM and cash deposit machines	0.08	0.08	8.57%
6.	Production of cards	0.00	0.00	0.00%
7.	Settlement and clearing	0.00	0.00	0.38%
8.	Fraud prevention and managing the damages derived from fraud	0.08	0.08	8.33%
9.	Management and monitoring of activities	0.05	0.05	4.86%
10.	Other acticivities	0.01	0.01	1.52%
Total		0.93	0.93	100.00%

Source: MNB.

4.6.5 Costs relating to postal inpayment money orders at payment service providers

Although two types of payment service providers participate in the carrying out of postal inpayment money orders, their costs are indicated combined in view of the protection of Postal data.

Since the Post is the sole participant receiving inpayments, its cost data and estimates were integrated without extrapolation into the aggregated data relating to the entire payment service provider sector. Extrapolation was necessary in relation to credit institutions, as the banks in the sample accounted for 85.33% of total postal quantity. Thereafter it was necessary to estimate the total cost of the entire integration of savings co-operatives, based on the share of the savings co-operative selected in the sample in relation to the total quantity of postal inpayment money orders handled by the integration. We thus obtained the total cost of postal inpayment money orders passing through the banking sector from the aggregate costs of credit institutions selected in the sample with two step extrapolation based on the comparison of quantities. To this we still needed to add the cost of the handling of postal inpayment money orders received by credit institutions, as final payees; for the estimation of the above cost, we used the cost of the handling of corporate postal inpayment money orders described under the following point. Finally, it was necessary to exclude the fees paid by the credit institutions to the Post, as these constitute fee payments within the payment service sector.

The private cost of the payment service sector, calculated in accordance with the above, is estimated to be HUF 26.10 billion (without the loss on cash holding), while social costs amounted to HUF 24.10 billion.

The two largest cost items are the collection of postal inpayment money orders from customers (33.32%) and the processing of postal inpayment money orders (23.88%) (we quantified the shares in comparison with social costs).

Table 59
Private and social costs of payment service providers related to postal inpayment money orders in 2009

	Items	Private costs (HUF billions)	Social costs (HUF billions)	On the basis of social costs (share)
1.	Service contracts	0.05	0.05	0.19%
2.	Checking the produced postal inpayment money orders and procuring money orders	0.06	0.06	0.23%
3.	Collection of postal inpayment money orders from customers	8.03	8.03	33.32%
4.	Money laundering control	0.01	0.01	0.03%
5.	Handling and converting cash	5.26	3.26	13.52%
6.	Processing of postal inpayment money orders	5.76	5.76	23.88%
7.	Financial clearing	0.43	0.43	1.76%
8.	Handling exceptions	0.01	0.01	0.04%
9.	Establishing, invoincing and paying fees related to postal inpayment money orders	0.02	0.02	0.08%
10.	Fees related to postal inpayment money orders	0.00	0.00	0.00%
11.	Fraud prevention and managing the damages derived from fraud	0.03	0.03	0.11%
12.	Customer services and handling complaints	0.17	0.17	0.68%
13.	Advertising and marketing	0.14	0.14	0.57%
14.	Filing procedures (archive)	0.26	0.26	1.06%
15.	Management and monitoring of activities	5.36	5.36	22.24%
16.	Other acticivities	0.55	0.55	2.30%
17.	Loss on cash holdings	0.91	0.00	0.00%
Total (1–17)		27.02	24.10	100.00%
Total (1–16)		26.10	24.10	100.00%

Source: MNB.

4.6.6 Costs relating to postal inpayment money orders at corporates

As noted under points 4.6.1 and 4.6.2, corporates use postal inpayment money orders partly as payees and partly as payers. We carried out extrapolation on the basis of the number of transactions. In relation to incoming payments, we used the cost data derived from the sample of 15, covering larger corporates; in this case, the sample covers 4.05% of the incoming corporate quantity. In relation to outgoing payments, we used the cost data derived from the sample of 300, covering smaller corporates; in this case, the sample covers 0.2% of the outgoing corporate quantity. The total corporate private cost (without loss on cash holding) amounted to HUF 34.32 billion, while the social cost is HUF 4.79 billion.

Examining the Table 16 row by row, the following is noteworthy: the sample did not contain any corporates which outsourced administration relating to postal inpayment money orders either on the incoming or the outgoing side. Own costs relating to the administration and conducting of incoming and outgoing payments amounted to HUF 3.59 billion which is on the basis of average net income the HUF equivalent of labour input derived from the corporate sample and aggregated on a sector level. (This item represents 74.87% in terms of social cost.)

We estimated bank and postal handling fees at HUF 29.53 billion, which we calculated on the basis of the notice of Magyar Posta Zrt. relating to payment service fees applicable to 2009 and the notices of several[58] credit institutions. It was known that the Post charges a value-linked fee and a volume-linked fee for both normal and express postal inpayment money orders. The value-linked fee was a uniform 0.3%, while the volume-linked fee for "normal" postal inpayment money orders

[58] OTP, K&H, Budapest Bank, Unicredit, Raiffeisen, ING, Citibank.

Table 60
Private and social costs of corporates related to postal inpayment money orders in 2009

	Items	Private costs (HUF billions)	Social costs (HUF billions)	On the basis of social costs (share)
1.	Fees paid for outsourcing the administration related to postal inpayment money orders	0.00	0.00	0.00%
2.	Cost of time spent on administration of incoming and outgoing turnover related to postal inpayment money orders	3.59	3.59	74.87%
3.	Postal and banking fees related to postal inpayment money orders	29.53	0.00	0.00%
4.	Production of postal inpayment money orders	0.00	0.00	0.00%
5.	Procurement costs of postal inpayment money orders	1.17	1.17	24.36%
6.	Returning unduly received amounts via postal inpayment money orders	0.04	0.04	0.78%
7.	Discounts given to postal inpayment money orders	0.00	0.00	0.00%
8.	Loss on cash holdings	0.02	0.00	0.00%
Total (1–8)		34.35	4.79	100.00%
Total (1–7)		34.32	4.79	100.00%

Source: MNB.

– depending on the content and method of data provision – was HUF 74–87[59] and HUF 210 for express postal inpayment money orders. The distribution derived from national data was projected to the corporate ratio of normal and express postal inpayment money orders (99.90% on a volume basis and 99.29% on a value basis relating to normal orders). The fees of banks are in all cases linked to the fees actually paid to the Post and these amounts vary depending on the bank; we estimated the value thereof at 0.10% on the basis of the fee of banks transacting the bulk of payments. This method of calculation produced the amount of HUF 29.53 billion for the postal and bank handling fees.

Since there were no corporates in the sample which themselves produced the postal inpayment money order, we used as the lower limit the lowest fee (HUF 5) of Magyar Posta Zrt. per order valid from 1 January–30 June 2009, applicable to the minimum order of 10,001 orders.[60]

We estimated the lower limit of the cost of cash withdrawal and holding with the 1-day loss of interest on the aggregate value of postal inpayment money orders paid by corporates (based on the average central bank base rate).

4.6.7 Costs relating to postal inpayment money orders in the public sector

In some cases the Hungarian State Treasury and local governments are also payees of postal inpayment money orders. As noted under point 4.6.2, we estimated 27.35 million such orders in 2009. If calculated in accordance with point 4.6.6, such private cost[61] in the public sector amounted to HUF 3.65 billion, with a social cost of HUF 0.14 billion relating to postal inpayment money orders.

[59] The Post basically also applies a HUF 95 minimum value to the combined amount of the volume-linked and value-linked fee related to the transaction of the "normal" postal inpayment money order. This, however, was not relevant to our estimate, as we worked with the average value (with HUF 11,015.18) of the "normal" postal inpayment money order, in which case the combined use of the volume-linked and value-linked fee results in a fee that is higher than the minimum value.

[60] This fee increased to HUF 5.21 as of 1 July 2009.

[61] In this case, we applied a bank fee only in relation to payments made to local governments.

Table 61
Private and social cost of the public sector in 2009 in relation to postal inpayment money orders

	Items	Private costs (HUF billions)	Social costs (HUF billions)	On the basis of social costs (share)
1.	Fees paid for outsourcing the administration related to postal inpayment money orders	0.00	0.00	0.00%
2.	Cost of time spent on administration of incoming turnover related to postal inpayment money orders	0.00	0.00	0.25%
3.	Postal and banking fees related to postal inpayment money orders	3.51	0.00	0.00%
4.	Production of postal inpayment money orders	0.00	0.00	0.00%
5.	Procurement costs of postal inpayment money orders	0.14	0.14	99.74%
6.	Returning unduly received amounts via postal inpayment money orders	0.00	0.00	0.01%
7.	Discounts given to postal inpayment money orders	0.00	0.00	0.00%
Total		3.65	0.14	100.00%

Source: MNB.

4.6.8 Costs relating to postal inpayment money orders in the household sector

We estimated the private costs (without loss on cash holding) of Hungarian households relating to postal inpayment money orders at HUF 8.58 billion in 2009, corresponding to a relevant social cost of HUF 8.58 billion.

Table 62
Private and social cost of households in 2009 in relation to postal inpayment money orders

	Items	Private costs (HUF billions)	Social costs (HUF billions)	On the basis of social costs (share)
1.	Submitting postal inpayment money orders (inbound and outbound trips are included)	8.58	8.58	100.00%
2.	Loss on cash holdings	0.68	0.00	0.00%
Total(1–2)		**9.27**	**8.58**	100.00%
Total (1) without loss on cash holdings		**8.58**	**8.58**	**1.00**

Source: MNB.

Examining each row of the table, we can see that the time spent on submitting postal inpayment money orders is of major relevance (including the inbound and outbound trips). We estimated the time on the basis of the first round single household survey, but we reconciled the data with the statistics that we obtained from 2 banks in relation to the waiting and service time pertaining to average cash transactions. We used such data (8.89 minutes) as a minimum value also for the estimation of household costs in connection with bank cash transactions. We regarded this value to be applicable also in connection with the Post, as Government Decree 79/2004 (IV. 19.) on postal services and quality requirements sets out a maximum 15-minute waiting time as a requirement for the core activity of the Post, in relation to universal service, even in the busiest hours.[62] If the diary contained more cheques submitted on the same day, we made sure to charge the minimum time above to the cheques only once. We determined the HUF equivalent of time on the basis of per capita, per 1 minute of net household income.

Similarly to corporates, we estimated the lower limit of the cost of cash withdrawal and holding with the 1-day loss of interest on the aggregate value of postal inpayment money orders paid by households (based on the average central bank base rate).

[62] According to the recent report available on compliance with the requirement, 46 post offices of the checked 152 post offices were unable to comply with such requirement in relation to certain workplaces. Source: Point 4.3 of the report of the Nemzeti Hírközlési Hatóság (National Communications Authority) (2007).

4.6.9 Total social cost of transacting postal inpayment money orders

Summarising the above, we detail below the costs and fees related to postal inpayment money orders according to the stakeholders of the payment chain. (Private costs and fees calculated in consideration of seigniorage are indicated in a separate box; it is clear that seigniorage is not relevant either in terms of own production costs calculated for each sector or in terms of total social costs.)

Table 63
Costs and fees (without seigniorage) relating to postal inpayment money orders in 2009
(in HUF billion)

Stakeholders		Private costs	Fees paid	Own production costs	Fees received	Net private costs
		(1)	(2)	(3)=(1)−(2)	(4)	(5)=(1)−(4)
1.	MNB	0.42	0.00	0.42	0.02	0.40
2.	Cash-in-transit companies	0.93	0.00	0.93	1.98	−1.05
3.	Payment service providers	26.10	2.00	24.10	33.05	−6.95
4.	Corporates	34.32	29.53	4.79	0.00	34.32
5.	Public sector as payees	3.65	3.51	0.14	0.00	3.65
6.	Households	8.58	0.00	8.58	0.00	8.58
Total		74.01	35.05	38.96	35.05	38.96

Source: MNB.

Box 4
Costs and fees relating to postal inpayment money orders (with seigniorage)

In accordance with the ECB methodology, in the following we present the private costs and fees relating to postal inpayment money orders, including seigniorage and loss on cash holding. The table below shows that the loss on cash holding moderately increases the private costs of payment service providers, corporates and households, and as a result, the amount of fee-type items is somewhat higher than in the previous table. In respect of the net private costs, only the position of the MNB changes, as the MNB earns revenue as a result of seigniorage. The own production cost (social cost) is the same in both tables by definition.

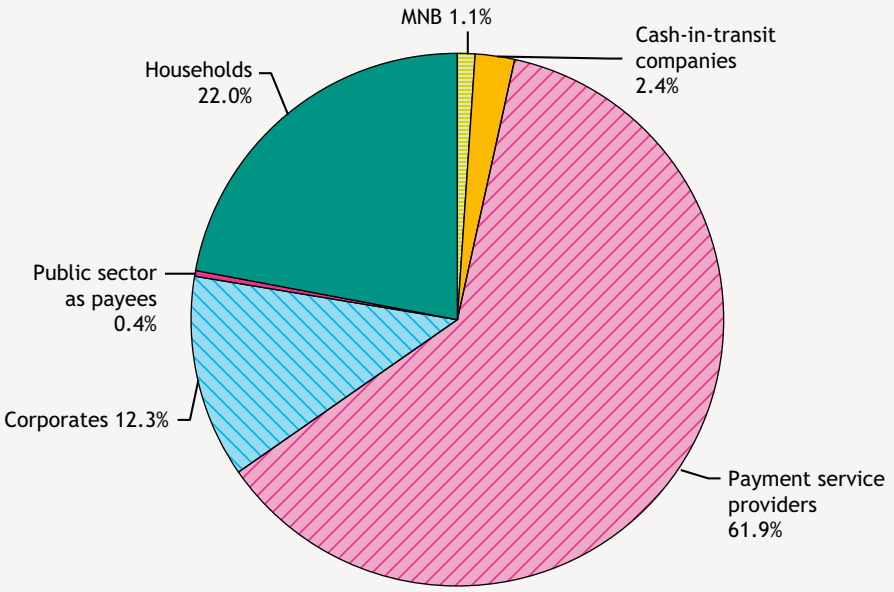
Table 64
Costs and fees (with seigniorage) relating to postal inpayment money orders in 2009
(in HUF billion)

Stakeholders		Private costs	Fees paid	Own production costs	Fees received	Net private costs
		(1)	(2)	(3)=(1)−(2)	(4)	(5)=(1)−(4)
1.	MNB	0.42	0.00	0.42	1.64	−1.22
2.	Cash-in-transit companies	0.93	0.00	0.93	1.98	−1.05
3.	Payment service providers	27.02	2.91	24.10	33.05	−6.03
4.	Corporates	34.35	29.56	4.79	0.00	34.35
5.	Public sector as payees	3.65	3.51	0.14	0.00	3.65
6.	Households	9.27	0.68	8.58	0.00	9.27
Total		75.63	36.67	38.96	36.67	38.96

Source: MNB.

The aggregate of own production costs, exclusive of fees, constitutes social cost. Thus, at the social level postal inpayment money orders amount to HUF 38.96 billion, i.e. equivalent to 0.15% of annual GDP in 2009. The predominant share of social costs, expenditures is borne by payment service providers (61.9%), households and companies (the 2 sectors combined: 34.3%), while the remaining 3.8% is distributed between the central bank, cash-in-transit companies and the public sector.

Chart 26
Sectoral breakdown of social cost related to postal inpayment money orders in 2009



Source: MNB.

Table 63 (compiled without seigniorage) reveals that both cash-in-transit companies and payment service providers "gain" from postal inpayment money orders, as in their case, the net private cost indicates a negative figure, i.e. revenues exceed costs. Fees account for 47.4% of aggregated private costs, not including seigniorage, therefore it is useful to separately examine who pays these fees to whom and in what value.

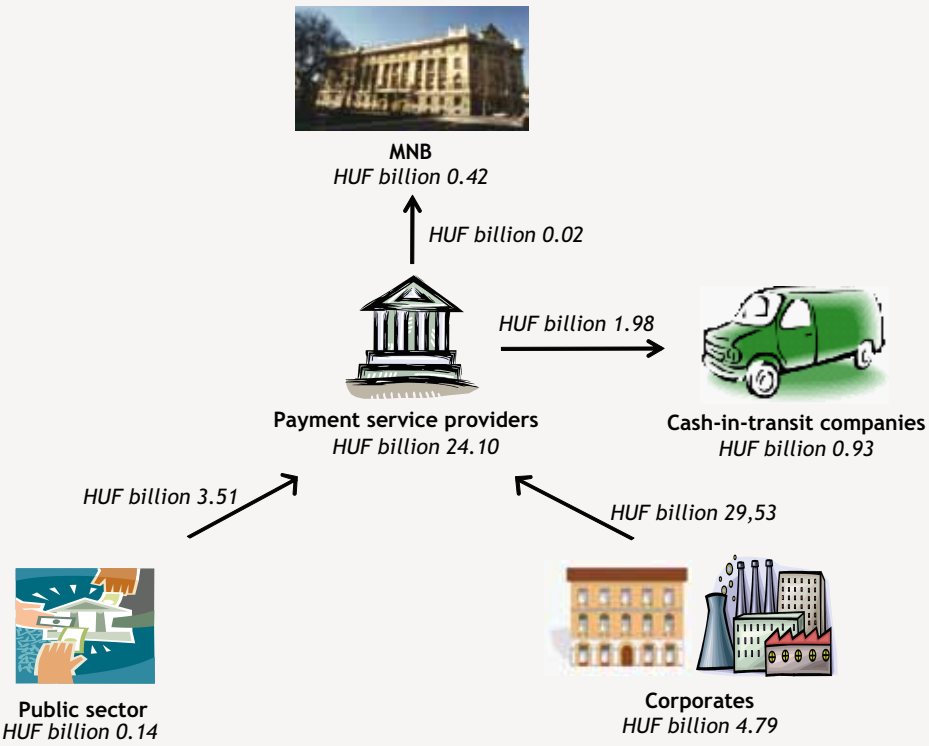
Table 65
Fees (without seigniorage) relating to postal inpayment money orders in 2009
(in HUF billion)

From	To MNB	To cash-in-transit companies	To payment service providers	To corporates	To public sector	To households	Total
MNB	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Cash-in-transit companies	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Payment service providers	0.02	1.98	0.00	0.00	0.00	0.00	2.00
Corporates	0.00	0.00	29.53	0.00	0.00	0.00	29.53
Public sector	0.00	0.00	3.51	0.00	0.00	0.00	3.51
Households	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Total	0.02	1.98	33.05	0.00	0.00	0.00	35.05

Source: MNB.

Charts 27 and 28 show the costs and fee flows related to postal inpayment money transactions in terms of aggregate value and value per transaction; own production costs, i.e. social costs, are indicated for the particular sectors, the flow of fees is shown by the arrows and the direction of the arrows indicates who pays the given fee to whom.

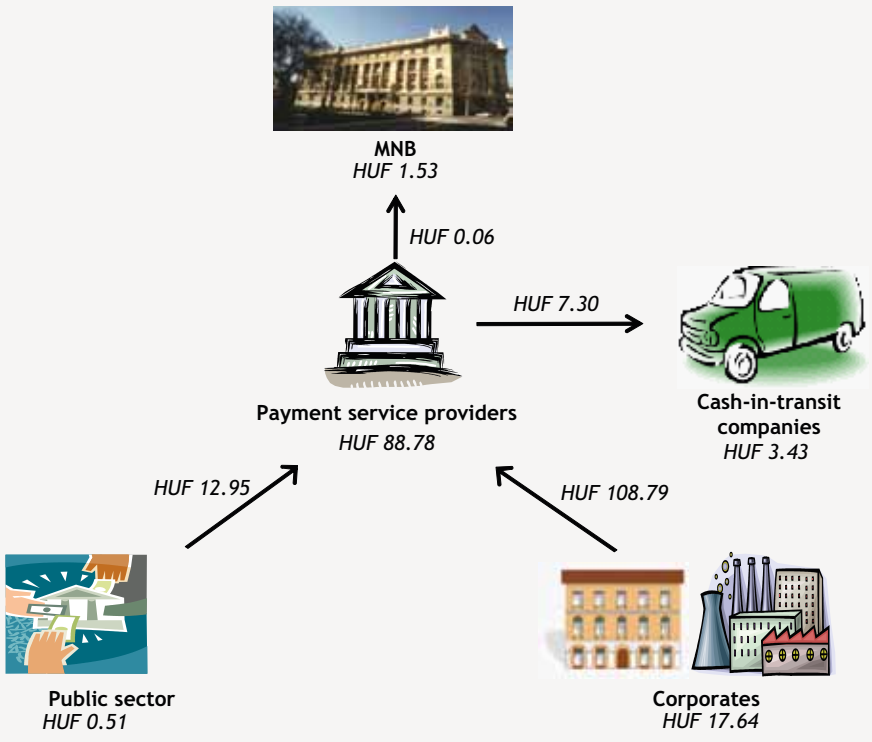
Chart 27
Total cost, flow of fees related to postal inpayment money transactions in 2009



Source: MNB.

The social cost of one postal inpayment money transaction was HUF 143.52 in 2009. The chart below shows the social cost of one transaction in each sector and the flow of fees related to one transaction.

Chart 28
Unit cost and flow of fees related to postal inpayment money transactions in 2009



Source: MNB.

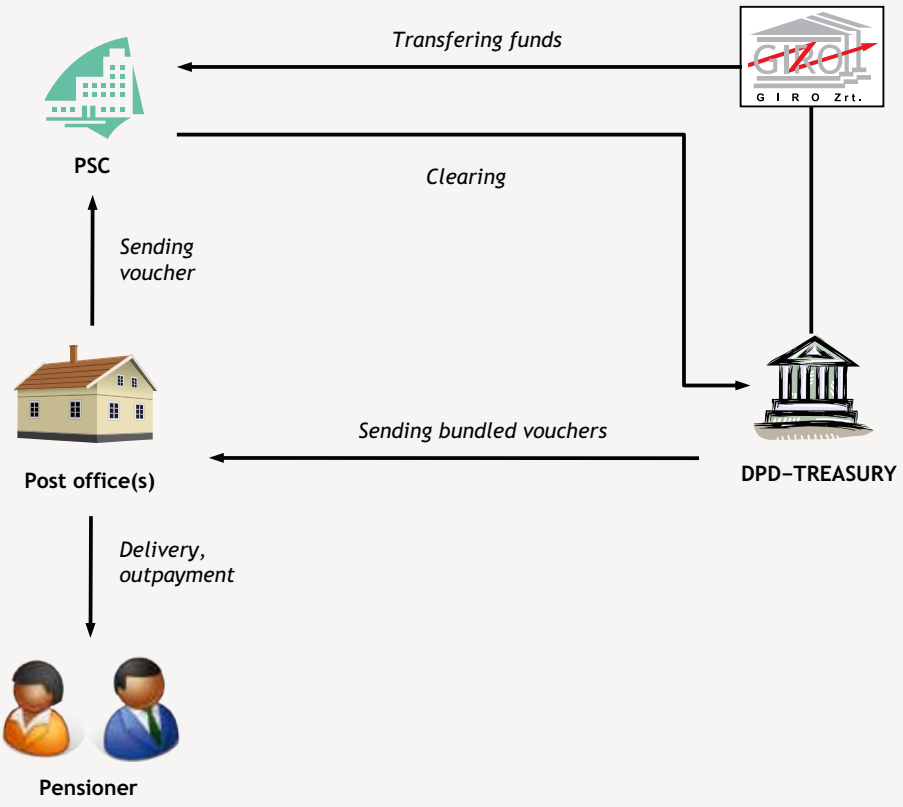
4.7 POSTAL OUTPAYMENT MONEY ORDERS FOR PENSIONS

Postal outpayment money orders for pensions is a unique payment instrument; Magyar Posta Zrt. makes pension outpayments in cash, on the basis of authorisation and fund provided in advance by the pension disbursement authorities.

4.7.1 The payment chain and process in relation to postal outpayment money orders for pensions

The payment process begins with the Hungarian State Treasury (HST) transferring the funds for pension outpayments to Magyar Posta Zrt. via the Interbank Clearing System, then the National Directorate for Pension Disbursement (NYUFIG, DPD) sends the payable vouchers to Magyar Posta Zrt. In the next step, the vouchers are distributed among the payer post offices and the cash necessary for disbursement is ordered. This is followed by payment, then the post offices send the paid and unpaid vouchers to the processing centre of the Post (Postal Settlement Centre, PSC) for processing purposes. The PSC clears accounts with the HST and DPD, transferring back the unused funds in relation to the unpaid vouchers to the HST.

Chart 29
The payment chain and process in relation to postal outpayment money orders for pensions



Source: MNB.

It follows from the above that the essential stakeholders of the payment chain are Magyar Posta Zrt., the Hungarian state and the payees involved, but due to cash and settlement, the payment chain also includes the MNB, cash-in-transit companies and Giro Zrt.

4.7.2 Turnover data

In 2009, a total of 22 million (precisely 21,997,860) postal outpayment money orders for pensions were paid in the total value of HUF 1,541.93 billion.

4.7.3 Particularities and results of the cost survey

Partly in view of the volumes and partly in consideration of the stakeholders concerned, we conducted the survey with a focus on the MNB, cash-in-transit companies and Magyar Posta Zrt. We did not consider it an option, namely, to request a cost survey from the HST and DPD, and believe that it would not have been reasonable to calculate the cost of time spent on waiting for the postman to arrive in the case of pensioners choosing cash as a means of receiving their pension.

Owing to the above approach, Magyar Posta Zrt. bears the most costs, and therefore, to ensure the protection of its individual data, we do not present a sectoral breakdown of data, but only the lump sum of the final result. In terms of social cost, in 2009 the postal outpayment money orders for pensions (not including the costs of HST and DPD) amounted to HUF 6.65 billion, corresponding to 0.03% of GDP. The social cost of one voucher (postal outpayment money order for pensions) was HUF 302.39.

4.8 SUMMARY OF THE ESTIMATED SOCIAL COST OF THE ANALYSED PAYMENT INSTRUMENTS

Table 66 summarises the data and estimates relating to the eight analysed payment instruments, with indication of the volume and value[63] of payment transactions and the related social cost.

Table 66
Number, value and social cost of the main analysed non-time critical payments in 2009

Payment instruments		Number (in millions)	Value (HUF billion)	Social costs (HUF billion)	Social unit costs (HUF)		Share(%) based on		
					per transaction	per 100 Ft of payment value	number	value	social costs
1.	Cash transactions	2,834.82	51,454.18	208.82	73.66	0.41	77.49%	12.22%	53.84%
2.	Debit card transactions	150.25	1,050.35	30.22	201.13	2.88	4.11%	0.25%	7.79%
3.	Credit card transactions	24.57	200.42	19.56	796.18	9.76	0.67%	0.05%	5.04%
4.	Credit transfers, of which	277.23	362,772.29	75.08	270.84	0.02	7.58%	86.14%	19.36%
a)	paper-based	47.13	61,671.29	35.01	742.88	0.06	1.29%	14.64%	9.03%
b)	electronic	230.10	301,101.00	40.07	174.15	0.01	6.29%	71.49%	10.33%
5.	B2B direct debits	0.86	507.43	0.79	918.75	0.16	0.02%	0.12%	0.20%
6.	Direct debits	77.00	639.97	7.73	100.39	1.21	2.10%	0.15%	1.99%
7.	Postal inpayment money orders	271.48	2,990.43	38.96	143.52	1.30	7.42%	0.71%	10.05%
8.	Postal outpayment money orders for pensions*	22.00	1,541.93	6.65	302.39	0.43	0.60%	0.37%	1.72%
Total		3,658.20	421,157.00	387.81	106.01	0.09	100.00%	100.00%	100.00%
Social costs as % of GDP				1.49%					

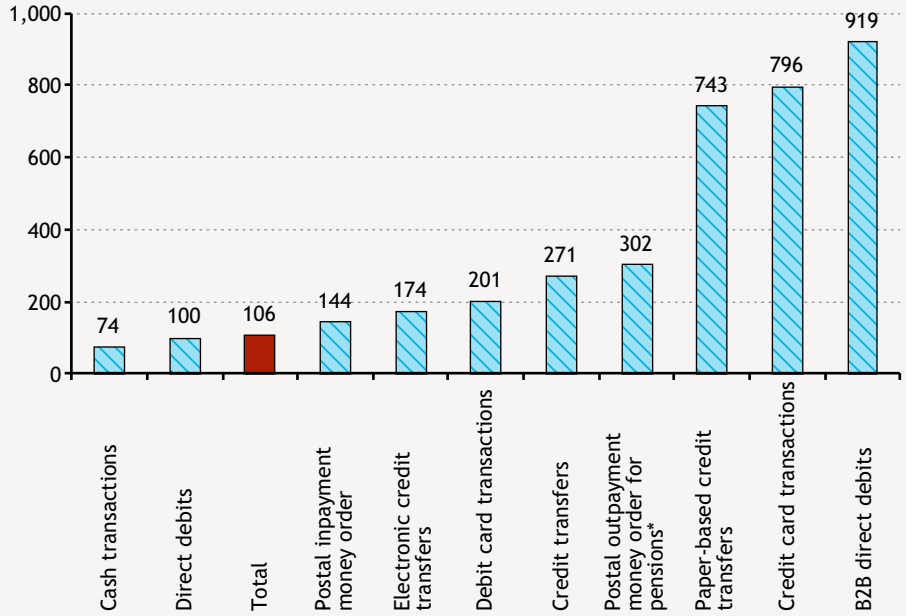
** The social costs are uncompleted, because they include only the costs of MNB, the Post and cash-in-transit companies.*
Source: MNB.

The table shows that according to our estimates, in 2009 the 3.7 billion domestic payment transactions cost HUF 387.81 billion, corresponding to 1.49% of GDP.

The domestic social unit cost was HUF 106.01 for 1 payment transaction (quantity) and HUF 0.09 projected to a payment value of HUF 100. Viewing social unit costs, on the basis of volume, the cost of cash transactions is by far the lowest with HUF 73.66 due to the high number of transactions, while B2B direct debits are the most expensive (HUF 918.75); (the chart below shows the individual payment instruments in the order of increasing unit costs; the unit costs of total payment transactions is marked with a different colour). The unit cost of credit card transactions is nearly four times that of debit

[63] It follows that the shares relating to turnover data vary from the figures indicated in Table 2 of Chapter 2.

Chart 30
Social cost of one payment transaction in Hungary in 2009 in HUF



** Social costs are uncompleted, because they include only the costs of MNB, the Post and cash-in-transit companies.*
Source: MNB.

card transactions. The postal inpayment money order is more costly than the direct debit order, but with the current transaction numbers it is more efficient than the (electronic) credit transfer.

Due to the varying methods of approach, international comparison is somewhat difficult because – as noted under point 6.1 – the Swedish, Belgian, Dutch and Portuguese central banks arrived at figures of 0.4%-0.77% of GDP by covering a much smaller range of transactions,[64] while the Norwegian central bank basically used a very similar approach to ours with a result of 0.49% of GDP. Thus, the Norwegian results are most suitable for verifying comparison in terms of the approach; their result is over 3 times better than ours which is partly attributable to the choice of the payment instrument (we discuss the potential savings resulting from the change of the payment instruments in a separate chapter).

In accordance with our processing method, for the comparison of the unit cost of individual payment instruments it was necessary to take into account total social cost on the cost side in relation to cash transactions, but we only worked with the number of purchase transactions in relation to the volume of payment transactions.[65] In Norway, the central bank prepared and published the results in several segments: it separately analysed cash withdrawals and deposits, but did not break down debit and credit card transactions for the whole of society. The Norwegian central bank performed a breakdown of paper-based and electronic transactions only for total giro[66] transactions; in comparison with the payment instruments used in Hungary, in addition to credit transfers, this covers direct debits and B2B direct debits; for the purpose of easier manageability and comparability, such data are indicated in the credit transfer row. Beyond the foregoing, we fine-tuned data contained in the national cost survey and converted data indicated in national currencies other than the euro with the average spot exchange rate published by the ECB for the given year.

In international comparison, with regard to unit costs, it is clear that similarly to Hungary, cash transactions are also cheapest in Belgium and the Netherlands. In the Swedish and Norwegian economies, however, which show a higher level of development in terms of payments, it is not cash transactions, but electronic credit transfer and card transactions which were already the cheapest in the year analysed.

[64] Not only in relation to the number of payment instruments, but also within the selected payment instruments, as they predominantly focus on POS transactions, while we aimed at analysing the payment transactions conducted within the economy as a whole.
[65] We ignored Portugal, as the Portuguese conducted the actual cost survey per payment instrument only in the scope of credit institutions.
[66] Giro services are basically payment orders serving the settlement of public utility, telecommunications and other bills.

Similarly to Hungary, there is a substantial difference between the unit costs of debit and credit card transactions in Belgium and in the Netherlands (the Norwegians did not perform such an internal breakdown); in fact, this difference was much larger in the two BENELUX countries (4.8 and 7.4 times the figure, respectively) than in Hungary (4 times the figure). This is presumably significantly attributed to the relatively low number of credit card transactions. (The annual number of per capita credit card purchase transactions in Hungary was 2.45, while this figure was 2.85 in the Netherlands and 3.57 in Belgium in the year analysed[67]) Overall the unit cost of credit card transactions in Hungary is by 8% higher than in Belgium, but cheaper than in the Netherlands. However, the unit cost of debit card transactions is cheaper not only in Sweden, but in both BENELUX countries as well, compared to Hungary. This is presumably significantly attributed to the major differences in the number of transactions. (The annual number of per capita debit card purchase transactions in Hungary was 15, while this figure was 66 in the Netherlands and 52 in Belgium in the year analysed.[68])

With regard to credit transfers, a rough[69] comparison is possible with Norway. The data indicate that Hungary's lag behind Norway is only 24% in relation to paper-based credit transfers, but 55% in relation to electronic credit transfers and 71% overall, in view of the fact that the share of electronic giro items in Norway exceeds 90% and it is 83% in Hungary.

The cost of the e-purse was only surveyed by the Belgians and the Dutch.

Table 67
Social unit cost of individual payment instruments calculated on the basis of number of transactions
(in euro)

Payment instruments		Hungary 2009		Norway 2007		Sweden 2002		the Netherlands 2002		Belgium 2003	
		number (in millions)	unit costs (EUR)	number (in millions)	unit costs (EUR)	number (in millions)	unit costs (EUR)	number (in millions)	unit costs (EUR)	number (in millions)	unit costs (EUR)
1.	Cash transactions	2,834.82	0.26	285.00	1.53	1,424.00	0.50	7,066.00	0.30	2,970.00	0.53
2.	Debit card transactions	150.25	0.72	902.40	0.74	509.00	0.33	1,069.00	0.49	539.00	0.55
3.	Credit card transactions	24.57	2.84			80.00	0.48	46.00	3.59	37.00	2.62
4.	Credit transfers*, of which	277.23	0.97	510.70	0.56						
a)	paper-based	47.13	2.65	48.40	2.13						
b)	electronic	230.10	0.62	462.30	0.40						
5.	B2B direct debits	0.86	3.28								
6.	Direct debits	77.00	0.36								
7.	Postal inpayment money orders	271.48	0.51								
8.	Postal outpayment money orders for pensions	22.00	1.08								
9.	E-purse							87.00	0.93	107.00	0.54
Memo items:											
Social costs as % of GDP		*1.49*		*0.49*		*0.40*		*0.65*		*0.75*	
Number of payment instruments covered in the cost study		*8*		*29*		*3*		*4*		*4*	
Population (in millions)		*10.02*		*4.69*		*8.93*		*16.15*		*10.37*	

** Similar but not identical scope of transactions.*
Source: MNB estimate based on the national cost surveys.

[67] By contrast, it was 8.96 in Sweden.
[68] By contrast, it was 57 in Sweden.
[69] The scope of transactions does not completely match.

4.9 SUMMARY OF NET PRIVATE COSTS BY STAKEHOLDER

In accordance with point 3.2, the net private cost expresses the extent to which the resources ("costs") of the given stakeholder relating to a given payment instrument are financed with its revenues relating to the given payment instrument. Net private costs are calculated by deducting the fees received by the given stakeholder from the private costs calculated for the given stakeholder. If the value of net private cost is negative, the payment instrument (or the sum thereof) is profitable for the given service provider. Based on the logic applied to the table structure, the table reveals all stakeholders of the payment chain, but in each case a positive figure is stated in relation to the household, corporate and public sctor[70], as they earn revenue from their core activity and not from payments; however, this figure may be lower or higher, depending on the selection of the payment instrument.

Table 68
Net private cost of payment instruments in 2009 (not including seigniorage)
(in HUF billion)

	Cash transactions	Debit card transactions	Credit transfers total	Paper-based credit transfers	Electronic credit transfers	B2B direct debits	Direct debits	Postal inpayment money orders	Total
MNB	6.95		0.00	0.00	0.00	0.00	0.00	0.40	7.36
Cash-in-transit companies	1.28							−1.05	0.23
Payment service providers* +**	17.12	−3.81	−17.50	1.29	−18.79	−0.47	1.38	−6.95	−10.23
Corporates*+**	144.14	17.76	67.58	13.89	53.70	1.26	4.66	34.32	269.73
Households*	37.39	16.27	25.00	19.84	5.17		1.69	8.58	88.93
Public sector**	1.94							3.65	5.59
Total	208.82	30.22	75.08	35.01	40.07	0.79	7.73	38.96	361.60

** The total amount does not include the net private costs related to credit card transactions.*
*** The net private costs of corporates and public sector are divided between each other only in case of cash transations and postal inpayment money orders. The net private costs of the public sector related to other payment intsruments are included in the net private costs of corporates.*
Source: MNB.

The table reveals that the MNB suffers a loss on the payment instruments without seigniorage. The cash-in-transit companies – limited to two payment instruments – incur minimal losses, but from their point of view, the comparison of costs and revenues relating to all cash-based[71] payment instruments, i.e. the total branch of cash, bears more relevance. Revenues have exceeded costs at the level of the total branch.

A separate table shows payment service providers, where the cost recovery (ratio between received fees and private costs) is also indicated in addition to net private costs. The table clearly shows that overall, the payment service providers gain from the payment instruments through strong cross-subsidisation (cash transactions, paper-based credit transfers and direct debits are cross-subsidised, while the debit card transactions, electronic credit transfers and, to a certain extent, postal inpayment money orders are cross-subsidising). This, however, is not a unique Hungarian phenomenon, as payment service providers commonly apply cross-subsidisation. Even in Norway, where cost-based pricing is applied, the rate of the cross-subsidisation of cash transactions could only be moderated. The table below quantifies the current cross-subsidisation applied by Hungarian payment service providers in absolute and relative terms.

[70] The segregation of the net private costs of public sector was performed only in relation to two payment instruments; in relation to the other payment instruments, public sector transactions and their effect is assessed in the corporate sector.

[71] In addition to purely cash transactions and the postal inpayment money orders indicated in the table, the postal outpayment money orders for pension, the postal outpayment money orders for social benefits and other purposes. Point 4.1.4 showed the total costs of cash-in-transit companies relating to cash and their total revenue was known from the provided data. We allocated costs according to the shares included in Table 11 for each payment instrument, while we took into account data provided by payment service providers for the distribution of revenues, as the fee revenue of cash-in-transit companies basically originates from this sector.

Table 69
Absolute and relative recovery of costs relating to payment instruments at payment service providers (without seigniorage) in 2009

Items	Cash transactions	Debit card transactions	Credit transfers total	Paper based credit transfers	Electronic credit transfers	B2B direct debits	Direct debits	Postal inpayment money orders	Total
Net private costs (HUF billion)	17.12	−3.81	−17.50	1.29	−18.79	−0.47	1.38	−6.95	−10.23
Cost recovery (%)	78%	115%	141%	92%	171%	160%	78%	127%	105%

Source: MNB.

Net private costs from the point of view of corporates and households are also shown in a separate table, but in this case, the amount relates to one transaction, as the economic participants may choose the payment instrument they deem appropriate for any given payment transaction.

Table 70
Net unit private cost per payment instrument in relation to companies and households (not including seigniorage) in 2009

Payment instruments	Unit net private costs (HUF)		Number (in millions) and relevant for		Net private costs (HUF billion)	
	Corporates	Households	Corporates	Households	Corporates	Households
Cash transactions	52.07	14.18	2,768.29	2636.32	144.14	37.39
Debit card transactions	118.19	108.28	150.25	150.25	17.76	16.27
Paper-based credit transfers	694.27	731.22	20.00	27.13	13.89	19.84
Electronic credit transfers	259.12	225.90	207.23	22.87	53.70	5.17
Direct debits	60.53	21.92	77.00	77.00	4.66	1.69
B2B direct debits	1,465.81	n. a.	0.86	n. a.	1.26	n. a.
Postal inpayment money orders	147.13	32.44	233.27	264.64	34.32	8.58

Source: MNB.

The table is based on net private costs in view of the fact that households receive discounts from corporates for the use of credit transfers and direct debits, and thus it is reasonable to reduce the consumption of household resources related to the use of the given payment instrument with the received discount. Net private costs thus include the total net consumption of resources of the stakeholders in question, including the HUF equivalent of work or leisure time relating to the use of the payment instrument.

Net private costs include the fees paid to the payment service providers, but these account for significantly varying ratios[72] across the different payment instruments and the stakeholders. This ratio is over 70% on the one hand in the case of B2B direct debits, postal inpayment money orders (only in relation to corporates in the case of both payment instruments) and direct debits (in relation to households), and on the other hand, in the case of debit card transactions and electronic credit transfers in relation to both corporates and households. The ratio of payment service providers to net private costs, however, does not reach 30% in relation to cash transactions in either sector, and the figure is 0% for postal inpayment money orders in the household sector. Thus, in this sense, we see the mirror image of the rate of financing of payment service providers.

For the calculation of the net unit private cost, we used either the nationwide or the sector-specific data for the volume of the given payment instrument. The nationwide data are stated in connection with debit card transactions, direct debits and B2B direct debits, as in the case of the first two payment instruments households entirely represent the payer with

[72] Fees and fee-type items paid to payment service providers in proportion to net private costs per sector and payment instrument.

some minor exceptions, while corporates[73] represent the payee, and B2B direct debits are typically payments carried out between corporates.

We used data contained in Table 10 for cash transactions. We took into account the number of outgoing transactions of households in relation to households and the number of incoming transactions of corporates in relation to corporates. With respect to credit transfer transactions, we used the data of Table 32 to determine the number of national transactions in the breakdown of the household and corporate sector. In relation to postal inpayment money order transactions, we used the data of Table 56, where in the case of corporates we took into account the number of incoming transactions, given that this is the more common transaction form in contrast with outgoing payments, and in the case of households: obviously the number of outgoing transactions in relation to households.

Similarly to the social cost of one payment transaction, currently cash transactions and direct debits require the least resources from both corporates and households. Debit card transactions and postal inpayment money orders are ranked third and fourth, where the former are ranked higher in relation to corporates and the latter in relation to households. These are followed by electronic and paper-based credit transfers in relation to both corporates and households. Similarly to the social cost of one payment transaction, the largest resources are required by B2B direct debits in relation to customers. Beyond the similarity in ranking among the sectors, it is also noteworthy that there is a considerably large difference between corporate and household net unit private costs in relation to postal inpayment money orders, direct debits and cash transactions. This implies, among others, that the fee of postal inpayment money orders is incurred by corporates, as well as significant administration which is related to both cash and direct debit payments in different forms (e.g. preparation for making cash deposits and order, cash storage and related insurance costs, administration related to collection implemented through postal inpayment money orders or direct debits). There is no significant difference between the costs of one payment transaction in the two sectors with respect to the other payment instruments.

[73] We wish to note that we managed corporates and the public sector jointly in relation to much of the payment instruments.

Box 5
Net private costs (with seigniorage and loss of interest on cash holding) of payment instruments in 2009 (in HUF billion)

In accordance with the ECB methodology, we indicate below net private costs in 2009 also including seigniorage and loss of interest on cash holding.

Table 71
Net private cost (including seigniorage and loss of interest on cash holding) of payment instruments in 2009

(in HUF billion)

	Cash transactions	Debit card transactions	Credit transfers total	Paper-based credit transfers	Electronic credit transfers	B2B direct debits	Direct debits	Postal inpayment money orders	Total
MNB	−183.93		0.00	0.00	0.00	0.00	0.00	−1.22	−185.15
Cash-in-transit companies	1.28							−1.05	0.23
Payment service providers* +**	29.94	−3.81	−17.50	1.29	−18.79	−0.47	1.38	−6.03	3.51
Corporates*+**	170.45	17.76	67.58	13.89	53.70	1.26	4.66	34.35	296.06
Households*	188.89	16.27	25.00	19.84	5.17		1.69	9.27	241.12
Public sector**	2.18							3.65	5.83
Total	208.82	30.22	75.08	35.01	40.07	0.79	7.73	38.96	

** The total amount does not include the net private costs related to credit card transactions.*
*** The net private costs of corporates and public sector are divided between each other only in case of cash transations and postal inpayment money orders. The net private costs of the public sector related to other payment intsruments are included in the net private costs of corporates.*
Source: MNB.

The above table shows that, when seigniorage is included, the position of the MNB and payment service providers changes. The MNB "gains" as a result of the substantial seigniorage realised on cash, while the payment service providers incur additional costs resulting from the loss of interest on cash holding in an amount that in itself renders them unable to realise surplus revenue from payment services. There is no change of position in relation to the other sectors, apart from the fact that the loss of interest incurred on cash holding increases the costs of the economic participants.

5 Potential social savings (efficiency improvement) through the more efficient selection of payment instruments

As noted above, the total and unit social cost of the specific payment instruments varies significantly. Current costs suggest that on a unit basis (projected to one transaction), cash is the cheapest payment instrument, followed by direct debit, the postal inpayment money order, electronic credit transfer and debit card payment. On the basis of current costs and transaction numbers, the most expensive payment instruments projected to one transaction are postal outpayment money orders for pensions, paper-based credit transfers and credit cards.

At first glance, it might appear that we are finished, as the unit transaction costs show the efficiency ranking. This is not the case, however, as the unit costs are more likely to be determined by current transaction numbers in addition to total costs, where the payment instruments vary significantly from each other. Since Hungary – even in relation to its formal ("white") economy – is considered to be a country with an intensive use of cash, the number of cash transactions is substantially larger than for other payment instruments. Thus, the low unit cost of cash is not attributed to its low total cost or efficiency, but its currently high transaction number. This result is consistent with the result of the cost survey conducted in relation to the Belgian and Dutch economies (summarised under point 4.8 and detailed under point 6.1), where the cheapest payment instrument is also cash on the basis of costs relating to the date of the survey. (In the Swedish and Norwegian economies, however, showing a higher level of development in terms of payments, card transactions have been cheaper than cash transactions on a unit basis for years.)

In the course of analysing the potential improvement of social efficiency, it is necessary to also take into account the cost structure of the specific payment instruments, as the share of fixed and variable costs varies in relation to individual payment instruments. This means that the total social cost of a payment instrument can be broken down into elements which are entirely independent from the transaction number of the payment instrument or the size of the value exchange transacted through the payment instrument (fixed costs). Thus, the costs remain unchanged if the use of the given payment transaction increases or decreases. Such costs are typically related to infrastructure investments, but they also include items classified in the category of indirect costs and are practically present in relation to all payment instruments (contracting between payment service providers and customers, advertising, marketing, management, monitoring, etc.). Additional examples include the cost of banknote research and development, protection against cash counterfeiting, depreciation of cash registers or the cost of the account management systems of banks.

Naturally, in addition to fixed costs, there are also variable costs dependent on the number of transactions and the paid values; their value depends on the extent in which society actually uses the payment instrument in question. Such costs include, for example, the work or leisure time – of economic participants – spent on conducting specific payment transactions, management of risks of fraud relating to payment instruments, money laundering control, the storage, processing of cash, customer service, document management, and naturally, to a lesser extent, "front office" and "back office" type human resource expenditures necessary as a result of a higher volume of payments.

It is important to consider the above, as the varying rates of the variable costs of payment instruments mean that if we assume a different distribution of transaction numbers among the payment instruments within the economy (i.e. we assume different payment habits for the economic participants), the unit cost may substantially change in comparison to the current situation. Therefore, in terms of the development of total costs, variable costs will be decisive in the restructuring of payment instruments.

On the basis of the MNB survey, the social cost of the domestic payment instruments surveyed in the framework of this analysis is distributed according to cost types, as follows:

Table 72
Distribution of the social costs of payment instruments based on fixed costs, value based and transaction number based variable costs

Type of costs	Cash transactions	Debit card transactions	Electronic credit transfers	Direct debits	Postal inpayment money orders	Paper-based credit transfers	Postal outpayment money order for pensions	Debit card transactions	Total payment instruments
1. Fixed	33.5%	62.3%	52.5%	63.2%	17.0%	8.6%	23.0%	73.9%	32.9%
2. Variable: linear to value	8.8%	0.4%	1.5%	12.6%	4.2%	0.4%	0.0%	0.1%	9.0%
3. Variable: degressive to value	8.8%	2.0%	0.0%	0.0%	0.4%	0.0%	1.0%	2.0%	10.0%
4. Variable: linear to number	19.5%	5.0%	0.0%	0.0%	62.3%	83.7%	41.9%	5.9%	23.3%
5. Variable: degressive to number	29.4%	30.4%	46.0%	24.2%	16.1%	7.4%	34.2%	18.1%	24.7%
Total social costs (HUF billion)	208.82	30.22	40.07	7.73	38.96	35.01	6.65	19.56	387.02

Source: MNB.

The results in the above table were obtained by classifying the estimated social costs relating to the payment instruments into one of the cost categories, based on the type of activity. In contrast to the cost surveys published so far, we also introduced a sub-category to enable the differentiation of costs which change in direct proportion to changes in value or transaction number and costs which change to a lesser extent. (Thus, a change in direct proportion means that if the value or transaction number increases by 10%, the cost also increases by 10%, while the change is smaller than the change in direct proportion if the volume or the value increases by 10%, the costs will increase by 5% or 1%.) In the classification process – in addition to responses provided by the data providers (a question relating to the above was included in the cost survey questionnaires) – we also relied on our own expert opinions. In the case of degressive variable costs, partly on the basis of information received and partly our own expert information, we show either 0.5 or 0.1 cost-elasticity, i.e. cases when in response to a change of 10% either in the value or in the volume of transactions the costs change either by 5% (in the case of 0.5 cost-elasticity) or by 1% (in the case of 0.1 cost-elasticity).

Annex 5 contains the distribution of the fixed and variable costs of the social cost of the specific payment instruments, broken down by activity.

Our estimate relating to the cost structure is roughly similar to the one used in the Belgian, Dutch and Swedish cost surveys. In all surveys the share of fixed costs[74] relating to electronic payment instruments is much higher than in relation to cash or paper-based payment instruments.

If in such a cost situation we carry out a substitution of the transaction numbers of the specific payment instruments (i.e. we examine what would happen if we used one payment instrument instead of another), the change in costs can be calculated. Obviously, the total cost would also increase in relation to a payment instrument that we use more frequently, and the total cost would decrease with less frequently used instruments. An improvement in social efficiency can be achieved if the rise in costs is less in relation to a payment instrument where use is growing than the decline in costs relating to a payment instrument where use is decreasing. In this case, namely, the cost of an additional payment transaction will be lower than the cost of the substituted transaction, which seemingly involves a payment transaction with a low unit cost. Thus, this implies that the shift from paper-based payment instruments with a lower fixed cost to electronic payment instruments may result in an improvement in social efficiency, as the savings

[74] These central banks managed variable costs on a global basis.

achievable in the case of the former may be significantly higher than the cost increase witnessed in the case of the latter.

In the following, we analyse the savings potentially realisable through the conditions conceivable in payment situations, and by combining these we estimate the potential of the Hungarian economy in the medium and long term resulting from a shift towards the more efficient use of payment instruments.

5.1 HIGH VOLUME SUBSTITUTION OF CASH TRANSACTIONS WITH DEBIT CARD TRANSACTIONS IN THE RETAIL SECTOR

As noted in Chapter 2 (Table 2) and point 4.8 (Table 66), currently only 175 million payment card transactions are made annually, compared to 2.8 billion cash transactions. This ratio is very poor in comparison to the figures of more developed economies. When examining retail payment transactions, the share of payment card use in Hungary amounts to 7-8% according to the MNB household surveys, in contrast to the over 90% share of cash transactions. Although we have data available on the number of cash transactions in relatively few developed countries, we summarise some of these below, on the basis of the cost survey studies noted under point 6.1. Data is shown in relation to so-called POS type transactions (retail trade[75] in a wider context).

Table 73
Distribution of POS type transactions according to payment instruments, on the basis of number of transactions

Country	Year	Cash	Payment card	E-purse
Belgium	2003	81.3%	15.8%	2.9%
The Netherlands	2002	85.5%	13.5%	1.1%
Norway	2007	24.0%	76.0%	
Sweden	2002	70.7%	29.3%	

Source: MNB estimate based on the national cost surveys.

The share of cash transactions in Belgium, the Netherlands and Sweden was over 80% and 70% at the beginning of the decade, but the number of payment card purchases has significantly increased since then (see the table below in relation Dutch data[76]). In 2007, the ratio of cash purchases was already less than 25% in Norway.

Table 74
Distribution of POS type transactions in the Netherlands in 2007
(according to payment instruments, on the basis of number of transactions)

	Minimum	Maximum
Debit card	25.6%	38.0%
Cash	62.0%	74.4%

Source: MNB calculation, on the basis of Jonker and Kosse (2009).

If we assume that Hungary reaches half of the level currently measured in the Scandinavian countries, and the annual number of payment card purchases in retail trade, in a wider context, increases from the current 150 million to 1 billion (i.e. the transaction proportionate ratio of payment card purchases increases from the current 7-8% to 38%), on the basis of the current cost structure, the annual cost of conducting the payments may be reduced by HUF 11.35 billion on a social level.

[75] By "retail trade in a wider context", we mean any provision of goods or services that are purchased by households from companies and merchants through "point-of-sale" type transactions, i.e. transactions involving a physical relationship.

[76] Table 74 shows minimum-maximum values, as the data were contained in a study that compares the results of the various surveying methods. Since the relevant national cost survey, a new estimate of the number of cash transactions was only prepared in the Netherlands.

Table 75
Social savings achievable with an increased use of debit card purchases

	Cash	Debit card
1. Total social costs (HUF billion)	209	30
2. Total number of transactions (in millions)	**2,835**	**150**
3. Total value of transactions (HUF billion)	51,454	1,050
4. Assumed change in number of transactions (in millions)	**–850**	**+850**
5. Assumed change in value of transactions (HUF billion)	**–10,000**	**+10,000**
6. Total number of transactions in assumed scenario (in millions)	**1,985**	**1,000**
7. Total value of transactions in assumed scenario (HUF billion)	41,454	11,050
8. Total costs in assumed scenario (HUF billion)	182	46
9. Total social savings (HUF billion)	**11.35**	

As a result of such change, social savings in the total amount of HUF 11.35 billion annually may be achieved through cuts in the cost of payment transactions (resource requirement). This is a relatively small figure compared to national GDP, but it is substantial in comparison to the domestic payment infrastructure and the size of the sector. Such savings are principally attributable to the fact that the decline in the number of cash transactions decreases the variable costs (dependent on transaction numbers and transacted values) of cash payments by a larger rate than the rate it increases the variable costs of payment card purchases, as the rate of fixed costs related to payment card purchases (e.g. bank infrastructure, procedures) is significantly higher than the fixed costs related to cash purchases.

5.2 SHIFTING OF PAPER-BASED REMOTE PAYMENT INSTRUMENTS ORDERS TO ELECTRONIC CHANNELS IN THE PRIVATE SECTOR

The relatively high rate of the use of paper-based transactions is another area where the Hungarian economy shows substantial underdevelopment in relation to the conduct of payment transactions. With the exception of cash, the domestic payment infrastructure uses paper only in connection with certain payment orders, for the submission of orders, while it has been entirely phased out for processing, background transactions and settlements. At the same time, such paper-based transactions, typically involving a personal presence at the bank branch or post office, require major resources due to the "shoe leather" costs related to the submission of the orders or their cash nature.

This study has identified two such payment instruments used in the private sector which, if partially or fully substituted or transacted electronically, could contribute to a major efficiency improvement potential. One such instrument is the paper-based credit transfer and the other is the postal inpayment money order (both are basically credit transfers sent with paper-based orders); moreover, the postal inpayment money order is the domestic payment instrument with the second[77] highest number of retail transactions after cash. Both aforementioned payment instruments are used by households and corporates on an ad hoc or regular basis for remote payments, hence these are typically not used in retail sales. The sum of the transaction number of the two payment instruments is surprisingly higher than that of the alternative electronic payment instruments involving bank accounts: the sum of the transaction number of credit transfers sent through the electronic channel and direct debits.

On the basis of our cost survey, we therefore examined the extent of the change in social costs if, firstly, paper-based credit transfers would be entirely substituted with electronic credit transfers, and secondly, if the "yellow cheque" transactions would be entirely substituted, where roughly half of these would become electronic credit transfers and direct debits, respectively. As an additional element, we assumed that the number of cash payments made by corporates would decline by 100 million payments, where these would become electronic credit transfers. (As noted under point

[77] We manage separately paper-based and electronic credit transfers.

Table 76
Potential social savings resulting from the shifting of paper-based payment transactions to electronic payment instruments

	Cash transactions	Electronic credit transfers	Direct debits	Postal inpayment money orders	Paper-based credit transfers
1. Total social costs (HUF billion)	209	40	8	39	35
2. Total number of transactions (in millions)	2,835	230	77	271	47
3. Total value of transactions (HUF billion)	51,454	301,101	640	2,990	61,671
4. Assumed change in number of transactions (in millions)	**–100**	**+278**	**+140**	**–271**	**–47**
5. Assumed change in value of transactions (HUF billion)	**–26,000**	**+89,000**	**+1,661**	**–2,990**	**–61,671**
6. Total number of transactions in assumed scenario (in millions)	2,735	508	217	0	0
7. Total value of transactions in assumed scenario (HUF billion)	25,454	390,101	2,301	0	0
8. Total costs in assumed scenario (HUF billion)	192	42	11	0	0
9. Total social savings (HUF billion)	**85.16**				

4.1.2.3, according to our estimates, in 2009 corporates made a total of 177 million cash outgoing payments, partly related to inter-company payments and partly to wage payments.)

The shifting of such transactions can produce total social savings of HUF 70 billion annually through cuts in variable costs. If we add the savings of the fixed costs (infrastructure, volume independent procedures, etc.) of the payment instruments which are "phased out", an additional HUF 15 billion can be saved. Thus, the complete phasing out of paper-based orders could produce resource savings equivalent to approximately HUF 85 billion annually for Hungarian society.

5.3 SHIFTING OF PENSION OUTPAYMENTS TO BANK ACCOUNTS

Currently approximately 50% of outpayments for pensions initiated by the state are still effected by postal means in cash (in the form of postal outpayment money orders for pensions) and not by credit transfer. This amounts to 22 million such transactions annually (i.e. each year the postman delivers pensions in cash in this quantity in Hungary). The obvious alternative to such payment instrument could be the electronic credit transfer. If the credit transfer to the bank account/ payment account would entirely substitute the outpayment of pensions in cash, society could save approximately HUF 6.5 billion annually in resource costs. (HUF 3.8 billion in variable costs and an additional HUF 2.7 billion in fixed costs related to the payment instrument, assuming the complete phasing out of the payment instrument. Such savings in resources would primarily be realised by the state, initiating the payment transactions, and the Hungarian Post.)

Table 77
Total social savings achievable through the substitution of the delivery of pensions in cash with electronic credit transfers

	Electronic credit transfers	Postal outpayment money orders for pensions
1. Total social costs (HUF billion)	40	6,7
2. Total number of transactions (in millions)	**230**	**22**
3. Total value of transactions (HUF billion)	301,101	1,542
4. Assumed change in number of transactions (in millions)	**+22**	**−22**
5. Assumed change in value of transactions (HUF billion)	**+1,542**	**−1,542**
6. Total number of transactions in assumed scenario (in millions)	**252**	**0**
7. Total value of transactions in assumed scenario (HUF billion)	302,643	0
8. Total costs in assumed scenario (HUF billion)	40,3	0
9. Total social savings (HUF billion)	**6.5**	

5.4 ESTIMATION OF TOTAL SAVINGS ACHIEVABLE THROUGH THE MODERNISATION OF PAYMENTS

Summarising the savings resulting from the above, independently manageable "scenarios", we find that the potential savings would amount to approximately HUF 103 billion annually, that is, domestic payments could be transacted with this much less use of resources, were the above changes implemented.

Table 78
Total social savings achievable through the modernisation of payments

	Cash transactions	Debit card transactions	Electronic credit transfers	Direct debits	Postal inpayment money orders	Paper-based credit transfers	Postal outpayment money order for pensions
1. Total social costs (HUF billion)	209	30	40	8	39	35	6,7
2. Total number of transactions (in millions)	**2,835**	**150**	**230**	**77**	**271**	**47**	**22**
3. Total value of transactions (HUF billion)	51,454	1,050	301,101	640	2,990	61,671	1,542
4. Assumed change in number of transactions (in millions)	**−950**	**+850**	**+300**	**+140**	**−271**	**−47**	**−22**
5. Assumed change in value of transactions (HUF billion)	**−36,132**	**+10,000**	**+90,845**	**+1,661**	**−2,990**	**−61,671**	**−1,542**
6. Total number of transactions in assumed scenario (in millions)	**1,885**	**1,000**	**530**	**217**	**0**	**0**	**0**
7. Total value of transactions in assumed scenario (HUF billion)	15,322	11,050	391,946	2,130	0	0	0
8. Total costs in assumed scenario (HUF billion)	166	46	43	10	0	0	0
9. Total social savings (HUF billion)	**103**						

The savings of HUF 103 billion result only from the lower social cost of payment transactions. This implies that the variable costs of cash, paper-based and postal payment instruments are so high that their substitution with electronic transactions generally results in social savings (as the total cost of cash transactions declines by a higher rate than the rise of costs resulting from additional electronic transactions), and therefore Hungarian society can realise savings by the shift in the direction of cash-free, electronic payments which we have assumed.

Although the above assumed changes are of a large scale and obviously cannot be implemented in the short term, in a single step, we still believe that these are by no means unrealistic. The significant change assumed in the competition between cash and (debit) payment cards: the rise of payment card transactions to 40% of total transactions is a rate that is already approximated by several European countries which are significantly more developed than Hungary. Presently, Hungary is following a global trend: the number of debit card transactions is dynamically rising at the expense of cash payments; unfortunately, the current number of debit card transactions is so low that even with such rate of dynamic growth, it would take 15 years to reach the above assumed level.

With respect to remote payments, the migration of the "yellow cheque" to electronic credit transfers or direct debits (or very similar electronic transactions, assuming innovation) is not a short term challenge, either, but it is far from unrealistic in the medium or longer term. In most European countries postal inpayment money orders are not commonly used for the transaction of remote payments, either because the product simply does not exist or the payer has to pay for the sending of payment. Owing to the latter condition, it is not particularly popular. Naturally, the number of paper-based credit transfers is similarly on a gradual decline in Western Europe in comparison to transfers via electronic channels.

Similarly, with respect to the outpayment of pensions, in several European countries pensions are paid exclusively to bank accounts and not in cash; therefore this assumption is not unsubstantiated either.

Thus, overall, there is major potential in the electronisation and modernisation of domestic payments, and although the trends continuously point in this direction, complete migration in itself remains distant, considering the intensity of these trends. This means that the political decision makers and the authorities could assist the early realisation of the above savings with the adoption of the appropriate policy measures, as we have every reason to say that the reduction of cash use and paper-based payment instruments is in the interest of society, and even intervention in market processes is warranted to promote this objective.

5.5 OTHER NON-QUANTIFIED IMPROVEMENTS IN EFFICIENCY

The above estimate relating to social savings is regarded to be a low estimate. Beyond the foregoing, additional savings may be realised that cannot be quantified with the methodology applied in this study. We outline below these factors.

5.5.1 Endogeneity of cash transactions

With respect to the use of cash, the payment instruments reliant on cash are naturally correlated to each other. An individual who receives his wage, pension or other income in cash is much more likely to spend it in cash, including the use of postal inpayment money orders that can be ad hoc sent with cash. Therefore, a reduction in the use of any of the above cash-related payment instruments contributes to the decline in the number of other cash-based transactions.

5.5.2 Hidden economy

The survey on the cost of payment instruments generally accounted for the formal (regular, legal, etc.) economy and the economic activities conducted in it. We are aware, however, that the hidden economy (also termed as black economy, shadow economy, etc.) has a considerable size in Hungary. Our estimates of transaction numbers and costs generally apply to the formal economy, therefore the number of cash transactions in the entire economy is likely to be even higher due to transactions linked to the hidden economy. The procedures, including payment instruments, typically used in the hidden economy leave no trace, so obviously cash is the most common payment instrument of choice. Beyond the fact that the cash-related resource requirement of activities conducted in the hidden economy is thus not included in the social costs, more importantly, the existence of the hidden economy in itself contributes to a major decline in efficiency and produces

costs for society. Thus, the efforts aimed to reduce the use of cash are not only important in connection with the above HUF 103 billion in savings, but electronisation can contribute to further, significant improvements in efficiency through the increased traceability of payment instruments. Therefore the decrease in the number of cash transactions may result in a much greater improvement in efficiency for society than estimated above, thanks to the whitening of the economy which it directly promotes.

5.5.3 Ignoring certain cash-related convenience cost elements

Although this analysis is more far reaching with cost estimates relating to households and corporates than the majority of Western European studies conducted on the topic so far, and it aimed at completely covering time expenditures and other "shoe leather" type costs, unfortunately the picture remains incomplete. In relation to cash transactions, we were unable to estimate two cost elements for lack of the necessary data and international examples.

The first and most important of these is the exchange cost resulting from fixed denomination structure of cash and the cost of convenience (time, energy, etc.) when the denominations held by the payer will not necessarily equal the amount payable, and it is also possible that the party receiving the cash is unable to return the appropriate sum. The transactions thus cancelled or failed or delayed as a result of a forced exchange, and the additional exchange transactions generated by these have a high cost in relation to cash payments, whereas this problem obviously does not arise in the case of payment card payments or credit transfers, due to the absence of a fixed denomination structure.[78]

The second ignored cost element (although of smaller relevance than the first) is the inconvenience caused by the storage, handling of cash – predominantly coins – in households, or the "thick wallet" effect[79] which we were also unable to quantify.

5.6 THE HYPOTHETICAL COST SITUATION

In summary of the above, we assumed the following changes on the side of the payment structure:

- the number of cash transactions declines by 950 million transactions from the current 2,835 million transactions to 1,885 million transactions, with an 850 million rise in the number of debit card payments and a 100 million rise in the number of electronic credit transfers;

- the number of paper-based credit transfers, postal inpayment money orders and postal outpayment money orders for pensions falls to zero with the result that the number of electronic credit transfers increases by a further 200 million transfers in addition to the above 100 million, from 230 million transfers to 530 million transfers, and the number of direct debits rise by 140 million transactions, from 77 million transactions to 217 million transactions;

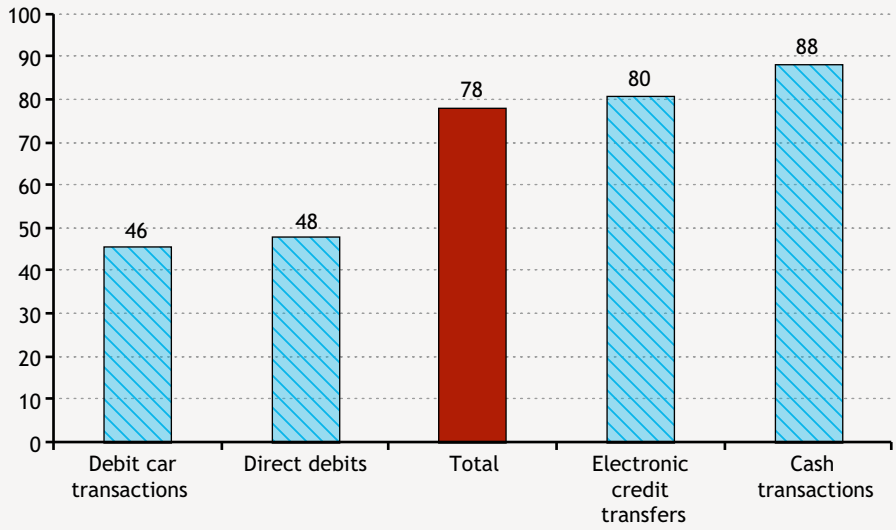
- the number of debit card payments increase – as a result of the declining number of cash transactions – from the current 150 million payments to 1 billion payments.

On the basis of the hypothetically assumed payment structure, the individual unit costs fundamentally change as a result of the sharply varying ratios of fixed and variable costs of the specific payment instruments, and as a result, the unit cost of all payment transactions. In contrast to the current situation discussed under point 4.8, the chart below reveals the unit cost relating to the hypothetical situation (payment instruments in the growing order of unit costs, where we assumed a change in payments). In the hypothetical situation, debit card transactions, direct debits and electronic credit transfers would be cheapest on a social level, and the unit cost of all payment transactions would decrease from HUF 106 to HUF 78.

[78] For the purpose of illustrating such types of problems, the survey conducted by MasterCard and bankkártya.hu in May 2010 ("The twenty thousand bill is a problem in many stores", 25 May 2010), relating to the acceptance of 20,000 forint banknotes, produced a shocking results: the purchase of goods in the value of less than HUF 3,000 failed in 40% of the visited Budapest stores because the store was not willing to exchange the twenty thousand banknote.

[79] E.g. faster wear of wallets, tear of pockets, etc.

Chart 31
Unit costs changing in the hypothetical situation
(HUF)



Source: MNB.

Had we attained this payment structure and cost structure in 2009, the following situation would have emerged per payment instrument.

Table 79
Summary of the estimated hypothetical volume of the surveyed payment instruments and the related estimated hypothetical social costs

Payment instruments		Number (in millions)	Value (HUF billion)	Social costs (HUF billion)	Social unit costs (HUF)		Share (%) based on		
					per transaction	per 100 Ft of payment value	number	value	social costs
1.	Cash transactions	1,885	15,322	166	87.81	1.08	51.5%	3.6%	58.2%
2.	Debit card transactions	1,000	11,050	46	45.63	0.41	27.3%	2.6%	16.0%
3.	Credit card transactions	25	200	20	796.18	9.76	0.7%	0.0%	6.9%
4.	Credit transfers, of which	530	391,946	43	80.47	0.01	14.5%	93.1%	15.0%
a)	paper-based	0	0	0	n. a.	n. a.	0.0%	0.0%	0.0%
b)	electronic	530	391,946	43	80.47	0.01	14.5%	93.1%	15.0%
5.	B2B direct debits	1	507	1	918.75	0.16	0.0%	0.1%	0.3%
6.	Direct debits	217	2,130	10	47.66	0.49	5.9%	0.5%	3.6%
7.	Postal inpayment money orders	0	0	0	n. a.	n. a.	0.0%	0.0%	0.0%
8.	Postal outpayment money orders for pensions	0	0	0	n. a.	n. a.	0.0%	0.0%	0.0%
Total		3,658	421,156	285	77.78	0.07	100.0%	100.0%	100.0%
Social costs as % of GDP				1.09%					

Source: MNB.

Table 80
Current and hypothetical social cost of main domestic payment instruments and the achievable social savings

	In current situation	In hypothetical situation	Absolute savings*	Relative savings* %
Social costs (HUF billion)	387.81	284.50	–103.31	–27%
Social costs/GDP (%)	1.49%	1.09%	–0.40%	n. a.
Unit costs for payment instruments (HUF)				
Cash transactions	73.66	87.81	14.15	19%
Debit card transactions	201.13	45.63	–155.49	–77%
Electronic credit transfers	174.15	80.47	–93.68	–54%
Direct debits	100.39	47.66	–52.74	–53%
Total	106.01	77.78	–28.23	–27%

** with – sign: decrease in costs*
without sign: incerase in costs
Source: MNB.

The table above reveals the comparison of the current and the hypothetical situation; it is clear that the greatest social savings are expected in connection with debit card transactions in terms of both the absolute and relative value of unit costs.

6 Summary of international experience

6.1 RESULTS OF FOREIGN SOCIAL COST SURVEYS

The Norwegian, Swedish, Belgian, Dutch and Portuguese central banks conducted cost surveys in Europe, which we summarise below in relation to their methods, results and conclusions.

6.1.1 The Norwegian study[80]

6.1.1.1 The method

The Norwegian central bank recently estimated the social cost of the group of cash, payment card and so-called giro[81] transactions and their elements, updating and supplementing its estimates prepared (to a lesser extent) for 1988 and (to a larger extent) for 1994 and 2001. The methodology changed over time, as the recent survey was expanded to include cash services as well, and the findings of the cost surveys of European central banks (Swedish, Belgian, Dutch and Portuguese central bank) conducted between 2002 and 2007 were also taken into account.

The experts at the Norwegian central bank aimed at determining the current average costs relating to the entire economy, and they firmly held the view that costing should be based on total costs. It follows that they also aimed at quantifying overhead costs, or under a different approach, direct and indirect costs within the banking sector, and they did not see the need for the breakdown of costs into fixed and variable elements in the banking sector either. They did not carry out a break-even point calculation because in their view

- very many assumptions would have been necessary for marginal costing, which would have essentially limited the utility of the break-even point calculation;

- break-even point calculation considers fixed costs as already incurred, while the infrastructure needs to be implemented and that is not free in any case;

- there is probably no linear correlation between costs and transactions, notwithstanding the fact that economies of scale apply to most payment instruments;

- cost levels and structures related to payments vary significantly in the different sectors, moreover the card, cash and giro payment instrument covers several types of services;

- it is not clear what advantage society gains – beyond savings – from the change of payment instruments.

Private costs, paid and received fees and – after adjusting the private costs by paid and received fees – own production costs and net private costs were determined in each sector (for participants of the payment chain), for each payment instrument.

The bank survey covered 35 payment services; participants were requested to estimate direct and indirect costs relating

[80] Gresvik and Haare (2009a).

[81] Payment orders primarily serving the settlement of public utility, telecommunications and other bills, most of which are currently transacted electronically.

to activities defined in relation to specific payment services, essentially based on the transaction method and submission channel, with a distinction of amounts dependent on and independent of labour expenditure among indirect costs. (Naturally, the data request also applied to transaction numbers and values relating to the 35 payment services.) In relation to merchants, the data request related to payments data, fee payments and labour expenditures related to cash, domestic (BankAxept) cards and cards with international trademarks; labour expenditures were also separately analysed within a narrower segment. The household survey covered cash withdrawals and deposits, daily purchases, their method of payment and the reasons for the choice of payment instrument. (12 banks, 147 merchants and 696 stores responded to the request and time surveys were held in eight stores.)

In the course of processing, calculations were carried out for 26 payment services out of the 35; 9 services were omitted because either there was an inadequate quality of data or the payment volume was so low that it was not worth the effort to carry out the calculations. The methodology of costing was based on the multiplication of the unit production and consumption cost estimated for the individual payment instruments with the relevant transaction numbers. (The number of card and giro transactions was available from central bank statistical sources, while the number of cash payments was partly estimated on the basis of information derived from the household survey and partly based on the national economy statistics relating to household consumption.)

Additional relevant methodological views put forth in the study:

- Despite the approach aimed at the survey of total costs, the cost of those types of infrastructure were ignored which do not primarily serve payment transactions (e.g. household personal computers, roads, bridges, etc.), and the cost of the issue of public utility, telecommunications and similar bills was similarly ignored.

- In relation to bank revenues, the interest rate spread was not taken into account – saved by banks by paying lower interest rates on current accounts than on fixed deposits (in some cases paying 0% interest on current accounts).

- The period of payment was deemed to be the time from the communication of the payable amount until the handover of the receipt. (According to the time survey, a payment in Norway takes 16, 17 and 57 seconds if transacted with cash, a BankAxept card or a card bearing international trademarks, respectively.)

- Neither cash held by households nor the whole of seigniorage is deemed to be part of the social cost. The time consumed with ATM cash withdrawal (including inbound and outbound trips), cash withdrawal and deposit at bank branches, the time spent on payment in stores and the fees paid for payment services were included in the private costs of households.

6.1.1.2 Results

The social cost of NOK 11.16 billion corresponds to 0.49% of GDP.

- With respect to cash transactions, the predominantly corporate deposits relating to higher values are significantly more expensive than cash withdrawals because they are still much less automated.

- Most card payments and giro payments are executed in a completely automated environment, and the average value of giro payments is higher than that of card payments.

- The payment process is considerably longer in the case of cards bearing international trademarks than for cards bearing domestic trademarks (because cards bearing international trademarks are based on signature, while domestic cards are based on PIN code authorisation).

- Cards with domestic trademarks are also cheaper for merchants because the payable merchant fee – in contrast with cards with international trademarks – does not increase in parallel with the increase in transaction value.

Table 80
Total and unit social cost of payment instruments in Norway in 2007

	Social costs (NOK million)	No. of transactions (in millions)	Value of transactions (NOK billion)	Unit social costs (NOK/ transaction)	Unit social costs (ø/NOK)
Cash, total	**3,493.3**	**494.7**	**209.3**	**7.06**	**1.67**
Cash transactions (in gross way, i.e. disbursed on payments only)	**3,493.3**	**285.0**	**62.1**	**12.26**	**5.63**
Cash transactions (in net way)	514.3	285.0	62.1	1.80	0.83
Cash withdrawal via ATM	1,296.8	98.5	119.1	13.17	1.09
Cash deposits and other cash withdrawals at banks	1,682.1	33.5		50.21	
Cash withdrawals at merchants (so-called BankAxept Cash back)	0.0	77.7	28.1	0.00	0.00
Cards total	**5,355.9**	**902.4**	**359.1**	**5.93**	**1.49**
Domestic (BankAxept) card scheme	3,326.8	805.3	298.1	4.13	1.12
International card scheme	2,029.1	97.1	61.0	20.90	3.33
Debit cards (only for banks)	2,355.4				
Credit cards (only for banks)	965.7				
So-called giro,total (a+b) or (c+d+e)	**2,308.5**	**510.7**	**10,428.8**	**4.52**	**0.02**
Elektronic giro (a)	1,481.6	462.3	10,212.2	3.20	0.01
Paper based giro (b)	826.9	48.4	216.6	17.08	0.38
Direct debits (c)	130.1	49.6	219.7	2.62	0.06
Credit transfers (d)	2,113.9	453.5	10,149.4	4.66	0.02
Other transfers (e)	64.5	33.8		1.91	
Internet banking (part of elektronic giro)	1,032.4	318.8	6,496.3	3.24	0.02
Society, total	**11,157.8**	**1,830.1**	**10,969.1**	**6.10**	**0.10**
Point of sale (POS) total (cash and card)	**8,849.2**	**1,319.4**	**540.3**	**6.71**	**1.64**

Note: the ø (øre) is the subunit of the Norwegian krone and one hundredth of the krone.
Source: Norges Bank.

6.1.1.3 Conclusions

The authors drew the following main conclusions:

- The banks improved efficiency: they are conducting more transactions at lower costs than in the past.

- Large volume electronic services have the lowest unit cost; the ratio of electronic payments has been rising for many years, partly as a result of banks' pricing policies. The price of payment services reflects the relative differences in underlying costs.

- With regard to the methodology of the cost survey, it was established that the merchant survey would be best conducted by a research team, as the response rate was low among merchants and the quality of responses was also poor in some cases. The diary was regarded as more effective than the phone survey in relation to households, although they were also satisfied with the quality of the latter. The ABC method worked well with banks.

6.1.2 The Swedish study[82]

6.1.2.1 The method

The Swedish central bank estimated the private and social cost of cash and payment card payments. Private cost served as the premise; costs were estimated for each sector (on the basis of the payment chain participants) and the fees paid by the participants to each other were deducted. The study does not describe in detail the method of data collection, but it does note that only the published annual reports of the 3 largest companies were used in relation to the cash-in-transit companies; the cost survey of the Swedish chamber was used in relation to merchants, while a two-week phone survey was conducted with households on purchases and their method of payment (with a 57% willingness to respond).

In relation to cash, the cash production and distribution costs of the central bank were estimated. Estimation covered the combined cash payment costs of banks and the post (through office, labour costs and costs relating to the use of ATM terminals, basically regarded as a fixed type of cost, and the terminal filling costs, basically regarded as a variable type of cost), the cost of the storage, processing and transport of cash, and finally, seigniorage on cash held by banks was added to these costs. (The interchange fee was deemed to be a cost only in terms of the given bank, as it only constitutes transfer between the banks within sector as a whole). The costs of households included the portion of the annual fee of the payment card allocated to cash withdrawal (on the basis of the transaction number), loss of interest incurred due to cash holding (projected to 50% of the average value of ATM cash withdrawal), the time of ATM service and the time required to access an ATM, as well as the cashier time related to cash purchases. ATM service was estimated at 50 seconds, while the combined waiting and access time was estimated at 1 minute. (Time was expressed as cost on the basis of the hourly wage after taxes.) The cashier time resulting from the time survey of the Swedish chamber was quantified as the average of after-tax and pre-tax hourly wages. In relation to retailers, the fees paid to cash-in-transit companies, additional work related to the handling of cash and the cashier time relating to cash sales was quantified. In addition to the foregoing, the costs of cash-in-transit companies and the authorisation cost relating to ATM cash withdrawals was also taken into account.

With respect to payment card payments, banks incurred the costs of authorisation, settlement, balancing, administration and the procurement of cards. Households incurred costs relating to the annual fee of the payment card distributed to card purchases and cashier times relating to payment card purchases. On the side of merchants, costs relating to POS terminals, transaction fees (merchant fees) and cashier times related to payment card sales were taken into account.

The counterfeiting of cash and payment cards was regarded as a private cost, as in their view, it is a monetary transfer between the counterfeiter and the victim of counterfeiting. They hold the view that this constitutes social cost only if it modifies the behaviour of the market participants, that is, protection against counterfeiting is necessary.

6.1.2.2 Results

The table below summarises the results of the estimates and calculations.[83]

The social cost thus calculated amounted to 0.4% of GDP.

The total cost of payment card payments was deemed to be fixed in the sense that the costs are independent of the value of transactions. In relation to cash payments, a rough estimate of the ratio of fixed and variable costs was made for each sector, resulting in 40% and 60%, respectively. It follows that the result of the two equations below was used to determine the amount where the social cost of cash and payment card payments is identical:

[82] Bergman et al. (2007)

[83] The sum of numbesrof transactions produces a higher value than the aggregate, but the unit costs are correct.

Table 82
Total and unit social cost of payment instruments in Sweden in 2002

	Social costs (SEK billon)	Number (in millions)	Value (SEK billon)	Unit costs (SEK)
Cash	6.56	1,424	235	4.6
Total card, of which	1.91	589	365	3.2
Debit card	1.56	509	297	3.1
Credit card	0.35	80	68	4.4
Total POS transactions	8.47	1,989	600	

Source: Sveriges Riksbank.

Table 83
Method of determining the social break-even point in Sweden in 2002

$$\text{Social cost of card payment} = \frac{\text{Total social costs cards}}{\text{number of card payments}}$$

$$\text{Social cost of cash payment} = \frac{0{,}4 * \text{total social costs cash}}{\text{number of cash payments}} + \frac{0{,}6 * \text{total social costs cash*value spent}}{\text{value of cash payments}}$$

Source: Sveriges Riksbank.

The result is SEK 82, which was broken down separately into debit card and credit card purchases with the use of assumptions and data that were not detailed. The result is SEK 71 (EUR 8) for debit cards and SEK 157 (EUR 18) for credit cards as the estimated amount above which the use of the given cash saving instrument has a lower social cost.

6.1.2.3 Conclusions

Upon comparison of the private costs of sectoral payment instruments with the social costs, it was established that consumers are motivated to excessively use credit cards over cash and they are under-motivated to use debit cards. By contrast, merchants are motivated in an opposite direction; banks finance cash with their profits originating from card transactions (hence they realise cross-subsidisation). The authors made the following combined proposal to improve the situation:

– introduction of a fee for ATM cash withdrawals and

– reduction of the interchange fee which would moderate the costs of acquirer banks, and the latter could promote the reduction of the merchant fee,

– the enabling surcharging for merchants if a customer pays with a card with a more expensive format.

6.1.3 The Belgian[84] and the Dutch[85] study

6.1.3.1 Results of the Dutch cost survey

In 2005, the Dutch central bank published its study on the social cost of payment instruments. The subject of the study were 4 payment instruments: cash, debit card, credit card and (offline) electronic money stored on chips (e-purse). With regard to the payment chain, the authors of the study only analysed the Dutch central bank, the royal mint, the banking sector and the retail sector. The costs of other companies and households ("shoe leather costs" and household fees) were not estimated at all. Accordingly, the study only focused on payment transactions and payment instruments in the retail sector. Facts and estimates of the study relate to the year 2002 (Table 84).

[84] National Bank of Belgium (2006).
[85] Brits and Winder (2005).

Table 84
Results of the Dutch cost survey on costs in 2002

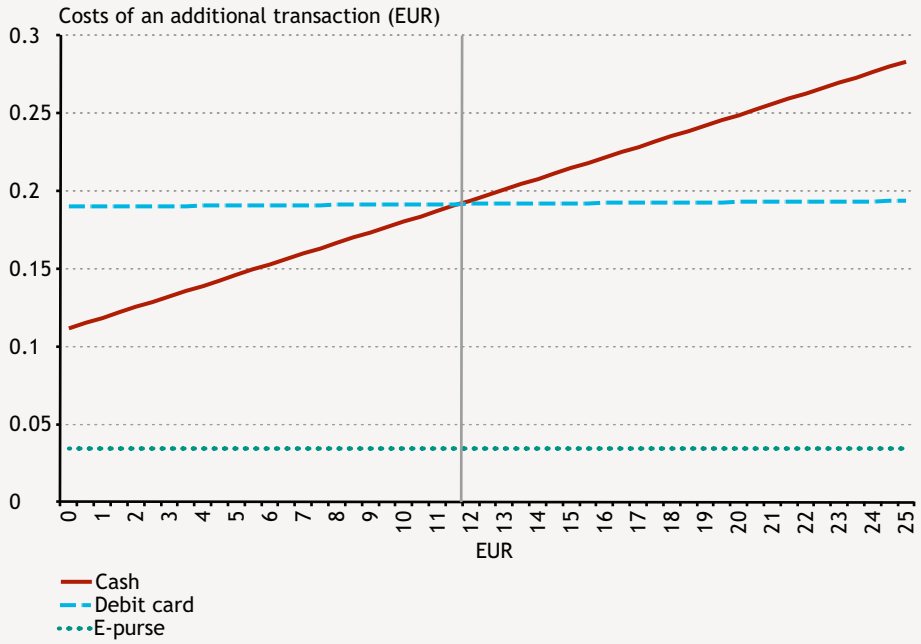
	Cash	Debit card	Credit card	E-purse
Trotal number of transactions (in millions)	**7,066**	**1,069**	**46**	**87**
Total value of transactions (EUR million)	66,263	47,177	5,300	236
Average value of transactions (EUR)	9.38	44.13	115.22	2.71
Estimated total social costs related to the payment instrument (EUR million)	2,122	520	165	81
Unit social costs related to the payment instrument (EUR)	**0.30**	**0.49**	**3.59**	**0.93**
Share of fixed costs	41%	60%	70%	96%
Share of transaction-linked variable costs	37%	39%	22%	4%
Share of value-linked variable costs	21%	1%	8%	0%

Source: DNB.

On the basis of the above figures, the total cost of the surveyed payment transactions on a social level equalled 0.65% of annual Dutch GDP and 2.4% of retail sales. Thus, average resources of over EUR 400 per Dutch household were spent annually on the transaction of payments.

On the basis of the above calculations, the authors of the Dutch central bank's study determined (by dividing the transaction number based variable costs with the number of transactions and value based costs with payments expressed in value) the break-even point between the cash, debit card and e-purse where payment with a payment card is cheaper than with cash in terms of the social cost of an additional transaction. They produced the following result on the basis of the above figures:

Chart 32
Estimate of the Dutch cost survey on the additional (variable) cost of payment instruments based on the amount of the transaction



Thus, according to the estimate of the Dutch authors, based on the value of the transaction, the choice of the debit card over cash is optimal in terms of social cost in relation to transactions with a value of over EUR 11.36, and the e-purse is more efficient than cash or debit card payment in relation to all transaction values (the costs of credit cards were very high in proportion to the number of transactions, therefore the authors did not examine the credit card any further). The

authors concluded from the above that social savings may be realised if cash transactions are substituted with the e-purse in relation to low value (less than EUR 11) transactions and with debit card payments of a higher value.

Since the authors regarded the full substitution of cash as impossible (utopian) within a foreseeable period of time, on the basis of a more realistic scenario, they examined what would happen if the Dutch would substitute 1.5 billion cash payments with 1 billion debit card and 0.5 million e-purse payments. (On the basis of the table above, the result would be 5.5 billion cash transactions, slightly over 2 billion payment card transactions and 587 million electronic money transactions.) In consideration of variable and fixed costs, the result is that due to the higher ratio of the variable costs of cash transactions, the decline in costs realised on cash transactions exceeds the rise in costs realised on debit card and electronic money transactions, and Dutch society would save resources in the amount of approximately EUR 100 million annually.

6.1.3.2 Results of the Belgian cost survey

The survey of the social cost of payment instruments in Belgium was propelled in 2004 by a broader social debate emerging as a result of the introduction of a fee charged for ATM cash withdrawals by the largest Belgian retail bank. In reaction to the above, the Belgian central bank prepared its cost survey, significantly relying on the methodology used in the Dutch and Swedish studies that were already in progress. Similarly to the Dutch and Swedish studies, the Belgian study only surveyed the costs of retail transactions and only in relation to cash, debit and credit cards and the electronic wallet (e-purse). The Belgian analysis produced the following results (Table 85):

Table 85
Results of the Belgian cost survey on costs in 2003

	Cash	Debit card	Credit card	E-purse
Trotal number of transactions (in millions)	**2,970**	**539**	**37**	**107**
Total value of transactions (EUR million)	52,185	26,836	3,656	553
Average value of transactions (EUR)	17.57	49.79	98.81	5.17
Estimated total social costs related to the payment instrument (EUR million)	1,574	296	97	58
Unit social costs related to the payment instrument (EUR)	**0.53**	**0.55**	**2.62**	**0.54**
Share of fixed costs	49%	61%	75%	82%
Share of transaction-linked variable costs	25%	39%	21%	15%
Share of value-linked variable costs	26%	0%	3%	2%

Source: National Bank of Belgium.

According to the estimate of the Belgian authors, the total resources spent on the surveyed payment instruments amounted to 0.75% of Belgian GDP.

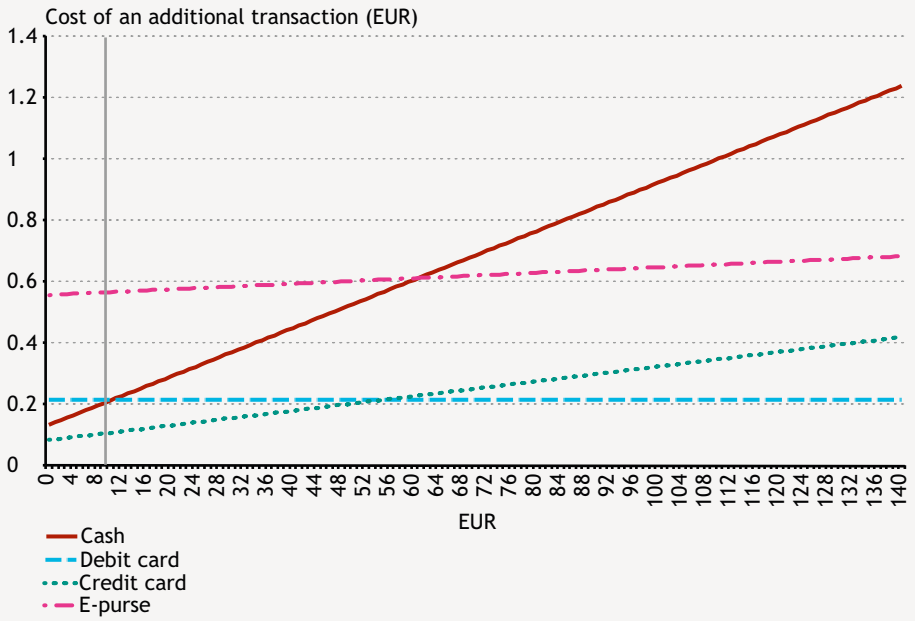
On the basis of the estimates, the Belgian authors also determined the break-even points based on the value of the same additional transaction, in line with the Dutch methodology (Chart 33).

Thus, according to the estimation of the Belgian authors, the threshold is at EUR 10.24, over which the costs of a payment transacted with a debit card is cheaper than cash from a social point of view.

The Belgian authors conducted a similar reasonable simulation with the assumption that 750 million cash transactions would be substituted with 500 million debit card and 250 million electronic money transactions in the economy. In such a scenario, the total resource savings of Belgian society would amount to approximately EUR 58 million annually (corresponding to 0.02% of Belgian GDP).

The results of the Belgian survey are very similar to those of the Dutch survey with respect to the optimal switching point between cash and the payment card and the estimation of the social resource requirement of the survey payment instruments (0.75% and 0.65% of GDP, respectively). The share of fixed and variable costs, however, differed significantly in the two estimates, even though all studies showed the highest share of variable costs in relation to cash payments.

Chart 33
Estimate of the Belgian cost survey on the additional (variable) cost of payment instruments based on the amount of the transaction



6.1.4 The Portuguese study[86]

6.1.4.1 The method

The Portuguese central bank estimated the private cost of cash, direct debit, cheque and credit card and debit card transactions. The cost was estimated with the ABC method in the banking sector and with the collection of costs and work expenditures relating to payments in the case of merchants. (Only 7 major merchants provided valid responses relating to costs.) With regard to consumers, the aim was to survey payment habits and the extent to which the parties concerned are aware of the cost of the specific payment instruments.

6.1.4.2 Results

Table 86
Costs and revenues of payment instruments in Portugal in 2005

		1. Costs of banking sector	2. Revenues of banking sector	3. Coverage rate for the banking sector (2/1)	4. Unit cost of banking sector	5. Unit revenue of banking sector	6. Unit costs for the retail sector	
1.	Measure unit	EUR million	EUR million	%	EUR/ transaction	EUR/ transaction	cent/ transaction	cent/EUR
2.	Total	1,138.70	722.00	63.4			18,9	1,2
3.	Cash	196.30	8.30	4.3	1.85	0.08		
4.	Direct debits	14.00	22.30	159.5	0.09	0.15		
5.	Cheques	327.30	129.10	39.4	1.45	0.57		
6.	Credit transfers	26.10	24.20	92.7	0.28	0.26		
7.	Credit cards	266.90	286.90	107.5	2.44	2.62		
8.	Debit cards	308.10	251.10	81.5	0.23	0.18		

Source: Banco de Portugal.

[86] Banco de Portugal (2007).

The total (private) bank cost of the 6 analysed payment instruments corresponded to 0.77% of GDP, while bank revenues amount to 0.49% of GDP. Bank revenues exceed bank costs only in relation to 2 of the six analysed payment instruments – credit cards and direct debits.

6.1.4.3 Conclusions

The authors drew the following main conclusions:

- It is more efficient to pay with cash under EUR 8, while debit card payment saves costs in relation to payments of over EUR 8.

- Electronic payments result in social benefits through security, ease of use, convenience and time savings (with the reduction of trip, waiting and processing time) and improve social welfare. Electronic payments also allow banks to consume less resources.

- Consumers and smaller merchants are barely aware of the cost of the payment instruments which prevents the wider proliferation of socially more efficient payment instruments.

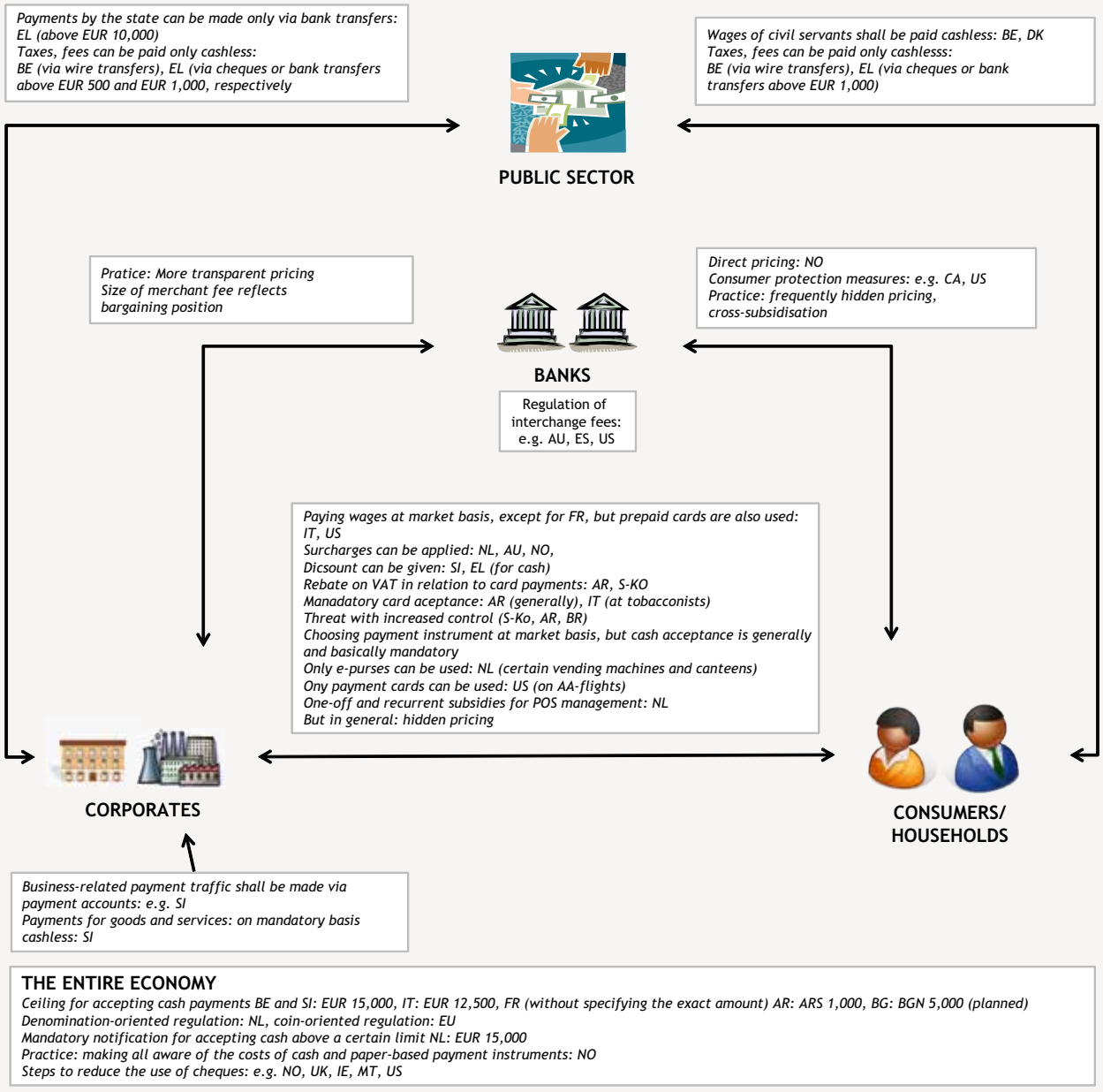
6.2 INTERNATIONAL REGULATORY INITIATIVES AND RESEARCH SERVING THE IMPROVEMENT OF THE EFFICIENCY OF THE CHOICE OF PAYMENT INSTRUMENTS

A review of international literature dealing with retail payments also highlights international regulatory initiatives and main areas of research. In this section we discuss both topics.

6.2.1 International regulatory initiatives

Within certain limits, international literature offers insight into regulatory initiatives. In the course of processing the information, in addition to developed European countries we also aimed at describing emerging countries which, for some reason, are in the focus of international attention. Our summary makes reference to impact studies only in a few cases, as these are relatively rarely made public. The changes underlying the statistical data are partly the result of organic development and partly occurred and/or occur as the combined effect of several factors. Moreover, certain countries do not disclose any payments related statistical data or only to a very limited degree. The chart below shows the identified/identifiable main regulatory initiatives within the relationship between the participants of the payment chain and in relation to the economy as a whole.

Chart 34
Summary of international regulatory initiatives and practices



Source: MNB, on the basis of literature specified in the list of references, particularly in relation to the communication of the European Commission (2010a).

6.2.1.1 With regard to payments in the public sector

We may assume that most developed countries adopt the principle that public sector wages may only be paid in a cashless form. We found this to be confirmed specifically in the case of Belgium in the 2010 publication[87] of the European Commission covering countries of the euro area (payment is made by credit transfer). Beyond wages, the referenced publication of the Commission also reveals that government benefits and aid are also paid in a cashless form. This is generally the case in Greece, for example, in relation to payments of over EUR 10,000, or even EUR 1,500, if the given point of sale does not have enough cash. Taxes, duties and fees are also collected in a cashless form (e.g. in Belgium, taxes and fees may only be paid by credit transfer; in Greece, these are payable by cheque or credit transfer by companies over the amount of EUR 500 and by natural and other legal entities over the amount of EUR 1,000).

[87] Source: European Commission (2010a).

6.2.1.2 With regard to the customer transactions of banks

In relation to banks and their customers, we did not find any signs of current government intervention in charged fees. In 1973 in Norway, however, the central bank criticised the free payment services, and following wide ranging and lengthy communications and the adoption of common principles, it laid the foundations for the transformation of the Norwegian payments market by securing the acceptance of higher fees for paper-based payment instruments (cheques, "yellow cheques", paper-based credit transfers). From the middle of the 1980s until 2008, transaction pricing was in effect for all payment instruments. As a result, the direct financing of bank payments costs increased from 26% in 1988 to 71% in 2007, although differences remain very large between the individual products (only 27% for cash, 61% for payment cards and 140% for giro services[88]).[89]

Box 6
Preparation and process of transaction pricing in Norway

The process[90] began on 1 January 1960, when salaries were transferred to bank accounts, leading to a rise in the use of banks. At the request of employers and trade unions, until 1966 banks agreed to temporarily provide this service free of charge for employers, employees and trade unions. In 1974, the fee exemption was extended for an additional four year period, bound to the use of cheques, provided that any modification would constitute the renegotiation of other elements of the agreement.

In 1973 the Banking Association conducted a campaign to reduce the use of cheques with a value of less than NOK 100. The governor of the central bank publicly criticised the free use of the given payment services for the first time in 1973. The report relating to the Norwegian budget, adopted in 1973, also put forth that cheque payments produce major costs for banks, and if banks were to charge a fee for the transaction of cheque payments, the increase of lending rates could be moderated and a clearer picture could emerge in terms of economics.

Professional work was conducted from 1972 in the various committees with the participation of the ministry of finance, the banks and other parties concerned; as a result, the estimates relating to bank unit costs and total costs were completed in 1979. The majority opinion of the committee supported the introduction of fees to promote a more rational use of resources. According to the plan, the banks were to initially provide four transactions a month free of charge (including cheque payments and cash outpayments), agreeing to a total of 15 cheque payments per quarter free of charge from 1978, but with a view to curbing rising inflation – the freezing of prices – the introduction of fees was not adopted due to the royal decree issued in 1978.

The decree relating to the freezing of prices was repealed in 1981 and the major banks began to charge fees for small-value cheques (with a value of less than NOK 150). As a new sign of support by administration, the budget relating to 1983 contained that banks must aim at setting prices/fees which cover the actual costs of their various services. The banks intended to introduce a unified fee for payment services, but the competition authority rejected their application in 1984. The largest bank, however, unilaterally introduced a fee for its payment services and the other banks followed suit, thus the charging of (transaction based) fees was introduced without statutory regulation.

In reaction to the banking crisis around 1990, in 1992 the ministry of finance, the central bank and the banking supervision authority unanimously agreed that the banks need to increase their fee revenues, including fee revenues from payments. In the same year a proposal was made for the harmonisation of bank and postal payment services in the sense that the cost recovery rate needs to be increased through direct pricing and the varying costs of the different services need to be reflected. Finally, the fees of postal payment services increased at a slower pace until 1996 than those of bank payment services. The fees of paper-based payment services continuously rose from 1990, while electronic based services did not increase. Statutory regulation[91] was adopted in 1999 on the method of charging interest (with exclusion of the float).

The mass conversion from the use of paper-based payment instruments to electronic payment instruments evolved on a gradual basis in the course of the 1990s, but the process is still in progress. The table below provides an overview of the graduality of conversion.

[88] Giro services are basically payment orders serving the settlement of public utility, telecommunications and other bills.
[89] Source: Norges Bank (2009).
[90] Source: Enge and Øwre (2006).
[91] Source: Kredittilsynet Norway (2000), Article 27.

Table 87
Norwegian giro payments from 1998 to 2009
(in millions)

Year	Electronic giros	Paper-based giros	Out of paper-based giros: "yellow cheque" (cash payments)
1988	35.0	233.7	
1990	53.2	229.2	
1995	101.7	222.9	62.5
2000	221.0	149.3	20.4
2005	411.8	68.6	
2009	503.5	38.3	5.0

Source: MNB, derived from Norges Bank' Payment System Reports (2000, 2001, 2010).

In the table we called an instrument similar to the Hungarian postal inpayment money order a "yellow cheque", as it can also be paid in cash at the postal/bank counter. The change was principally attributed to the price and fee policy of banks, but also to the development of user friendly giro services; both the banking community and the public found that electronic services are faster, simpler to use and less costly than paper-based services.

In Canada, the government issued a code of conduct for the credit and debit card sector that aims at promoting a better understanding of costs and benefits related to payment cards by merchants and consumers.[92]

In the area of consumer protection, the law adopted in the United States[93] in 2009 is noteworthy. Since 80% of American families have credit cards and 44% of them have credit card debt, the government launched reforms to implement the following objectives[94]:

- strong and reliable protection of consumers,
- provision of comprehensible, clear printed forms by card companies to consumers,
- to ensure that holders can use credit cards without fear of exploitation,
- larger accountability and liability for participants which use infringing practices that defraud families and consumers.

Main elements of the law:

- advance notification of interest rate increases and other material modifications (45 days prior to effective date), prohibition of the tightening of the terms of credit repayment related to the closing of an account,
- limitation of interest rate and fee increases (no modification of the contractual terms and conditions in the first year, rules relating to the charging of default interest),
- protection of young consumers: under the age of 21, credit cards may only be applied for with a co-signer,
- prohibition of the unreasonable fee trap: minimum 21-day deadline from mailing for the payment of the bill, confirmation of the reasonableness of interest calculation: the item with the highest interest rate is reducible with overpayment,
- comprehensible and clear communication of terms and conditions prior to opening of account,
- fair information on the financial consequences of credit decisions.

The various studies suggest that corporates are more clearly informed of the fees of bank services, while the bank fees are frequently hidden for retail customers.

[92] Source: Tumpel and Gugerell (2010).
[93] Source: US Credit Card Accountability, Responsibility and Disclosure Act (2009).
[94] Source: US The White House (2009).

Box 7
The Dutch bank fee policy

In the Netherlands,[95] the fees paid by retailers to banks are directly related to the payment instruments, but such direct relationship is realised through an account management package, explicit fees and fees based on the number of payment transactions. The fees relating to electronic payments do not depend on the value of the transactions, but the fee of cash transactions are value based. In relation to debit cards linked to the use of a PIN code, the acquirer bank fees approximately 4-5 euro cents for each incoming payment to retailers, although the (very) large retailers generally pay a lower fee.

Consumers are rarely confronted with the cost of their payment decisions at the point of sale; the use of the payment instruments basically seem free to them. The banks commonly charge a fee to consumers for a specific period (an average of EUR 35 annually) for use of the bank account and the payment card, but the consumers incur the costs through hidden costs (non-interest bearing current account, value dating).

6.2.1.3 With regard to the regulation of the interchange (interbank) fee

The Australian central bank[96] introduced the regulation of the interchange fee in 2003. Main elements of the regulation: the interchange fee is maximised on a cost basis, the prohibition of the surcharge (no-surcharge rule) was phased out and the obligation to honour all cards (honour-all-cards rule) was cancelled. Following a transitional period, from 2005 the average maximum interchange fee was set at 0.5% of the transaction value in relation to both MasterCard and Visa (half of the average rate prior to the regulation of 2003). And from 2006, the average maximum interchange fee equalled 12 (Australian) cents in relation to debit cards bearing the MasterCard and Visa trademark (MasterCard voluntarily adopted the regulation of the latter). Prior to the introduction of the regulation, fees were considerably higher in both systems, and these varied from each other despite the fact that both systems conduct transactions with identical purposes. The interchange fee was set at 4-5 cents in the EFTPOS debit card system for cards bearing domestic trademarks.

The mandatory phasing out of the prohibition of the surcharge was enforced in relation to MasterCard and Visa, while American Express and Diners Club voluntarily accepted this demand. (There was no such restriction in the domestic EFTPOS system in the past.) The central bank maintains that the possibility of the surcharge is sufficient for the merchant to avoid the (excessive) increase of the merchant fee. There are no limits on the surcharge charged by the merchant; the only rule is that prior to the transaction the merchant must inform the customer of the possibility of the surcharge, and it may not lead the customer to believe that the merchant only charges the cost of card acceptance if it would charge more.

The phasing out of the obligation to accept all cards gave the freedom for merchants to decide whether they want to accept both debit cards and credit cards from the given card company which also improved the price negotiating position of the merchant. (MasterCard and Visa, however, needed to enable the merchant to be able to distinguish a debit card from a credit card at a glance.)

As a further element of regulation, from 2003 MasterCard and VISA were required to disclose the interchange fees, and in addition to the authorised deposit-taking institutions, they needed to expand the group of partners which came under control by the Australian supervision authority.

[95] Source: Bolt et al. (2008).
[96] Source: Bullock (2010).

Box 8
Effect of Australian interchange fee regulation

Prices changed in reaction to the regulation. For the use of cards the users of credit cards pay more than those who use debit cards. By contrast, the cost of credit card acceptance declined for merchants, while the cost of the acceptance of debit cards moderately increased. The decrease in the interchange fee prompted credit institutions to increase the fees charged to credit card holders (and reduce the provided benefits), while cardholder costs declined in relation to debit cards.

According to the survey conducted in June 2010, 40% of larger merchants and 20% of smaller merchants charge a surcharge for card payments. The rates of the surcharge vary, but the average is 1.7% (MasterCard and Visa) and 2.7% (American Express and Diners Club) of the transaction value. According to the central bank's estimate, the net cost of the credit and debit card is currently nearly identical for cardholders, in consideration of the benefit programs related to the credit cards, provided that the cardholders duly settle their debt. The regulation produces cost savings of approximately 1 billion dollars annually for merchants.

As the first step of Spanish interchange fee regulation,[97] in 1999 the Spanish ministry of economy resolved the gradual decrease of the interchange fee (from approximately 3.5% in 1999 to 2.75% in July 2002), and in 2005, it resolved to implement interchange fee regulation on a cost basis. The fee is of a fixed amount in relation to debit card transactions and continues to be determined on a percentage basis in relation to credit card transactions.

Box 9
Effect of Spanish interchange fee regulation

Carbó-Valverde and his co-authors[98] established that the merchant fee is in close positive correlation with the decline of the interchange fee; they found that merchant acceptance increased with the decrease in the interchange fee. This effect is particularly strong in countries where card acceptance remains far below acceptable levels. Their empirical study implied that in such markets card use increased as a result of the decline in the interchange fee. As a result, bank incomes did not decrease either.

In recent years the interest representation organisations of merchants in the USA put forth their arguments relating to the interchange fees and the network operation of card companies on several occasions to the US Congress. In reaction to the lawsuits and congressional hearings, there was growing belief in the USA that some of the problems need to be resolved through regulation. Pursuant to the "Dodd-Frank Wall Street Reform and Consumer Protection Act" adopted on 21 July 2010, the regulation of interchange fees relating to debit cards came under the authority of the Federal Reserve Bank (Fed).[99] On the basis of the above, the Fed sets maximum for interchange fees and enables merchants to differentiate payment instruments through consumer prices. According to the law, the interchange fee charged for transactions conducted with electronic debit cards must be proportionate to the costs incurred by the bank in connection with the transaction. The Board is to draft the relevant regulation within nine months of promulgation of the law.

6.2.1.4 Regulation, funding relating to payments between corporates and the consumers/households

With regard to the payment of wages, we found regulation only in France, where above a certain value limit, wages may only be paid by credit transfer or crossed cheque, provided that the payee has a bank or payment account.[100] This suggests that in most countries the choice of the payment instrument is at the discretion of the given employer. Payment by credit transfer is not a general practice even in the most developed countries, as a MasterCard[101] presentation suggests that

[97] Source: Carbó-Valverde et al. (2009).
[98] Source: Carbó-Valverde et al. (2009).
[99] Source: Keszy-Harmath et al. (2010).
[100] European Commission (2010a).
[101] Source: MasterCard (2010b).

numerous small and larger corporates in the USA pay wages with cheques, while many corporates in Italy do so with prepaid (payroll) cards. (MasterCard developed a card specifically for this purpose with the trade name "payroll".)

Article 52, paragraph (3) of Directive 2007/64/EC of the European Parliament and of the Council on payment services in the internal market refers the possible prohibition or restriction of the payee charging a fee for the use of a given cash substitutive payment instrument to the authority of the Member States.[102]

We examined[103] the extent in which the EU Member States apply any prohibitions/restrictions. We determined that some of the Member States apply prohibitions/restrictions (Austria, Bulgaria, Cyprus, Denmark, France, Greece, Lithuania, Luxembourg, Latvia, Portugal, Romania, Sweden and Slovakia), while others – keeping with earlier traditions – do not apply these (Belgium, Germany, Estonia, Spain, Finland, Ireland, Malta, Netherlands, Slovenia). Thus, European countries apply different practices, and we believe that they aim at establishing a balance between four criteria. The four criteria: efficiency (card payment is definitely more efficient than cash payment above the social optimum), consumer protection (the consumer should not feel misled), transparency (the cost of payment should be visible) and competition (there should also be competition between the payment instruments).

Countries applying prohibitions/restrictions were principally motivated to avoid distortion between the socially efficient card payments and socially inefficient cash payments. (The decision in some countries is also attributed to the fact that merchants were to be spared from a complex system.) The prohibition/restriction generally applies to all sectors and any card in the countries concerned, with the exception of Denmark, where the charging of a surcharge is in all cases permitted in relation to online purchases and payments with foreign cards. The prohibition/restriction did not produce a particularly negative effect, although there were cases in Austria and Sweden, where smaller merchants were not willing to accept payment cards, or only above a certain value limit. In Sweden and Denmark, the price of card payment is thought to be hidden by the merchant in the price charged for product/service sold.

Countries not applying any prohibitions/restrictions did so on the premise that the surcharge is rare, and they did not wish to hide the cost of payment from customers or intervene in the legal relationship between customers and sellers. In practice, the surcharge is commonly applied in a few sectors or smaller stores. In fear of bad press coverage, Finnish merchants refrain from applying the surcharge in practice. The box below summarises the practical experience in the Netherlands.

Box 10
Application of the retail surcharge in the Netherlands

Retailers can freely decide on applying a surcharge, including the payment instrument, transaction value linked to the surcharge and the amount thereof. Some retailers charge a surcharge only for debit card purchases under a limit determined by them. Only 20% of retailers accepting debit cards charge a surcharge; the average limit is EUR 10. (20% of retailers apply a maximum EUR 7.50 limit, 60% apply a limit of EUR 8-12.50, and the remaining 20% apply a higher limit.) The average surcharge is 23 euro cents (the surcharge was generally between 10 and 50 euro cents).

The concerned experts of the central bank hold the view that the introduction of the surcharge system initially improved the efficiency of the POS system. The limit applied by retailers, namely, matched the social optimum, but due to technological development and the rise in the number of transactions, the social optimum declined and the change of the limit barely followed this decline. In reaction to the surcharge, a large number of Dutch consumers (69%) either choose a different payment instrument (cash or, to a lesser extent, the e-purse) or go to another store. Price sensitivity varies according to age, gender, income and education levels (consumers under the age of 35, women, those with higher income and higher education show greater price sensitivity).[104]

[102] Source: European Parliament and Council (2007).
[103] European Commission (2010b).
[104] Source: Bolt et al. (2008b).

In connection with transposition of the EC Directive, as of 1 November 2009, Norway permits merchants to apply a surcharge for the acceptance of cards bearing an international trademark that are much more costly than cards bearing the domestic trademark (BankAxept).[105] In the view of the central bank, this change not only favours merchants, but improves the cost efficiency of payment services overall. Currently, merchants pay a fee of NOK 0.12-0.20 (≈ 1-2 euro cents) – irrespective of the transaction value – for the acceptance of the BankAxept card, but 1-4% of the purchase value in relation to international cards. (Since the bulk of purchases are made with BankAxept cards that have a lower cost and fee, overall merchants in Norway pay less for the acceptance of payment cards than in other countries.)

As noted under point 6.2.1.3, merchants in Australia may also charge a surcharge for card purchases.

In Argentina, a law[106] obliges taxpayers selling real estate and certain consumer services to end consumers to accept debit card payment, but they may reclaim the cost thereof to the debit of payable VAT. Private individuals paying with debit cards for such goods and services were also temporarily (from 2001 to 2007) entitled to reclaim VAT (in different amounts for the given products, but for up to 5% of the transaction value), but an implementation decree limits the reclaiming of VAT by households (bound to a maximum transaction value of 1,000 pesos and excluding gas, electricity and water supply). Taxpayers registered in the VAT register are obliged to accept debit card payments, unless the point of sale is not a shop or store, the sale is not transacted in a municipality with a population of less than 5,000 and the value of the payment transaction is not less than 10 pesos. Such taxpayers are entitled to reclaim the debit card processing costs each month (monthly and for up to 30 pesos per POS terminal).[107]

We found a few other examples of regulatory intervention through statutory regulation.

– In Italy it is mandatory to set up POS terminals at tobacconists.[108]

– In South Korea it is mandatory to use credit cards over certain value limits relating to travel and entertainment costs. In South Korea retailers may pay less VAT if they accept cards and they are required to pass on some of such deduction to buyers.[109] It is assumed that tax revenue did not decline overall and the share of cash payments fell from 50% to 25% in four years.[110]

In relation to emerging countries, a MasterCard presentation[111] indicated a threat of greater control of the payment instruments offered by merchants.

– Threat of a tax inspection for those who have uncommonly low revenue from electronic payments (South Korea).

– Fitting of black boxes on ATMs which are connected to the tax authorities (Argentina).

– Required implementation of the tax collection system relating to POS transactions at acquirers (Brazil).

Beyond regulatory intervention, it is useful to review the multifaceted approach applied by the Netherlands to promote the further increase of the ratio of debit card transactions.

[105] Source: Norges Bank (2010).
[106] Source: Argentinean regulation (in translation into English).
[107] We did not find any substantial information relating to the impact of legal regulation.
[108] Source: Visa (2009).
[109] Thus, in practice, in relation to a product with a price of 120 won, including VAT, the government remitted 5 won of the 20 won VAT from the merchant if the purchase was made with a payment card, and it required the merchant to pass on 2 won of the 5 won to the buyer in the form of a lower price. Thus, the buyer paid 118 won if he paid with a payment card (if he paid with cash, he would have to pay the total 120 won), and the merchant was only required to pay 15 won as VAT, thereby keeping 3 won and a total of 103 won for the price of the product, in contrast to cash payment, where he would only keep 100 won.
[110] Source: Visa (2009).
[111] Source: MasterCard (2010a).

Box 11
Dutch measures taken to increase the ratio of debit card transactions

The telecommunications service providers and terminal suppliers (in cooperation with banks or independently) offer more favourable packages for small- and medium-sized corporates for the use and operation of POS terminals.[112]

In 2007, the Foundation for the Promotion of Efficient Payments (Stichting Bevorderen Efficiënt Betalen/SBEB) – operating with the participation of banks and retailers – launched a campaign to promote the acceptance of debit cards among small- and medium-sized corporates. A separate package was developed for them; the first 10,000 retailers joining the program received a one-off EUR 100 subsidy, and all participating corporates can manage their affairs with simplified administration. (It is not necessary to contract with various partners; it is sufficient to pay a single monthly fee for which the retailer is entitled to accept a maximum amount or unlimited number of debit card payments at no extra cost.)[113]

An experimental program was launched in 2007 in which stores exposed to particularly high risk (larger attack, robbery, e.g. stores open late into the night) could accept debit card payments free of charge.[114]

A campaign was underway in 2008 in the organisation of Currence (owner of the Dutch debit card system) to encourage consumers to use their debit cards also for smaller payments ("Klein bedrag? PINnen mag!"= Small amount? Please pay debit!). In 2008, many retailers phased out the previously applied surcharge on small-value debit card transactions and – in comparison to 2007 – the number of debit card transactions rose by 10% in 2008 and the number of acceptance points increased by 6%. The number of acceptance points increased at an above-average rate in public transportation and parking and at an average rate in street retail.[115]

Upon the initiative of the MOB[116] (Dutch payments forum), in 2007 the Dutch central bank launched a separate website covering issues in relation to the use of payment instruments (www.allesoverbetalen.nl).[117] The website is available only in Dutch, but it presumably contains all pieces of information and plans that may encourage consumers to use socially efficient payment instruments. The MOB report, used as a reference work, suggests that a higher fee would be justified in relation to credit card transactions and paper-based credit transfers – regarded as less efficient instruments – but unspecified vulnerable groups would be exempted from the higher fee.

In 2007, the MOB adopted a directive for the facilitation of POS terminal use to enable the easier use of this payment instrument by older and/or visually impaired people for whom card payment was problematic in the past.[118] In 2008, the ergonomic aspects of the use of POS terminals was surveyed (readability of display and slip, ease of use of the keypad, clarity of textual and audio signal instructions, terminal accessibility, lighting, noise environment).[119] The results were published under the title "Card payment for everyone" ("Pinnen voor iedereen").

The banking of the visually impaired was surveyed in 2008 and the correct practice applicable in their case was set up in 2009.

Beyond the foregoing, there are also examples of the cutback of cash payment for practical or business purposes.

- In the Netherlands, the use of the e-purse is mandatory for the use of certain (parking and train ticket vending) automated machines, canteens and snack counters.[120]

- Following the introduction of euro cash in January 2002, many cities and merchants reset their machines for the use of the e-purse and not for euro cash.

[112] Source: Netherlands. National Forum on the Payment System (2007).
[113] Source: Netherlands. National Forum on the Payment System (2008).
[114] Source: Netherlands. National Forum on the Payment System (2008).
[115] Source: Netherlands. National Forum on the Payment System (2009).
[116] Maatschchappelijk Overled Betalingsverkeer = Dutch National Forum on the Payment System.
[117] Source: Netherlands. National Forum on the Payment System (2008).
[118] Source: Netherlands. National Forum on the Payment System (2008).
[119] Source: Netherlands. National Forum on the Payment System (2009).
[120] Source: Jonker and Kettenis (2007).

– From 2004, the vending machines of the Dutch rail service only accept e-purses; other payment instruments may be used to buy tickets at the cashiers (with a 50 euro cent surcharge which obviously also covers the cost of personal service).

– As of June 2009, certain American airlines (e.g. American Airlines) only accept payment card payments for domestic flights.[121]

We separately examined the practice of the payment of public utility bills. The box below contains the result of our analysis.

Box 12
International practice of public utility bill payment

Several instruments are used in developed countries for the payment of public utility bills, including credit transfers, direct debits, credit transfers through ATMs, and in some countries postal payment instruments are also used. According to available sources,[122] direct debits are typically used for the payment of public utility bills in Belgium, Italy, the Netherlands, Portugal, France, Cyprus, Latvia and Great Britain. Public utility bills are also paid by credit transfers in the Netherlands and instruments similar to EBPP[123] are also used. Several European countries (Portugal, Finland, Ireland, Bulgaria) enable bill payment through ATMs (with a payment card, by credit transfer).

In Norway[124] public utility, telecommunications and other bills are sent on paper by post or electronically directly to the Internet bank. In 2009, the number of agreements relating to electronic billing rose sharply. Approximately 650 corporates sent electronic bills to household customers; 24 million electronic bills were issued through the Norwegian Banks' Clearing and Payment Centre (BSS), compared to the 18 million bills issued in 2008. This accounts for approximately 10% of household Internet or direct debit transactions. For direct debit transactions (AvteleGiro) both the payee and the payer need to have bank agreements. AvtaleGiro is a payment solution combined with electronic billing. At the end of 2009 a total of 11 million agreements had been concluded by a total of 12,000 corporates with their customers (7% more than in the previous year) on the transaction of such type of payments, corresponding to a 12% annual increase in terms of customers. In Norway, some customers pay their bills with mobile phones (by text message) when approving their electronically sent bills. Some banks also enable Internet bank bill payments through mobile phones.

In Australia,[125] the post carries out over 150 million bill payments annually, crediting the amount of the bill to the account of the payee on the business day following the date of payment. It sends the daily transactions and the settlement report by e-mail to the payee on all three available submission channels. The payment service is available through three types of submission channels: firstly, in person: in 3,800 post offices in cash, by cheque, payment card with a domestic Australian trademark, some credit cards and debit cards with international trademarks; secondly, with the use of phone cards (24 hours a day, every day of the week); thirdly, via the Internet with payment cards (24 hours a day, every day of the week).

In Ireland,[126] the Irish post provides bill payment services to customers in the framework of BillPay.ie. In 2007, 24.8 million bills were settled in this way (corresponding to 6.2 bills per capita, compared to 27.6 bills per capita in Hungary)[127]. For the use of the payment service, the customer registers a bank account on its account on the website that may be addressed with a laser engraved card or by direct debit. With a valid payment order, the post withdraws the money from the bank account or requests the bank to pay such amount on its behalf (the terms of business define this process as "withdrawal"). Thereafter, the withdrawn amount is credited to the "customer account" at the service provider, receiving payment and thus the payment is effected.

[121] Source: Carbó-Valverde (2009).
[122] Source: ECB (2007.)
[123] Electronic bill presentment and payment.
[124] Source: Norges Bank (2009).
[125] Source: Website of the Australian post: http://auspost.com.au/index.html.
[126] Source: billpay.ie.
[127] Source: Turján (2009).

6.2.1.5 Regulation relating to corporate payments

We may assume that there is wide application of the requirement to transact business related payments through bank accounts/payment accounts, although we found specific references thereto only in Slovenia. With the exception of small amounts and cases where appropriate records are guaranteed, legal entities and any other organisations that conduct business activity are required to transact all purchases of goods and services with cashless instruments (Article 36 of the law on the rules of taxation). In Slovenia, merchants are not obliged to accept cash (for the sale of goods) either from customers or third parties in the value of over EUR 15,000 (this limit also applies to transactions between affiliated corporates) (Article 37 of the act on money laundering).[128]

6.2.1.6 Regulation relating to the entire economy

There are regulations in force in several countries which set an upper limit for the acceptance of cash relating to specific or any payment obligations or enforce other similar restrictions.[129]

- In Belgium, the purchase price of goods or property where the value is in excess of EUR 15,000 may not be settled in cash (Article 10 of the Belgian act on money laundering).

- In France, debt over a specific limit may not be settled in cash (this rule is not applicable to payments between private individuals and public sector payments).

- In Italy, regulation is universally applied and the upper limit is EUR 12,500.

- In the Netherlands, the reporting obligation enforced pursuant to the money laundering act completely limits the acceptance of cash in practice in relation to payment obligations in a value of over EUR 15,000 (the limit is not EUR 15,000 but EUR 25,000 in relation to gold).

- In Argentina, payment may not be transacted in cash in a value of over 1,000 pesos or equivalent currency value.[130]

Beyond the foregoing, with a view to curbing the hidden economy, the Bulgarian Ministry of Finance is contemplating the submission of a bill[131] that would set a limit of 5,000 leva (≈ EUR 2,557) over which payments may only be transacted from payment accounts. (The planned regulation also applies to currency equivalent to 5,000 leva.)[132]

In addition to the upper limit relating to the acceptance of cash, there is also denomination related regulation in the Netherlands, and the limit pertaining to the use of coins is enforced in the whole of the EU.

- In the Netherlands, in accordance with the principle of equity and reasonableness, payments that are deemed to be unreasonable (e.g. large banknote denominations and small coin denominations) may also be rejected (Civil Code, Article 6:2).[133]

- Pursuant to the regulation of the Council on the introduction of the euro, no one in the EU may be obliged to accept more than 50 coins in the course of one payment. (The regulation is not applicable to issuing authorities and organisations that are designated by national legislation.)[134]

[128] Source: European Commission (2010a).
[129] Source: applied uniformly in the euro area countries concerned, European Commission (2010a).
[130] Source: Argentine regulation.
[131] As at the end of 2010.
[132] Source: European Central Bank (2010).
[133] Source: European Commission (2010).
[134] Source: Council (1998).

Some euro area Member States (Ireland, Germany, Finland, Netherlands) were of the view that contractual freedom enables the restriction of the acceptance of cash.[135] In the USA and Australia, they argue that the rejection of cash payment is not unlawful even under the definition of legal tender. In the United States, notwithstanding that American banknotes and coins serve to settle all types of payment obligations, there is no federal statutory obligation in force to the effect that any one (organisation or private individual) is obliged to accept these. For example, a transport company may prohibit the payment of the travel fare in cash, or any store may reject the acceptance of banknotes of larger denomination (larger than 20 dollar bills), if it indicates in advance that it does not accept such denominations.[136] In Australia, in the interpretation of the central bank, the seller of goods or services may freely determine – prior to the legal relationship – the terms of business, form of payment; for example, road, parking and other fee collectors are not obliged to accept coins of small denomination if they give notice of this in advance.[137]

In addition to cash, several countries also aim at reducing the amount of cheque payments. Norway implemented this objective through the introduction of transaction pricing and user-friendly electronic services. (According to the oldest data available to us, the annual cheque quantity decreased from 72.2 million cheques in 1988 to under 10 million cheques in 1998 and under 1 million cheques in 2005; 0.3 million cheques were used in 2009.)[138] The USA, Great Britain, Ireland and Malta all want to further reduce the use of cheques. Great Britain plans to phase out cheques from the market by 2018; MasterCard is recommending prepaid (allpay) cards for the payment of social benefits, as a substitute for cheques.[139] A MasterCard[140] presentation, cited above, suggests that with the use of the prepaid (payroll) card, American and other corporates could simply reduce wage payments with cheques, thereby cutting their own costs and increasing the free time of employees.

Banking groups in Ireland put forth a proposal[141] to the effect that from October 2012, government authorities should not accept or issue any cheques, and proposed to the government that this period should be designated as E-day, as the reform of payments. The proposals put forth, inter alia, that the government should increase the cheque fee to the level of social cost and distribute it in equal proportion between the payer and the payee (currently, namely, only the payer is required to pay for the cheque). The following instruments are to be used to reduce the use of cash: information relating to cash alternatives should be displayed on the screen when larger amounts of cash are withdrawn, merchants should give bonus points for card purchases, merchants should set up cashiers where only card payments are accepted, as a result of product development, banks should offer new innovative products that may promote the substitution of cash.

6.2.2 Main directions, findings of international research

In the area of retail payments, international research primarily focused on "point-of-sale" transactions, i.e. transactions involving a physical relationship.

Thus, transaction/cost-based pricing is an important topic of literature; many analysts would regard this to be an ideal situation, as consumers react to price incentives and are able to make the socially correct decisions only on the basis of actual costs.

- Enge and Øwre[142] argue that free payment services do not give a clear indication of the costs of payment instruments, but the negative consequence is smaller if the most efficient service is free.

- According to Leinonen,[143] cross-subsidisation/subsidies increase demand for subsidised services/payment instruments. If the subsidised service/payment instrument is not efficient, such subsidy does not result in an efficient payment structure and slows down the development of payments. The requirement of pricing with higher transparency basically depends on regulators which requires both political support and consumer consent.

[135] Source: European Commission (2010).
[136] Source: the Federal Reserve Board.
[137] Source: Reserve Bank of Australia.
[138] Source: Norges Bank (2000); Norges Bank (2010).
[139] Source: Peplow and Roberts (2010).
[140] Source: MasterCard (2010b).
[141] Source: National Irish Bank (2010).
[142] Source: Enge and Øwre (2006).
[143] Source: Leinonen (2009).

– Bolt and Humphrey[144] argue that the banks are aware that transaction pricing accelerates the proliferation of the use of electronic payments, but they are reluctant to be first in shifting to transaction pricing in fear of the contraction of their access to funds. This problem may be eliminated or mitigated if all banks (or the majority of banks) would convert to transaction pricing. The competition authorities may accept consultation relating to the timing of introduction, as the social welfare of electronic payments is considerable.

– According to Van Hove,[145] cost-based pricing is not simple to explain to consumers, as the costs are clearly visible, but the advantages defined in the argument – products/services with lower basic prices, smaller interest rate spreads – are hardly so. Therefore, the main issue is who has the courage to "sell" the cost-based pricing of retail payments (including cash) to the public.

The views differ considerably in relation to the interchange fee.

– Bedre-Defolie and Calvano[146] argue that regulation aiming at the maximisation of the interchange fee increases social welfare and mediates a clear economic policy message.

– According to Bolt and Humphrey,[147] the question is whether central intervention is capable of improving economic welfare in consideration of market characteristics.

It seems that cross-subsidisation between consumers and merchants in relation to payment card payments finds acceptance in literature.

– Bedre-Defolie and Calvano[148] argue that there is a conflict of interest between the buyer and the seller, as both want the other to cover the larger portion of the card transaction's cost.

– According to Bolt and Humphrey,[149] cross-subsidisation may be applied between merchant and consumer on a two-sided market to boost demand.

– Enge and Øwre[150] also argue that it may be necessary to subsidise the side where growth is more important in terms of the growth of total payments.

– According to Arango and Taylor,[151] since the cost sensitivity of the two sides is not identical, the network frequently subsidises one side at the expense of the other side. In particular, consumers are subsidised in the credit card branch at the expense of merchants, since consumers are more important in terms of the expansion of the network, and they are more sensitive to costs than merchants.

The following should be noted from the point of view of merchants:

– According to Carbó-Valverde and Chakravorti,[152] acceptance by merchants increases in reaction to the decline of the interchange fee. This effect is particularly strong in countries where card acceptance remains much below acceptable levels.

– The examples used in literature suggest that the merchant fee is more likely to be determined as an absolute value than in a percentage rate in relation to debit cards, and relatively frequently larger retailers pay more favourable fees than smaller retailers.

[144] Source: Bolt et al. (2008a)
[145] Source: Van Hove (2007).
[146] Source: Bedre-Defolie and Calvano (2009).
[147] Source: Bolt et al. (2008a).
[148] Source: Bedre-Defolie and Calvano (2009).
[149] Source: Bolt et al. (2008a).
[150] Source: Enge and Øwre (2006).
[151] Source: Arango and Taylor (2008); Arango and Taylor (2009)
[152] Source: Carbó-Valverde et al. (2009).

– Bolt and Chakravorti[153] argue that the possibility of charging a surcharge – even if generally not applied by merchants – may improve their bargaining position vis-à-vis banks in relation to fees. It is important that the fees paid by merchants reflect actual costs and the other participants must also receive a share of cost savings realised by a given participant of the payment chain. The surcharge and the limit, however, must adjust to the social break-even point.

Consumers predominantly switch from payment card cash withdrawals to payment card purchases not due to the price, but convenience, security criteria and the rising number of terminals. The conversion process, however, may be accelerated if the increase of the number of terminals is also linked to price incentives.[154] Carbó-Valverde and Liñares-Zegarra argue that from the point of view of the card issuer, the benefit program related to payment cards is a strategic means of promoting the use of cards.

A MasterCard presentation[155] made note of an interesting experiment in which 19 young men and women between the age of 17 and 30 in 6 European countries (Netherlands, Germany, Sweden, Great Britain, Italy and Poland) agreed not to use cash for one week in April 2010. The experiment was successful everywhere, but creativity was needed.

6.2.3 Summary of the international regulatory initiatives

In addition to communications campaigns, the reduction of cheque and paper-based credit transfers was/is generally performed with price instruments (e.g. Norway, Ireland).

For the purpose of promoting payment card acceptance/use, several countries have introduced or are introducing interchange fee regulations through regulatory intervention (Spain, Australia, USA). There are instances where retailers are supported with funds awarded through bidding procedures or with simplified administrative procedures to enable payment card acceptance (Netherlands). With a view to increasing the use of payment cards, VAT discounts are/were applied to merchants or buyers (South Korea, Argentina).

European countries are divided on the issue of prohibiting/restricting the payee from charging a fee for the use of a given cash substitutive payment instrument within the manoeuvring room permitted by Directive 2007/64/EC of the European Parliament and of the Council on payment services in the internal market. They are attempting to find a balance between four criteria. The four criteria: efficiency (card payment is definitely more efficient than cash payment above the optimal social level), consumer protection (the consumer should not feel misled), transparency (the cost of payment should be visible) and competition (there should also be competition between the payment instruments).

It is relatively common (e.g. Belgium, Netherlands, Italy) to apply administrative measures – partly for the purpose of combating money laundering – to limit the acceptance of cash above a certain limit (EUR 12,500–15,000), but we have no information as to the actual effect of such measures. This is presumably more effective in countries where the share of the hidden economy is smaller, and the vast majority make payments of larger amounts with cashless instruments.

Legal regulation aiming at the use of cashless instruments is common in connection with payments from and to the public sector; the largest benefit of this is the spill-over effect due to their modern form of payment and their weight.

[153] Source: Bolt and Chakravoti (2008a), Bolt and Chakrvavorti (2008b).
[154] Source: Bolt et al. (2008a).
[155] Source: Zanghi (2010).

7 Impeding factors identified in Hungarian legal regulations

In conjunction with the public sector payments project, we analysed national legislation with a focus on identifying any provisions that may possibly limit or impede the choice of more efficient payment instruments in Hungary.

7.1 UNCERTAINTY LINKED TO CASH AS LEGAL TENDER

We believe there is an issue that somewhat undermines a clear understanding, as national legislation does not adequately support the uniform interpretation of the legal tender and this may confuse communication.

Act LVIII of 2001 on the MNB sets out a definition of legal tender: "… The banknotes and coins issued by the MNB – including commemorative banknotes and coins – shall be legal tender of the Republic of Hungary." (Section 4 (2)). The Act also regulates the acceptance of legal tender at face value: "Prior to withdrawal, banknotes and coins issued by the MNB shall be accepted at their face value by all persons in transactions which are conducted in the legal tender of Hungary" (Section 31 (2)). In our interpretation, this only constitutes a mandatory provision in relation to the acceptance of payment at face value and does not regulate the issue of payment instruments to be used (payment in cash, credit transfer, etc.) because that depends on the agreement between the parties.

Act XCIII of 2001 on Foreign Exchange Liberalisation and Amendments to Related Laws is in accordance with such interpretation, defining the forint as the legal tender: "The forint is the legal tender of the Republic of Hungary. Payment in forints may not be rejected in Hungary." (Section 1 (1)). The Act defines legal tender as "money and – unless provided otherwise – money substitute instruments issued in forints or foreign currency" under Section 2 (7).

The domestic tax act obliges taxpayers with a current account to fulfil their tax payment obligations by credit transfer (from Section 38 (1) of Act XCII of 2003); moreover, taxpayers obliged to open current accounts are also obliged to execute their payments through the current account (from Section 38 (3) of the above act). Pursuant to the tax act, businesses are also obliged to report to the tax authority their cash payments of a value of over HUF 1 million and HUF 5 million (Section 17 (9)). Thus, they are not permitted to use cash for tax payments and are limited in using cash for other purposes as well.

EU legislation (e.g. Article 16 of the Statute of the ESCB and the ECB or Articles 10 and 11 of Council Regulation 974/98/EC on the introduction of the euro), too, uses the term of legal tender, defining it as cash. ("The banknotes issued by the ECB and the national central banks shall be the only such notes to have the status of legal tender within the Community" and "As from 1 January 2002, the ECB and the central banks of the participating Member States shall put into circulation banknotes denominated in euro. Without prejudice to Article 15, these banknotes denominated in euro shall be the only banknotes which have the status of legal tender in all these Member States. As from 1 January 2002, the participating Member States shall issue coins denominated in euro or in cent and complying with the denominations and technical specifications which the Council may lay down in accordance with the second sentence of Article 105a(2) of the Treaty. Without prejudice to Article 15, these coins shall be the only coins which have the status of legal tender in all these Member States."). At the same time, cash substitute instruments – not subject to an acceptance obligation – also come under the definition of (legal) tender in practice, everywhere in the world.

The analysis of the definition and scope of legal tender is on the agenda on an international scale. The expert group recently set up by the European Commission (composed of the representatives of the ECB, European Commission, central banks and ministries of euro area Member States) analysed the legal tender status of euro banknotes and coins.[156] The

[156] Source: European Commission (2010a).

majority held the view that in the B2C (i.e. business-to-customer) relationship, the acceptance of euro cash may only be restricted in exceptional cases, but four Member States (Ireland, Germany, Finland, the Netherlands) were of the opinion that contractual freedom enables restriction not only in exceptional cases. With respect to the surcharges charged to cash payments, the majority maintained that this is not permissible, but five Member States (Ireland, Germany, Finland, the Netherlands, Slovenia) regarded it to be reconcilable with the nature of the legal tender from a legal point of view. The Commission eventually issued a recommendation along the lines of the majority opinion which, however, may raise concerns in relation to the other payment instruments.

7.2 REGULATION OF THE METHOD OF WAGE PAYMENT

We separately analysed regulations relating to the method of the payment of wages (salaries), as our survey suggests that 40% of corporates pay wages in cash. Section 154 (1) of the Labour Code (Act XXII of 1992) stipulates that

- wage must be paid in forints – exemptions may only be stipulated by law;

- wage may not be provided in vouchers or in kind, only in money (HUF);

- it is not mandatory to pay wages in cash, it may also be transferred to the payment account of the employee (and not someone else), but this is bound to two conditions: the parties must agree on this either on an individual basis (employer-employee) or on a collective basis (employer-interest representative) and such method "may not result in additional costs" for the employee.

A legal provision relating to a payment instrument other than cash payment is found only in relation to civil servants and public employees. Pursuant to such provision, their emoluments are paid "by credit transfer, or in the absence of a payment account, by delivery of cash outpayment from the current account" (i.e. postal outpayment money order for social benefits and other purposes) (Section 49/A of Act XXIII of 1992 and Section 79/A of Act XXXIII of 1992). Under this basic concept, the provision in force from 5 November 1996 also guarantees that the single withdrawal of the emolument may not result in additional costs for the given employee.

Thus, the regulation is clear; it is possible to pay wages with instruments other than cash.

7.3 PUBLIC UTILITY AND TELECOMMUNICATIONS SERVICES SUBJECT TO ADMINISTRATIVE PRICING

We analysed legislation relating to public utility and telecommunications services subject to administrative pricing as to whether these would enable differentiated pricing based on payment instruments, that is, should the consumer pay more or less for the service, depending on the payment instrument, or should the actual cost of payment be made transparent for the consumer.

The scope of administrative prices is determined by several laws: Act LXXXVII of 1990 on Pricing, Act XVIII of 2005 on the Supply of District Heating, Act LXXXVI of 2007 on Natural Gas and Act XL of 2008 on Electricity. (Accordingly, in addition to the above services, administrative prices are applied, for example, to the fee of universal electronic telecommunications service, drinking water fee, sewage disposal, sewage treatment fees.) The laws only set out principles for administrative pricing (e.g. the administrative price must cover the costs of the efficiently operating enterprise and provide resources for profit necessary to conduct the activity, in consideration of the deductions and subsidies as well), but also designate the persons and bodies authorised to set the administrative price of products/services, and refer the criteria to be observed for the setting of administrative prices to be defined in separate legislation.

Upon review of the decrees relating to administrative prices, the following picture emerges.

- In relation to natural gas, there are three decrees of [KHEM - 29/2009 (VI.25), 31/2009 (VI.25) and 74/2009 (XII.7)] – in force pertaining to the setting of prices relating to universal service on the natural gas market, setting of natural gas network access fees and the framework of the pricing of the use of the natural gas system. The decrees determine initial

pricing and price adjustments related to the physical content of services in the depth of formulas. There is one element that is defined in a "looser" form, according to which the Hungarian Energy Office uses "quantified data adjusted with the degree-day method approved by it… for the calculation of costs to be taken into account for pricing and their conversion into prices… in consideration of the natural gas balances… consulted within the sector". "In the course of determining adjusted quantified data, in reasonable cases the Office takes into account the effect of other factors determining consumption, such as real trends in the global economy and changes in consumer habits." [From Annex 2, point 3 of Decree 74/2009 (XII.7) KHEM.] Although the legislative intention was obviously not aimed at the payment instrument related to consumption, but similarly to this provision, perhaps it would be possible to create manoeuvring room to consider the size of payment costs depending on the selection of payment instruments.

- With respect to electricity, there are two GKM decrees, one Government decree and one KHEM decree in force. Decree 5/2005 (I. 21.) GKM on the medium-term regulation of network access fees determines initial pricing and price adjustment in the depth of formulas, but in addition to the asset value, depreciation, capital costs, it enables the consideration of losses in the transmission network, the loan interest for the financing of basic activity and other, unspecified reasonable costs (from Annex 1, point 5 of the decree). The latter element may give some hope that the size of payment costs depending on the selection of payment instruments is taken into account. Decree 119/2007 (XII. 29.) GKM and Government Decree 398/2007 (XII. 23.) set out specific prices (with respect to the fees for transmission system operation fee and combined services at system level, the mandatory off-take price of co-generated electricity). Decree 44/2008 (XII.31.) KHEM on the pricing of universal service on the electricity market and product packages provided in the framework of universal service determines the price of universal service in the depth of formulas and maximises the trading margin that may be applied above the recognised, annual average electricity purchase price (at 1.98 HUF/kWh).

- Decree 47/1999 (XII. 28.) KHVM – regularly amended – on fees payable for drinking water supplied from state owned public utility water plants and for the use of state-owned public utility sewage treatment plants specifically determines the payable fee, provided that the water supply corporates may apply a municipality coefficient to fee billing due to variations in household water consumption.

- Decree 3/2002 (I. 21.) MeHVM on the fees of phone services provided by telecommunications service providers with a significant market power on the phone service market and fee packages related to universal telecommunications service currently only maximises the one-off fee related to the establishment of a main and dual subscriber connection and does not set out any other restrictions.

On the basis of the foregoing, it can be seen that in relation to telecommunications services, there are no legislative obstacles for the service provider to bill differentiated fees depending on the payment instrument. This, however, seems uncertain in relation to natural gas, electricity, water and sewage disposal.

8 Policy conclusions

The international examples are mixed; there are no clearly defined trends or a strong impetus for regulatory intervention in relation to the execution of payments between economic participants.

The simulation based on the social cost survey, however, suggests that on the wider social level a substantial improvement in efficiency can be realised if the cash, and cash and paper-based payment transactions, or parts thereof, can be shifted to electronic payments and payments carried out via payment accounts. On the price level of 2009, HUF 103 billion of the current cost of the use of payment instruments could be saved annually, without taking into account the effect of improved efficiency and higher tax revenues resulting from the contraction of the hidden economy and environmental aspects.[157]

Thus, the question arises as to what could be done to accelerate Hungary's progress in this direction. It is important to note that the current trend is already pointing in this direction in Hungary, because although the absolute number of payment card payments (particularly debit card payments) remains low, it is rising at a dynamic annual rate of 10-20%, and card payments are thereby replacing a portion of cash payments in retail sales. The number of credit transfers is also growing each year (although the growth rate has declined significantly recently), and the share of credit transfers submitted through electronic channels is continuously increasing in comparison to the ratio of paper-based credit transfers. The number of direct debits is also rising each year. The number of postal outpayment money orders for pensions has been gradually decreasing each year; moreover, a decline in the number of postal inpayment money orders has become visible in the past 1-2 years, breaking the initially strong, then slowing growth trend witnessed until the end of 2008.

In comparison to more developed economies, however, such change is considered to be slow because even in relation to the fastest growing payment card transactions 15-20 years would be needed to reach the ratios currently measured in the North European countries. The migration of postal money orders without intervention would take even longer, primarily because the number of postal inpayment money orders continues to be high. This is particularly unfavourable in light of the fact that in payment situations in most Western European countries (regular or single remote payments, e.g. public utility bills), where postal inpayment money orders are most popular currently in Hungary, most (nearly 100%) of the payment transactions are already conducted free of paper, or at least through payment accounts, by credit transfer or direct debit, i.e. without any flow of cash.[158]

On the basis of international examples and national particularities, we outline below the possible policy measures that we regard suitable for further analysis, depending on consultations with the stakeholders and adoptability in national economic policy. In the process of outlining possible policy measures, the focus was firmly on the improvement of social welfare and the promotion of early potential savings. We believe that the listed possible policy measures may enhance each other's effects.

[157] Paper-based payments, namely, consume a large quantity of paper. The electronisation of payments – similarly to the substitution of other paper based administrative activities – would also produce a beneficial environmental effect.

[158] In many countries the national post is part of the payment market, but in most countries it offers cashless electronic payment instruments (e.g. simple credit transfers or direct debits). Where there are services similar to the Hungarian postal inpayment money order (e.g. Czech Republic, Norway or Great Britain), the payer pays for the service, hence the payment instrument is not too popular.

8.1 SUBSTITUTION OF CASH PAYMENTS IN THE RETAIL SECTOR WITH A MAXIMUM NUMBER OF POSSIBLE PAYMENT CARD PAYMENTS

The payment card market in Hungary is underdeveloped in comparison to the EU average. The lag, however, is much larger in the number of acceptance points (measured for both the number of POS terminals suitable for purchases and stores accepting payment cards) than in relation to the payment card holding of Hungarian households. On the basis of the above, we may venture to say that the key to the development of the domestic payment card market is the rapid proliferation of payment card acceptance. In simple terms: the reason for Hungarians not paying with payment cards is not the fact they do not have cards, but because – even if they wished to – they are unable to do so in many places. Barely 25% of retail units in Hungary accept payment cards,[159] in contrast with the 60-70% or higher rates measured in Western Europe. Without the collection of separate data, it is possible to determine that payment cards are not accepted in smaller stores, as practically all stores located in larger department stores, hypermarkets and plazas accept the cards of the international card companies. The geographical characteristics of card acceptance also suggest that tourism continues to determine payment card acceptance in Hungary (particularly in rural areas), therefore the likelihood of card acceptance is higher in places where the presence of a larger number of foreign tourists is more probable. This is surprising, as the domestic payment card market is now over 15 years old and 85%[160] of Hungarian households have payment cards.

8.1.1 Supporting of the installation of POS terminals

On the basis of the foregoing, we propose that a common fund be established to support the installation of POS terminals. According to our concept, retailers should participate in tenders for subsidies awarded from the fund, where smaller merchants/catering businesses (within the SME sector) would be the targeted segment. Within the SME sector, subsidies could be predominantly focused on retail sectors (e.g. small food stores, small computer or electronics stores, etc.) that are underdeveloped in terms of payment card acceptance, including the less developed geographical regions. For the purpose of intensifying competition between acquirer credit institutions, subsidies should be bound to the establishment of a bank independent infrastructure, that is, the merchant would be required to acquire a standard terminal and conclude a contract that enables him to change the acquirer bank quickly and conveniently if such change is advantageous for the merchant. Obviously, the merchant should agree to accept without a limit at least the payment cards bearing the trademarks of the two international card companies.

The fund could be launched with an initial capital of HUF 3 billion, which could finance the installation of 30,000 POS terminals. In this case, the number of domestic payment card acceptance points could be nearly doubled. In addition to the MNB, the participation of the banking sector, MasterCard, Visa and the Hungarian state would be necessary.

8.1.2 Establishment of regulatory control over the interchange fee

In Hungary, the international card companies set the interchange fee. (The fee is collected by the issuer credit institution in connection with card purchases and by the acquirer credit institution in connection with card cash withdrawals.) The interchange fee, however, constitutes a significant cost of card acceptance, as it is built into the merchant fee paid by the merchant (typically at the percentage rate projected to the amount of payment card purchases; according to MNB estimates, the average fee approximates 0.5%[161]).

The card companies argue that the interchange fee is necessary because the demand of cardholders (consumers) is much more flexible toward the cost of payment card payments than that of merchants, and therefore the growth of the payment card market is fastest if the cardholders are subsidised at the cost of the merchants. This is particularly problematic in Hungary, as the country lags much further behind the EU average in payment card acceptance than in payment card holding (see point 8.1 for data). Therefore, under the current conditions in Hungary, it is presumably not fair to say any

[159] There are currently 66,000 POS terminals in Hungary, but a significant portion of these consist of several terminals operated by the same merchant. The number of domestic acceptance points equals nearly 59,000, while according to KSH (Central Statistical Office) data, there are a total of approximately 235,000 retail units in Hungary. The latter figure does not include "mobile retail units", such as taxis, long distance buses, etc.

[160] Takács (2011).

[161] Source: Keszy-Harmath et al (2010).

more that a higher interchange fee would promote the development of the market, as the burden placed on merchants, in fact, impedes what is most needed on the Hungarian market: expansion of the acceptance network.

Regulatory control could be possibly introduced to the extent that the card companies would be required to consult on their fee-related decisions with the authorities and market participants (e.g. merchants), taking into account that the card companies would reduce the percentage rate of the fee at least by a rate equivalent to the rise in payments traffic.

8.1.3 Servicing of the voucher market based on common standards and the existing payment card infrastructure

According to our estimates, Hungarian households used 52 million paper-based food and recreation vouchers in 2009 (in a total value of HUF 118 billion). If the stakeholders of the voucher market, including the Hungarian state (which supports the entire market with tax benefits), could declare the necessity of electronisation, this – similarly to health fund cards[162] – would also give rise to the proliferation of payment card payments, as the amount of the vouchers could be loaded onto the EMV chip payment cards. (The EMV chip is basically an independent small computer, and similarly to the replacement of cards, all domestic payment cards will be gradually fitted with it – scheduled until the middle of 2014 at the latest.) The acceptance of vouchers loaded onto the EMV chip payment cards would require additional investment from merchants/caterers only if presently they do not have any POS terminals installed; they could also apply for subsidies from the fund mentioned under point 8.1.1 (to be established according to our proposal). This may substantially expand the payment card acceptance network. It is important to note that since payments made with payment cards and electronic vouchers would be served by the same infrastructure, the dynamics of the two markets may be combined in terms of the expansion of the network.

8.2 IMPROVEMENT OF THE EFFICIENCY OF REMOTE PAYMENTS

The reduction of the use of cash and the decreased use of resource requirements is particularly warranted for the fulfilment of payment obligations relating to regularly received bills, as the majority of Hungarian society continues to rely on the postal inpayment money order service of the Post.

8.2.1 Charging part of or all of the fee of the postal inpayment money order to the payer

It is a basic principle in economic policy and economics that distortion and thereby a loss in efficiency occurs if the fee of a service is paid not by those who decide on using the service. With respect to the postal inpayment money order, its popularity is principally attributed to its appearance as a "free" instrument for the consumer, in addition to liquidity management on a basic level. Since the fee of the postal inpayment money order is paid by the payees (predominantly service providers, payees) of the payment instrument, if service providers also want to receive compensation for their related costs, such costs will eventually be borne by all consumers of the basic service (e.g. gas, water, electricity, etc. consumption) as part of the relevant bill. In relation to cashless payment instruments (single or regular credit transfer, direct debit, payment card transaction[163]) competing with the postal inpayment money order, in most cases the consumer is charged a certain type of direct fee for the conducting of the payment transaction.

There are basically two methods of making the postal inpayment money order "payable" by the initiating party. Similarly to other products, the Hungarian Post could directly demand the payment of the fee from the consumer upon payment of the postal inpayment money order, or the service provider could continue to pay the fee, but indicating such fee separately, in a transparent form on the bill of consumers who choose payment by postal inpayment money order. Such consumers would thus pay more to the service provider than those who choose a payment instrument that is not bound to the payment of additional fees to the service provider.

[162] Currently, electronic vouchers are predominantly used in connection with health fund cards, and similarly, the issuers with a banking background arrange for the acceptance of these by merchants through the existing POS infrastructure.

[163] In relation to payment cards: annual fee of the card.

8.2.2 Development of a generally accessible electronic bill presentment and payment (EBPP) system and the establishment of an online credit transfer payment instrument in Hungary with the participation of many banks

With respect to payments between remote parties, the most efficient payment instrument is currently the direct debit in terms of resources. In the longer term, its alternative could be electronic bill presentment and payment (EBPP). EBPP is an electronic service (provided over the Internet) that not only significantly automates the payment process, but also improves the efficiency of billing through the elimination of paper. Currently, there are two service providers in Hungary that provide EBPP schemes, but two fundamental problems remain in connection with the current domestic service.

- One problem is that the two current schemes are linked to two relatively competing bill issuer groups, and competition is also manifested by the fact that these two service providers do not accept or manage the bills of the other. Many potential consumers are therefore excluded from the service, or are forced to use two services in parallel which eliminates the essential efficiency improving nature of the scheme. Competition between the bill issuers should not involve one issuer being able to limit electronic billing to its own service providers and excluding the bills of other service providers (this is obviously not the area of competition). This would necessitate common standards and principles (e.g. accessibility) and even regulatory constraints in extreme cases.

- Another problem is that under the current domestic EBPP schemes, if the consumer is not the customer of the one or two selected partner banks, the payment process is not more convenient than a normal (Internet) credit transfer. This is a problem, as a major advantage of EBPP is not only electronic bill presentment, but the automation of the payment process for the consumer. Several similar foreign services operate in a manner whereby they are connected to an "online credit transfer" Internet payment instrument. In the framework of such service, the payer automatically accesses his own Internet bank interface revealing the already completed details of the transaction, and authorises initiation of the credit transfer with the single push of a button, while the bill issuer is immediately notified of the executed payment in accordance with the relevant standards. To ensure that such payment instrument is accessible through the Internet banks of all retail or corporate banks, the setup of a common regulatory framework and scheme and the cooperation of the credit institutions is necessary.

Both problems can be managed by authorities either with soft coordination (initiation of cooperation, threat of regulation) or hard coordination (actual regulation). The elimination of such deficiencies may lay the foundations for enabling electronic bill presentment and payment to become the fastest growing domestic payment instrument for clearing regular service bills. It is important to set up a scheme that is open to all public utility, telecommunications providers, insurance corporations and any consumer and made fit for use at all payment service providers.

8.3 DEVELOPMENT OF INFRASTRUCTURE AND LEGAL ENVIRONMENT

8.3.1 Improvement of the geographical infrastructure of payment services in Hungary

The payments map[164] of Hungary reveals that it is much more difficult for a household living in a small municipality to access modern payment services than for the urban population. The acceptance of payment cards in Hungary is concentrated in towns and popular tourist attractions, and the bank branch network is not as extensive to enable access to services related to bank accounts/payment accounts in municipalities under a certain size. Currently there is one payment service provider in Hungary that is practically capable of reaching everybody in a geographical and physical sense: the Hungarian Post. Accordingly, we believe that it would be important for the Hungarian Post to aim at the electronisation of the postal infrastructure, where it would be able to provide payment services (credit transfer, direct debit, payment card issue and acceptance) under its name related to any payment account. In the short and medium term, the prospect of a substantial modernisation of domestic payments could be enhanced if the Post, with its approximately 3,000 post offices, would provide electronic and cashless payment services in addition to, and later, in place of postal inpayment money orders and other cash-based postal payment instruments.

[164] For details see Helmeczi (2010).

8.3.2 Clarification of the legislative environment on the corporate side to enable greater freedom of the choice of payment instruments

Similarly to other European legal systems, the traditions of Hungarian law are also built on the "legal tender" status of cash. Unfortunately, this legal principle is a source of substantial uncertainty for merchants and service providers in terms of the degree and manner in which they can restrict the acceptance or use of cash over more efficient payment instruments. Where in relation to the corporate sector, legislation defines cash payment as a base case (with possibility of deviation), it is not necessarily clear for the stakeholders whether deviation is in fact permissible and whether cashless payment may be applied (e.g. issue of the rejection or surcharging of cash payment in relation to merchants). Clarification of the rules would also serve consumer protection purposes. As a result of similar debates, in the Netherlands they decided to encode in the civil code that unreasonable payments (e.g. made in large banknote denominations or small coin denominations) may be rejected. In the USA and Australia, they view that the rejection of cash payment is not unlawful even under the definition of legal tender.

An additional legal, regulatory issue relating to service providers subject to administrative pricing and bill issuers is the creation of manoeuvring room for the provision of discounts built into the bill, promoting the use of efficient payment instruments (in connection with the proposal outlined under point 8.2.1). In our interpretation, the service provider does not have any such option – without legislative amendment – in relation to water, natural gas, sewage and electricity bills regulated in detail by national legislation. It would be useful to analyse this issue in depth and draft legislative amendment proposals, if necessary, to expand such manoeuvring room.

Annex

Annex 1: Questionnaires used in the survey[165]

1.1 QUESTIONNAIRE OF THE MNB

Jegybanki kérdőív

1.2 QUESTIONNAIRE OF PAYMENT SERVICE PROVIDERS (CREDIT INSTITUTIONS, MAGYAR POSTA ZRT., MAGYAR TAKARÉKBANK, MONOR ÉS VIDÉKE TAKARÉKSZÖVETKEZET, GIRO ZRT.)

Pénzforgalmi szolgáltatói kérdőív

Pénzforgalmi szolgáltatói kérdőívvel kapcsolatos kérdések

1.3 QUESTIONNAIRE OF CASH-IN-TRANSIT COMPANIES AND RELATED FAQ

Pénzfeldolgozói kérdőív

Pénzfeldolgozói kérdőívvel kapcsolatos kérdések

1.4 QUESTIONNAIRE OF CORPORATES AND RELATED GUIDANCE

Vállalati kérdőív

Vállalati kérdőív kitöltési útmutató

1.5 QUESTIONNAIRE OF HOUSEHOLDS

First round

Háztartási kérdőív

Second round

Háztartási interjú kérdőíve

[165] All documents are available in Hungarian.

Annex 2: List of credit institutions and cash-in-transit companies participating in the survey

Credit institutions participated in the survey	Cash-in-transit companies participated in the survey
Budapest Credit and Development Bank Ltd.	Brink's C.L. Hungaria Zrt.
CIB Bank Ltd.	G4S Cash Services Hungary Ltd.
Citibank Europe plc Hungarian Branch Office	JNT Security Kft.
Erste Bank Hungary Nyrt.	
ING Bank N.V. Hungary Branch	
K&H Bank Zrt.	
Magyar Takarékbank Zrt. (Bank of Hungarian Savings Co-operatives Private Limited Company)	
MKB Bank Zrt.	
Savings Co-operative Monor és Vidéke	
OTP Bank Plc.	
Raiffeisen Bank Zrt.	
UniCredit Bank Hungary Zrt.	

Annex 3: Sub-elements of the first and second round corporate sample

3.1. FIRST ROUND SAMPLING

Aspect		Target number	Actual number	Actual/ target (%)
Size of corporates (number of employees)	Number of empyloyees: 0	0	2	
	Number of employees: between 1 and 9	25	63	252%
	Number of employees: between 10 and 49	75	73	97%
	Number of employees: between 50 and 249	150	151	101%
	Number of employees: more than 250 employees	50	45	90%
Sector	45 Wholesale and retail trade and repair of motor vehicles and motorcycles	9	8	89%
	47 Retail trade, except of motor vehicles and motorcycles	126	74	59%
	A Agriculture, forestry, fishing	6	6	100%
	B Mining, quarrying	0	0	
	C Manufacturing	12	35	292%
	D Electricity-, gas-, steam supply and air conditioning supply	24	11	46%
	E Water supply, sewerage, waste management, remediation activities			
	F Construction	6	17	283%
	H Transportation and storage	20	32	160%
	I Accomodation and food service activities	28	14	50%
	J Information, communication	9	11	122%
	K Financial and insurance activities	0	0	
	65 Insurance, reinsurance and pension funding, except compulsory social security	15	6	40%
	L Real estate activities	15	12	80%
	M Professional, scientific, techical activities	30	108	360%
	N Administrative and support service activities			
	O Public adminstration, defense, compulsory social security			
	P Education			
	Q Human health and social work activities			
	R Arts, entertainment, recreation			
	S Other service activities			
Details of "47 retail trade..."	Retail trade of daily consumer goods (supermarkets, food, drinks and tobabco)	45	36	80%
	Fashion	20	7	35%
	Medical and personal care	15	3	20%
	Home furnishing	15	8	53%
	Electronic produdcts and durable consumer goods	15	16	107%
	Street vending and markets	6	0	0%
	Petrol stations	10	4	40%

3.2. SECOND ROUND SAMPLING

Sector	Subsector	Other features	Target number	Actual number
Retail trade, except of motor vehicles and motorcycles	Retail sale of food, beverages and tobacco in specialised stores	at least 30 shops	2	**2**
	Electronic products and durable consumer goods	at least 2 shops or at least revenue of HUF billion 2	2	**2**
	Petrol stations	at least 100 petrol stations	1	**1**
	Medical and personal care	at least 5 shops	1	**1**
	Fashion	at least 5 shops	1	**1**
Manufacturing		at least revenue of HUF million 500	1	**1**
Construction		at least revenue of HUF million 500	1	**1**
Water supply, sewerage, waste management, remediation activities			2	**2**
Accomodation and food service activities		at least revenue of HUF million 500	1	**1**
Information, communication			1	**1**
Transportation and storage			1	**1**
Other services		at least revenue of HUF million 500	1	**1**
Total			15	**15**
	Out of these corporates at least			**Actual number**
	2	use direct debit		**4**
	5	accept credit transfers		**11**
	5	accept payment cards		**9**
	2	use postal inpayment money orders		**5**

Annex 4: Household/consumer sample

		sample of 1 000	sample of 300
Gender	Females	77.52%	43.67%
	Males	22.48%	56.33%
Age	0-14	0%	0%
	15-39	35.72%	32.33%
	40-59	46.58%	39.34%
	over 60	17.70%	28.33%
Highest educational qualification	elementary	17.37%	17.00%
	secondary	61.13%	64.00%
	high school/university	20.52%	17.00%
Region	Central part of Hungary	29.43%	28.00%
	Central part of Transdanube	10.64%	11.00%
	West Danube	9.88%	10.00%
	South Transdanube	9.66%	9.67%
	North-Hungary	11.51%	12.67%
	North Flat land	14.33%	15.33%
	South Flat land	14.55%	13.33%
Type of settlements	Capital	19.54%	16.67%
	Chief town of a county	18.89%	19.67%
	Other towns	32.47%	29.33%
	Smaller municipalities	29.10%	34.33%
Number of persons in household	1	13.68%	29.00%
	2	27.25%	29.67%
	3	26.49%	18.66%
	4	20.09%	14.67%
	5	11.62%	3.67%
	6	0.43%	3.33%
	7	0.33%	0.67%
	8 or more	0.11%	0.33%
Average annual net earnings (HUF/capita):		716,353	736,829

Annex 5: Distribution of the social cost of payment instruments according to fixed and variable costs

To understand the real social resource requirement of payment instruments, it is essential to examine the type of structure the current costs arise in – which cost elements change and which do not with the changes in the transaction number and payments of payment instruments.

International literature established – in confirmation of intuition based on common sense – that the share of fixed costs relating to electronic payment instruments is typically higher among all cost elements, thus these payment instruments burden social resources much less upon performance of an additional transaction. This holds true particularly with respect to electronic payment instruments that do not require a physical presence or substantial time from the payer or the payee (e.g. electronically submitted credit transfer or direct debit).

In this survey, we aimed at asking each data provider on the level of particular types of individual activity as to whether in their view, the given cost element is fixed or variable, and if the latter, does it increase in equal proportion to volume or less. The authors, however, also had an expert opinion on such aspects of this activity and the cost types on the basis of the detailed definition of the given type of activity, and therefore if we received sharply conflicting responses from the surveyed sector, we used our own expert judgement to classify the cost type. We also used the definition of cost types to determine whether the given variable cost is more likely to be determined by the transaction number or the transacted payment value and to assume the growth rate applicable in relation to cost elements increasing by a rate that is less than a rate of equal proportion (by how many per cent do costs rise in case of a 10% increase in volume). In relation to such "degressive" type of costs, on the basis of feedback from service providers and earlier literature, we assumed a cost-elasticity of 0.5 for paper and cash-based payment instruments (costs rise by 5% in case of a 10% increase in volume), and we assumed a cost-elasticity of 0.1 (costs rise by 1% in case of a 10% increase in volume) for electronic payment instruments that predominantly consist of fixed costs and use an infrastructure with a very large capacity in terms of payments.

There are activity elements where the resource requirement depends on both the value of payments and the number of transactions of the given payment instrument. In relation to the latter, for the calculation of the ratio we divided costs 50%-50% between the appropriate categories.

A. CLASSIFICATION OF COSTS

A.1. Classification of the costs of cash payment

With respect to cash-related activity elements, in relation to activities conducted by payment service providers and cash-in-transit companies, the conclusion of service contracts, management, monitoring, advertising and other costs were classified among the fixed cost elements. In relation to the central bank, this cost category included the cost of banknote research and development and costs of protection against counterfeiting. In relation to companies, the category included the depreciation and maintenance cost of cash registers, safes, and UV lamps.

Variable costs which change in equal proportion to the number of transactions included costs related to changes between denominations in relation to payment service providers, and time spent on cash payments and acceptance in relation to companies and households. Such costs of corporates also included the replacement of the paper rolls of cash registers, resource requirements relating to counterfeit suspicious and unfit banknotes and the time spent on wage payments made in cash. In relation to households, this category included cash withdrawal and deposits from and to the bank account and the time of checking related bank account authorisation.

The cost of exception handling and the handling of customer complaints was classified among costs increasing less than in equal proportion to the number of transactions. In relation to such costs, on the basis of feedback from service providers and the expert estimate, we assumed a cost-elasticity of 0.5 (costs rise by 5% in case of a 10% increase in transaction number or value). The handling and conversion of cash was classified among costs determined jointly by value and the transaction number and changing in equal proportion thereto, therefore we distributed the related costs on the basis of 50%-50% between the two categories.

Costs increasing less than in equal proportion to the number of transactions included the costs of payment service providers and cash-in-transit companies related to collection and transport, the cost of handling counterfeit suspicious banknotes in relation to the former and cash handling and processing in relation to the latter. In relation to the MNB, such costs include the procurement (production) of coins and banknotes and the cashier and processing transactions of the MNB.

We classified damages resulting from cash-related frauds (theft, robbery) suffered by corporates and households among the costs increasing in equal proportion to the transacted value.

Costs increasing less than in equal proportion to the number of transactions included the costs of payment service providers and cash-in-transit companies related to the prevention of frauds, and in relation to corporates, insurance costs against cash theft and residual loss.

In relation to corporates, the costs of cash planning, ordering and logistics were classified among costs determined in equal proportion by the transaction number and the transacted value combined. The costs of payment service providers related to cashiers and cash handling (storage, processing), ATM operation and protection against money laundering were classified in this category, but among costs increasing less than in an equal proportion. In relation to cash-in-transit companies, such costs are the safekeeping and storage of cash and the filling of ATMs. In relation to corporates, such costs also include labour costs of the emptying and balancing of cash registers.

Table 88
Classification of activities related to cash payment based on types of cost

	Payment service providers	Cash-in-transit companies	MNB	Corporates and public sector	Households
Fixed	– Conclusion of service contracts – Advertising, marketing – Management and monitoring – Other	– Conclusion of service contracts – Management and monitoring – Other – Clearing and settlement	– Banknote research/ development, production control – Protection against cash counterfeiting	– Preparation of cash registers – Annual depreciation of cash registers, UV lamps, safes – Maintenance fee of cash registers, UV lamps, safes	
Change in equal proportion to transaction number	– Change between denominations			– Duration of cash payment – Replacement of cash register paper roll – Handling of unfit and counterfeit suspicious banknotes – Customer visit only for acceptance of cash payment – Duration of wage payment in cash	– Actual duration of cash payment – Duration of cash withdrawal and deposit (inbound and outbound trips) – Time spent on checking bank account
Change less than equal proportion to transaction number	– Collection, transportation – Procedures related to counterfeit suspicious banknotes – Customer service – Document management and archiving	– Cash handling, processing, exchange – Collection and transportation	– Procurement of banknotes and coins – Cashier transactions, cash storage, processing and destruction		
Change in equal proportion to transacted value				– Total loss from cash-related crimes	– Risk of fraud related to cash holding and cash withdrawal
Change less than in equal proportion to transacted value	– Prevention and handling of frauds, handling of damage from fraud	– Prevention of frauds and damage from frauds		– Insurance premium – Residual loss	
Costs changing in equal proportion to both transacted value and transaction number				– Cash planning – Preparation of cash deposits and settlement – Own expenditures related to cash logistics	
Costs changing less than in equal proportion to both transacted value and transaction number	– Cash withdrawal by customers – Cash deposit by customers – Card company fees related to payment card cash deposit and withdrawal – Money laundering control – Cash handling/ storage/processing	– Safekeeping and storage of cash – Running, operation and maintenance of ATMs and cash deposit machines, network management		– Emptying and balancing of cash registers	

A.2. Classification of the types of payment card (debit and credit card) activities

In relation to payment cards, in addition to management, monitoring, advertising and other costs deemed to be fixed costs in connection with other activities, we also classified the cost of card issuance among fixed costs. The number of issued cards plays a minor role in determining transaction volume; it is not true that more payment cards should be issued in Hungary, for example, in order to get a multiplied number or value of payment card transactions and therefore we deemed the costs related thereto as fixed in terms of the number of transactions. The interbank clearing and settlement process does not change with the number of transactions or the transacted value and neither do costs related to POS management on the acquirer side. In relation to payment cards, we classified costs related to money laundering in this category due to the special nature of such payment instrument (contrary to credit transfers, where we did not regard this to be a fixed type of cost). In relation to corporates, such costs included the depreciation of own cash registers, POS terminals linked to card acceptance and card payments, and resources serving their maintenance.

In relation to card transactions, the time consumed by card payments for cardholders and merchants and the paper roll consumption of POS terminals and cash registers of merchants increase in equal proportion to transactions.

In relation to banks, we classified the costs of authorisation activity, card company fees, customer service and document management, archiving as costs determined by the number of transactions, but increasing less than in an equal proportion thereto. Such resource requirements also included the printing of summary list for payment card transactions and reconciliation of summary list with the cash register in relation to merchants, and the time spent on checking the bank account in relation to households. In relation to payment cards, on the basis of feedback from service providers and our own expert estimates, we assumed a cost-elasticity of 0.1 in the case of these activities (costs rise by 1% in case of a 10% increase in volume or value).

We assumed damages suffered by corporates and households resulting from payment card frauds to be increasing in equal proportion to the transacted value, but on the basis of feedback from the sector, we assumed the resources of banks spent on the prevention of frauds to be increasing less than in an equal proportion.

Table 89
Classification of payment card (debit and credit card) activities according to types of cost

	Payment service providers	Corporates	Households
Fixed	– Customer acquisition and conclusion of service contracts – (Credit) risk analysis – Card issuance – Interbank clearing and settlement – Auxiliary services provided to customers – POS management (on acquirer side) – Money laundering control – Management and monitoring – Advertising – Other	– Depreciation of merchant owned POS terminals – Maintenance, service fee of merchant owned POS terminals – Preparation of cash registers, depreciation, service, maintenance of own cash registers (portion charged to payment card)	
Changing in equal proportion to transaction number		– Cost of card payment time (duration) – Time spent on paper roll replacement of POS equipment and cash registers and cost of paper roll	– Cost of time spent on transacting payment card payment
Change less than equal proportion to transaction number	– Processing of non-payment type transactions (authorisation) – Card company fees – Customer service – Document management and archiving – Management of purchase transactions on acquirer side	– Printing of summary list for payment card transactions – Reconciliation of payment card slips with cash register data	– Cost of time spent on checking the bank account – portion charged to payment card payment
Change in equal proportion to transacted value		– Write-off of losses from payment card frauds	– Loss from payment card frauds
Change less than in equal proportion to transacted value	– Prevention and handling of frauds, handling of damage from fraud related to purchase (POS) transactions		

A.3. Classification of the costs of (paper-based and electronic) credit transfers

Similarly to the other payment instruments, in relation to the credit transfer, we classified the conclusion of service contracts, advertising, management and monitoring and other costs among fixed costs. Such costs include the collection and processing of electronic credit transfer orders, as the current bank IT systems practically do not have any capacity limits in terms of these processes. In all three sectors we classified the submission process of the order related to paper-based credit transfer orders among costs increasing in proportion to the number of transactions (collection in relation to banks and delivery to the bank in relation to corporates and households).

We classified the costs of exception handling, document management and archiving, customer service and tasks relating to the prevention of money laundering as determined by the number of transactions, but increasing less than in an equal proportion to the transaction number. In relation to corporates, such costs included the administration of credit transfer payments and the return of unduly received money, and in relation to households, the time spent on electronically submitted orders and bank account authorisation.

We classified the resources of service providers spent on the prevention of frauds among costs changing in equal proportion to the transacted value.

Table 90
Classification of activities related to credit transfers based on types of cost

	Payment service providers and MNB	Corporates	Households
Fixed	– Conclusion of service contracts – Collection and processing of electronic credit transfer orders – Advertising, marketing – Management and monitoring – Other		
Changing in equal proportion to transaction number	– Collection and processing of paper-based credit transfer orders	– Time spent on paper-based credit transfer orders	– Time spent on credit transfers submitted face-to-face (including inbound and outbound trips)
Change less than equal proportion to transaction number	– Return of credit transfer orders, exception handling – Document management and archiving – Money laundering control – Customer service	– Own expenditures related to administration of credit transfer payments – Reverse transfer of unauthorised money	– Time spent on remote credit transfers – Time spent on checking bank account
Change in equal proportion to transacted value	– Prevention and handling of frauds, damage resulting from frauds		
Change less than in equal proportion to transacted value			

A.4. Classification of the costs of direct debits

Similarly to the other payment instruments, in relation to direct debits, we classified the conclusion of service contracts, advertising, management and monitoring and other costs among fixed costs. Such costs include the handling, collection and submission of direct debit mandates. A mandate enables an unlimited number of direct debit transactions, and thus these activities do not depend on either the transaction number or the transacted value. This category also includes the resources of households (payers) spent on limit modification.

We classified the costs of collection procedures and the execution of collection, customer service, document management and resource requirements relating to money laundering as determined by the number of transactions, but increasing less than in an equal proportion to the transaction number. Such costs include administration related to collection and the handling of unauthorised collection on the collector side and time spent on checking bank account by households.

We classified the resources of service providers spent on the prevention of frauds among costs changing in equal proportion to the transacted value.

Table 91
Classification of activities related to direct debit based on types of cost

	Payment service providers and MNB	Corporates	Households
Fixed	– Conclusion of service contracts – Submission and handling of direct debit mandates (payees and payers) – Advertising, marketing – Management and monitoring – Other		– Duration of direct debit mandating, limit modification (incl. inbound and outbound trips, if conducted face-to-face)
Changing in equal proportion to transaction number			
Change less than equal proportion to transaction number	– Collection procedures and payment process – Document management and archiving – Money laundering control – Customer service	– Own expenditures related to administration of direct debit payments – Return of unduly received money	– Checking the bank account
Change in equal proportion to transacted value	– Prevention and handling of frauds, damage resulting from frauds		
Change less than in equal proportion to transacted value			

A.5. Classification of the resource requirement of postal inpayment money orders

In the case of activity elements relating to postal inpayment money orders, the conclusion of service contracts, tasks related to the prevention of money laundering, clearing with partners (with payees and payment service providers) and balancing of positions, invoicing to customers related to the activity and between payment service providers, resource requirements related to fee setting were classified among fixed cost elements (i.e. independent of volume) of activities on the side of payment service providers. In relation to payment service providers, costs increasing in equal proportion to transaction volume included the individual processing, collection, authorisation and archiving of certain postal inpayment money orders. The cost of exception handling and the handling of customer complaints was classified among costs increasing less than in equal proportion to the number of transactions. The handling and conversion of cash was classified among costs determined jointly by value and the transaction number and changing in equal proportion thereto, therefore we distributed the related costs on the basis of 50%-50% between the two categories.

Table 92
Classification of the activities of postal inpayment money orders according to types of cost

	Payment service providers	Cash-in-transit companies	MNB	Corporates and public sector	Households
Fixed	– Conclusion of service contracts – Money laundering control – Clearing with partners and balancing of positions – Invoicing, fee setting – Management and monitoring – Advertising – Other	– Conclusion of service contracts – Management and monitoring – Other – Settlement with partners and balancing of positions	– Banknote research/ development, production control – Protection against cash counterfeiting		
Changing in equal proportion to transaction number	– Individual processing, collection, authorisation, archiving of postal inpayment money orders			– Return of unduly received money received through postal inpayment money orders	– Sending of postal inpayment money orders (including round trip)
Change less than equal proportion to transaction number	– Exception handling – Handling of customer complaints	– Cash handling, processing, exchange – Collection/ transportation	– Cashier transactions, cash storage, processing and destruction – Procurement of banknotes and coins	– Procurement cost of postal inpayment money orders – Own expenditures related to administration of postal inpayment money orders	
Costs changing in equal proportion to both transacted value and transaction number	– Cash handling and conversion				
Costs changing less than in equal proportion to both transacted value and transaction number	– Prevention and handling of frauds, handling of damage from fraud	– Prevention of frauds and damage from frauds – Safekeeping and storage of cash – Running, operation and maintenance of ATMs and cash deposit machines, network management			

A.6. Classification of the costs of postal outpayment money orders for pensions

In relation to postal outpayment money orders for pensions, the fixed costs of payment service providers and cash-in-transit companies include the cost of the conclusion of service contracts, management and monitoring activity, advertising and marketing, clearing and settlement and other activities. In relation to the MNB, this category includes the costs of banknote research and development and protection against counterfeiting (the proportional amount of cash costs are charged to all cash-based payment instruments).

Costs changing in equal proportion to the number of transactions include the payment (delivery), processing and settlement of vouchers, exception handling, customer service, document management and archiving and resource requirements related to the handling and prevention of frauds.

Costs determined by the number of transactions, but increasing less than in equal proportion to the transaction number, include the collection, distribution of voucher batches and data, ordering of cash, as well as cash collection and transport costs proportionate to such payment instrument and cash handling in relation to cash-in-transit companies. With respect

to central bank costs, this category includes the cost of banknote and coin procurement and central bank cashier transactions and cash processing.

Proportionate resources spent on the prevention of frauds in relation to cash-in-transit companies were classified among costs increasing less than in equal proportion of the transacted value.

In relation to costs determined by both the transacted value and the number of transactions, the costs of cash-in-transit companies relating to the safekeeping and storage of cash and the resource requirement of ATM operation were classified in the category of costs increasing less than in an equal proportion.

Table 93
Classification of activities related to postal outpayment money orders for pensions based on types of cost

	Payment service providers	Cash-in-transit companies	MNB
Fixed	– Conclusion of service contracts – Management and monitoring – Other – Advertising and marketing	– Conclusion of service contracts – Management and monitoring – Other – Clearing and settlement	– Banknote research/ development, production control – Protection against cash counterfeiting
Changing in equal proportion to transaction number	– Outpayment of vouchers – Processing, settlement – Exception handling – Prevention and handling of frauds, handling of damage from fraud – Customer service, complaint handling – Document management and archiving		
Change less than equal proportion to transaction number	– Receipt of voucher batch and data – Distribution of voucher batch – Ordering of cash	– Collection/transport – Cash handling, processing, exchange	– Procurement of banknotes and coins – Cashier transactions, cash storage, processing and destruction
Change in equal proportion to transacted value			
Change less than in equal proportion to transacted value		– Prevention of frauds and damage from frauds	
Costs changing in equal proportion to both transacted value and transaction number			
Costs changing less than in equal proportion to both transacted value and transaction number		– Safekeeping and storage of cash – Running, operation and maintenance of ATMs and cash deposit machines, network management	

B. RESULT OF COST CLASSIFICATION

In accordance with the above, the absolute values (in HUF) of estimated resource requirements relating to the payment instruments are collected in the table below. It is important to emphasise that we classified and aggregated cost elements constituting social costs. The flow of fees within the payment chain was not an element of the above, therefore we did not classify these fee items (as these were not necessary for this calculation).

Table 94
Absolute distribution of the social cost of payment instruments according to types of cost in HUF billions

Type of cost	Cash transactions	Debit card transactions	Electronic credit transfers	Direct debits	Postal inpayment money orders	Paper-based credit transfers	Postal outpayment money orders for pensions	Credit card transactions	All payment instruments
1. Fixed	69.88	18.82	21.04	4.88	6.62	3.00	1.53	14.45	127.44
2. Variable: linear to value	18.42	0.12	0.62	0.98	1.63	0.13	0.00	0.00	34.97
3. Variable: degressive to value	18.37	0.60	0.00	0.00	0.14	0.00	0.06	0.39	38.54
4. Variable: linear to number	40.66	1.51	0.00	0.00	24.29	29.30	2.79	1.15	90.30
5. Variable: degressive to number	61.50	9.17	18.41	1.87	6.28	2.58	2.27	3.55	95.76
6. Total social costs	208.82	30.22	40.07	7.73	38.96	35.01	6.65	19.56	387.02

References

Arango, Carlos and Varya Taylor (2008): 'Merchant Acceptance, Costs, and Perception of Retail Payments: A Canadian Survey', *Discussion Papers,* 12, Bank of Canada.

Arango, Carlos and Varya Taylor (2009): 'Merchants' Costs of Accepting Means of Payment: Is Cash the Least Costly', *Bank of Canada Review,* Winter 2008–2009.

Argentinean regulation, English translation of (LAW No. 25345 Limitation on cash transactions TAX PROCEEDINGS, General Resolution No. 1547 TAX PROCEEDINGS, General Resolution No. 1547 VALUE ADDED TAX, Executive Order No. 1402/2001, TAXES Executive Order 1548/2001, General Resolution No. 1166) (with collaboration of MasterCard).

Banco de Portugal (2007): *Retail Payments Instruments in Portugal: Costs and Benefits.*

Bank of Japan (2009): 'Developments in Electronic Money in Japan during Fiscal 2008', *BOJ Reports & Research Papers,* August.

Bedre-Defolie, Özlem and Emilio Calvano (2009): 'Pricing payment cards', *ECB Working Paper Series,* No. 1139.

Beijnen, Christine and Wilko Bolt (2007): 'Size Matters: Economies of Scale in European Payments Processing', *DNB Working Papers,* No. 155, De Nederlandshe Bank.

Bergman, Mats, G. Guiborg and B. Segendorf (2007): 'The Costs of Paying – Private and Social Costs of Cash and Card', *Working Paper Series,* 212, Sveriges Riksbank.

Bódi-Schubert, Anikó (2010): 'Factors behind the high cash usage in Hungary', *MNB Bulletin,* March.

Bolt, Wilko and Sujit Chakravorti (2008a): 'Economics of Payment Cards: A Status Report', *DNB Working Papers,* No. 193, De Nederlandsche Bank.

Bolt, Wilko and Sujit Chakravorti (2008b): 'Consumer Choice and Merchant Acceptance of Payment Media', *DNB Working Papers,* No. 197, De Nederlandsche Bank.

Bolt, Wilko, David Humphrey and Roland Uittenboggard (2008a): 'Transaction Pricing and the Adoption of Electronic Payments: A Cross-Country Comparison', *International Journal of Central Banking,* March.

Bolt, Wilko, Nicole Jonker and Corry van Renselaar (2008b): 'Incentives at the counter: an empirical analysis of surcharging card payments and payment behaviour in the Netherlands', *DNB Working Papers,* No. 196, De Nederlandsche Bank.

Bolt, Wilko, Nicole Jonker and Corry van Renselaar (2009): 'An empirical analysis of payment behaviour and debit card surcharges in the Netherlands: Evolving payment habits: Proceedings of the Bank of Finland Payment Habits Seminar 2008', *Expository studies,* A 113, Bank of Finland.

Bolt, Wilko and Heiko Schmiedel (2009): 'SEPA, efficiency and payment card competition', *ECB Working Paper Series,* No. 1140.

Brits, Hans and Carlo Winder (2005): 'Payments are no free lunch', *Occasional Studies,* Vol. 3 No. 2, De Nederlandsche Bank.

Bullock, Michele (2010): 'A Guide to the Card Payments System Reforms', *Bulletin,* September, Reserve Bank of Australia.

Carbó-Valverde, Santiago, Sujit Chakravorti and Francisco Rodriguez (2009): 'Regulating two-sided markets, an empirical investigation', *ECB Working Paper Series,* No. 1137.

Carbó-Valverde, Santiago and José M. Liñares-Zegarra (2009): 'How effective are rewards programs in promoting payment card usage? Empirical evidence', *ECB Working Paper Series,* No 1141.

Central Bank of Argentina (2008): *Report to the National Congress.*

Centre for Latin American Monetary Studies (2000): *Payments and securities clearance and settlement systems in Argentina.*

Council (1998): *Regulation 974/98/EC (3 May 1998) on the introduction of the euro.*

Dankó Dávid and Szegedi Zoltán (2006): 'A tevékenységalapú költségszámítás módszertani problémái és idővezérelt tevékenységalapú költségszámítás: vissza a gyökerekhez?', [Activity based costing and time controlled costing: back to the roots?], *Vezetéstudomány,* 37. k., szeptember.

Deutsche Bundesbank (2009): *Zahlungsverhalten in Deutschland Eine empirische Studie über die Auswahl und Verwendung von Zahlunsgsinstrumenten in der Bundesrepublik Deutschland.*

Divéki Éva, Lajos Brigitta and Luspay Miklós (2010): *Állami fizetési szokások, javaslatok az állami szektort érintő pénzforgalom hatékonyságának javítására,* [Payment habits in the public sector, proposals for improving the efficiency of payments related to the public sector], manuscipt.

Enge, Asbjørn and Grete Øwre (2006): 'A retrospective on the introduction of prices in the Norwegian payment system', *Economic Bulletin,* Vol. 77 No. 4, Norges Bank, pp. 162–172.

European Central Bank (2007): *Payments and Securities Settlement Systems in the European Union.*

European Central Bank (2009): *Retail payments – integration and innovation: A joint conference by the ECB and De Nederlandsche Bank.*

European Central Bank (2010): *Opinion of the European Central Bank of 10 November 2010 on restrictions on cash payments (CON/2010/79).*

European Commission (2009): *On the follow up in retail financial services to the consumer markets scoreboard, SEC 2009, (22.9.2009).*

European Commission (2010a): *Report of the Euro Legal Tender Expert Group (ELTEG) on the definition, scope and effects of legal tender of euro banknotes and coins,* URL: http://ec.europa.eu/economy_finance/articles/euro/2010-03-22-legal-tender-euro_en.htm.

European Commission (2010b): *Working Document, List of Member States' Options of transposition, Payment Services Directive Transposition Group (PDSTG),* URL: http://ec.europa.eu/internal_market/payments/framework/options_en.htm.

European Parliament and the Council (2007): *Directive 2007/64/EC on payment services in the internal market amending Directives 97/7/EC, 2002/65/EC, 2005/60/EC and 2006/48/EC and repealing Directive 97/5/EC.*

The Federal Reserve Board (2011): *Frequently Asked Questions. Currency: Notes and Coins_ t Is U.S. currency legal tender for all debts?,* URL: http://www.federalreserve.gov/generalinfo/faq/faqcur.htm.

Garcia-Swartz, Danile D., Robert W. Hahn and Anne Layne Farra (2006): 'The Move Toward a Cashless Socitey: A Closer Look at Payment Instrument Economics', *Review of Network Economics,* Vol. 5 Iss. 2.

Gresvik, Olaf and Harald Haare (2009a): 'Costs in the Norwegian payment system', *Staff Memo,* No. 4, Norges Bank.

Gresvik, Olaf and Harald Haare (2009b): 'Costs in the payment system', *Economic Bulletin,* Vol. 80 No. 1, pp. 16–27, Norges Bank.

Helmeczi István (2010): 'A magyarországi pénzforgalom térképe', [Map of payments in Hungary], *MNB-tanulmányok,* 84.

Helmeczi István and Olasz Henrietta (2010): *Javaslatok a csoportos beszedés elterjedését gátló tényezők megszüntetésére,* [Proposals for the phasing out of factors obstructing the proliferation of direct debits], manuscipt.

Humphrey, David B. (2009): *Payment Scale Economies, Competition, and Pricing.*

Igazságügyi és Rendészeti Minisztérium (2010): *Az ezredfordulót követő bűnözési helyzet,* [Ministry of Justice and Law Enforcement: Crime after the turn of the millennium].

Jonker, Nicole and Thijs Kettenis (2007): 'Explaining cash usage in the Netherlands: The effect of electronic payment instruments', *DNB Working Paper Series,* No. 136, De Nederlandsche Bank.

Jonker, Nicole and Anneke Kosse (2009): 'The impact of survey design on research outcomes: A case study of seven pilots measuring cash usage in the Netherlands', *DNB Working Paper Series,* No. 221, De Nederlandsche Bank.

Keszy-Harmath Zoltánné, Kóczán Gergely, Kováts Surd and Martinovic Boris (2010): *A bankközi jutalék szerepe a kártyás fizetési rendszerben,* [Role of the interchange fee in the card payment system], manuscipt.

Kosse, Anneke (2010): *Credit cards: Acceptance and surcharging by retailers: A Pilot Study,* De Nederlandsche Bank.

Központi Statisztikai Hivatal [Hungarian Central Statistical Office]: *Stadat Tables,* URL:
http://portal.ksh.hu/pls/ksh/docs/eng/xstadat/xstadat_annual/i_zhc006b.html
http://portal.ksh.hu/pls/ksh/docs/eng/xstadat/xstadat_annual/i_qpt005b.html
http://portal.ksh.hu/pls/ksh/docs/eng/xstadat/xstadat_annual/i_qpt008b.html
http://portal.ksh.hu/pls/ksh/docs/eng/xstadat/xstadat_annual/i_qpt009.html

Kredittilsynet Norway (2000): *Act on Financial Contracts and Financial Assignments,* (Financial Contract Act), (No. 46 of 25 June 1999).

Leinonen, Harry (2009): 'Hidden payment charges at point of sale and possible impact of increased transparency: Evolving payment habits: Proceedings of the Bank of Finland Payment Habits Seminar 2008', *Expository studies,* A 113, Bank of Finland.

Leszkó, Erika (2009): 'Rounding is not to be feared', *MNB Bulletin,* July.

Magyar Posta (2008–2009): *Hirdetmény a Magyar Posta pénzforgalmi szolgáltatásainak díjairól,* [Hungarian Post: Notice on the payment service fees of the Hungarian Post].

Magyarországi Bűnözésföldrajzi Információs Rendszer: *Az ismertté vált bűncselekmények: Országos adatok megyénként,* [Crime Geographical Information System of Hungary: Registered crimes: National data in a county breakdown], URL: http://crimestat.b-m.hu.

MasterCard (2010a): *Promoting electronic payments& reducing cash: Some examples from around the world,* presentation.

MasterCard (2010b): *Why Prepaid for Payroll Opportunity to Access New Segments and Capture New Revenue,* presentation.

McKinsey & Company Inc. (2006): *Payment Services in Ther Netherlands: an analysis of revenues and costs for banks.*

Monnet, Cyril and Williamn, Roberds (2007): 'Optimal pricing of payment services when cash is an alternative', *Working Papers,* No. 07-26, Federal Reserve Bank of Philadelphia.

National Bank of Belgium (2005): *Costs, advantages and disadvantages of different payments methods.*

National Irish Bank (2010): *Target 2013. Modernizing Payments in Ireland.*

Nemzeti Hírközlési Hatóság (2007): *Beszámoló az egyetemes postai szolgáltatás és a postapiaci verseny 2006. évi magyarországi alakulásáról,* [National Communications Authority: Report on universal postal services and competition on the postal market in 2006 in Hungary].

Netherlands. National Forum on the Payment System (2007): *Report of the National Forum on the Payment System 2006,* Report to the Minister of Finance.

Netherlands. National Forum on the Payment System (2008): *Report of the National Forum on the Payment System 2007,* Report to the Minister of Finance.

Netherlands. National Forum on the Payment System (2009): *Report of the National Forum on the Payment System 2008,* Report to the Minister of Finance.

Norges Bank (2000): *Report on payment systems 1999.*

Norges Bank (2001): *Report on Payment Systems 2000.*

Norges Bank (2009): *Annual report on payment systems 2008.*

Norges Bank (2010): *Annual report on payment systems 2009.*

Odorán, Rita and Balázs Sisak (2008): 'Cash demand of the Hungarian economy – is the shadow economy still running smoothly?', *MNB Bulletin,* December.

Országos Kriminológiai Intézet (2009): *A betöréses lopás alakulása 1999–2008,* [National Institute of Criminology: Burglaries from 1999 to 2008].

A pénzforgalmi szolgáltatás nyújtásáról rendelkező 2009. évi LXXXV. törvény, [Act LXXXV of 2009 on the provision of payment services].

Peplow, Nick and R. Roberts (2010): *Prepaid Cards in the Public Sector,* presentation.

A postai szolgáltatások ellátásáról és minőségi követelményeiről szóló 79/2004 (IV.19.) kormányrendelet, [Government Decree 79/2004 (IV. 19.) on the provision of postal services and their quality requirements].

Reserve Bank of Australia (2009): 'The Introduction of Direct Charging for ATMs', *Bulletin,* April.

Reserve Bank of Australia: *Legal Tender,* URL: http://www.rba.gov.au/banknotes/legal-framework/legal-tender.html.

Sisak Balázs (2010): *What drives cash demand? Decompisition of cash stocks in selected countries,* manuscript.

Szalkai István (1995): *A monetáris irányítás: Bevezetés a monetáris közgazdaságtanba,* [Monetary management: Introduction to monetary economics], Budapest, Nemzetközi Bankárképző Központ, /Bankárképző könyvek/.

Takács Kristóf (2011): *A magyar háztartások fizetési szokásai,* [Payment habits of Hungarian households], manuscipt.

Toshiro Muto (2005): 'Japan's payment and settlement systems and the Bank of Japan', *Quarterly Bulletin,* Vol. 13 No. 2, Bank of Japan, (speech of the deputy governor of the Japanese central bank on the 20th anniversary of the establishment of the Center for Financial Industry Information Systems).

Tumpel-Guggerel Gertrude (2010): *SEPA for cards: more than a symbol of SEPA's success,* (speech of the board member of the European Central Bank at the Monnet symposium).

Turján Anikó (2009): 'Postai pénzforgalmi szolgáltatások Magyarországon', [Postal payment services in Hungary], *MNB-tanulmányok,* 83.

US Credit Card Accountability, Responsibility, and Disclosure Act (2009).

US. The White House (2009): *Fact Sheet: reforms to protect American credit card holders.*

Van Hove, Leo (2007): 'Central Banks and Payment Instrument: a Serious Case of Schiozophrenia', *MPRA Paper,* 5281, Munich Personal RePEc Archive.

VISA (2009): *The future of everyday payments in Europe, Who cares?*

Zanghi Anna (2010): *Towards a Cash Free Day,* presentation.

MNB Occasional Papers 93.

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