

Costs, advantages and drawbacks of the various means of payment

Introduction

On 9 February 2004, in response to the announcement at the end of 2003 by one of the major Belgian banks that it would charge a fee for ATM withdrawals, a gentlemen's agreement on the means of payment was concluded between the Belgian Bankers' Association, the Minister for the Economy and the Minister for Consumer Protection.

Point 5 of this agreement reads: "The parties recognise the need for more efficient payment traffic. To this end, the competent ministers will hold a consultation among the various interested parties before the end of the month. As part of this, concrete initiatives will be taken to modernise the payment circuit at government level. In addition, the competitive position of the Belgian banks will be reviewed."

Under this agreement, the two ministers, together with the Minister of Finance, asked the Governor of the National Bank of Belgium to take charge of the business consultation regarding the future of the means of payment, involving all the parties affected by this issue.

To ensure the effectiveness of this consultation, a Steering Committee on the future of the means of payment was set up, which is chaired by the Governor of the National Bank of Belgium and represents all the interested parties.

Among the proposals made at the first meeting of this Committee on 13 May 2004 was the formation of a working group in charge of conducting a study of the costs and benefits of the various means of payment.

For eighteen months, all the parties involved in the business consultation, i.e. the National Bank, the federal government, the financial sector, the professional organisations of small and medium-sized enterprises and traders and of the distribution as well as consumer organisations, collaborated closely in this working group. This *modus operandi* allowed for a consensual approach to the design of the study and the interpretation of the results.

The working group completed its tasks in the autumn of 2005. On 15 December the report entitled "Costs, advantages and drawbacks of the various means of payment⁽¹⁾" was submitted by the Governor of the National Bank of Belgium, in his capacity as Chairman of the Supervisory Board of the Financial Services Authority, to the three federal ministers who had commissioned the report.

This investigation followed an analysis framework inspired by the Dutch report "Betalen kost geld", which was published in March 2004⁽²⁾.

The aims of the Dutch report were twofold:

- to identify and quantify the costs associated with the means of payment used at points of sale;
- to calculate the cost savings obtained by replacing expensive payment instruments with cheaper ones.

(1) The full report can be downloaded at: <http://www.nbb.be/doc/TS/Publications/Brochures/MoyenPaiement.pdf>

(2) This report can be consulted at: http://www.dnb.nl/dnb/bin/doc/Rapport%20Betalen%20kost%20geld_tcm12-35125.pdf

The Belgian study has the same objectives. Although the research methods differ fundamentally in certain respects from those adopted in the Netherlands, the scope of the investigation is the same:

- it only looks at the costs of payment traffic at points of sale. The following instruments are therefore considered: notes and coins, the electronic purse (Proton), debit cards and credit cards. Thus the costs of payment transactions among professional market participants and the costs of payments made by individuals away from points of sale (more specifically transfers and domiciliations) are not considered. Likewise, the investigation is not concerned with less common payment instruments such as cheques, store cards and the Diners Club and American Express credit cards.
- furthermore, only the macroeconomic costs are taken into consideration, i.e. the internal costs incurred by the parties in the payment chain (the financial sector, the issuing institutions and the points of sale) when processing payments made and received.

Three surveys had to be carried out for the purposes of this investigation, relating specifically to:

- the costs of payment traffic borne by the financial sector;
- the costs of payment traffic borne by the points of sale;
- the use of payment instruments by consumers in order to determine the frequency with which notes and coins are used.

The basic data on costs relate to 2003. This year, for which detailed data were available from the national accounts during the study, could also be analysed on the basis of the surveys conducted when the working group commenced its activities. Broadly speaking, those data continue to be relevant, although innovations – particularly as regards electronic payment traffic – have brought about certain changes.

1. Breakdown and analysis of the macroeconomic costs of means of payment in Belgium

After verifying and extrapolating the results of the first two surveys, the total macroeconomic costs – i.e. for the financial sector, the issuing institutions (National Bank of Belgium and the Belgian Royal Mint) and the points of sale combined – can be estimated at 2,034 million euro, or 0.74 p.c. of GDP.

The costs of means of payment attributable to notes and coins amount to 0.58 p.c. of GDP, as against 0.11 p.c. for debit cards, 0.04 p.c. for credit cards and, finally, 0.02 p.c. for the electronic purse.

Roughly 50.5 p.c. of the costs of the means of payment are incurred at points of sale, 47.1 p.c. by the financial sector and 2.3 p.c. by the issuing institutions.

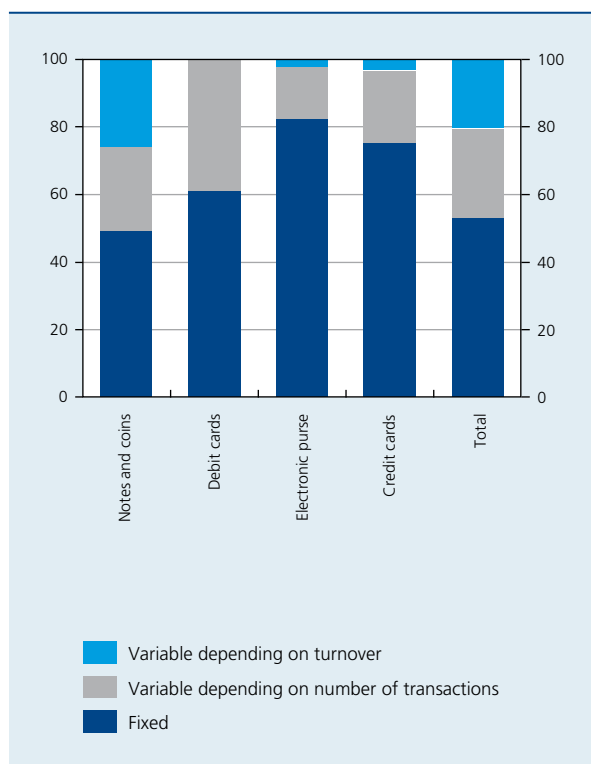
The total costs must be broken down according to fixed costs, variable costs related to the number of transactions and variable costs related to turnover. The costs associated with the electronic means of payment are largely fixed: this is because a significant portion of the costs of the financial sector relate to the computer system needed in order to carry out electronic transactions. The total fixed costs are highest for Proton (83 p.c.), followed by credit cards (75 p.c.) and debit cards (61 p.c.). The composition of the costs of notes and coins is much more balanced: 49 p.c. of the costs are fixed, 51 p.c. variable (25 p.c. related to the number of transactions, 26 p.c. related to turnover).

TABLE 1 TOTAL COSTS OF THE PAYMENT INSTRUMENTS
(Millions of euro)

	Notes and coins	Debit card	Electronic purse	Credit card	Total
1. Total costs of the financial sector	724	144	15	76	959
2. Total costs of the issuing institutions	47	–	–	–	47
3. Total costs of the points of sale	812	152	43	21	1,027
4. Total costs (= sum of 1 to 3)	1,583	296	58	97	2,034

Source: NBB.

CHART 1 BREAKDOWN OF THE TOTAL COSTS OF
THE PAYMENT INSTRUMENTS
(Percentages of the total)



Source: NBB.

2. The payment behaviour of consumers

However, in order to compare the total costs of each payment instrument, account must be taken of both the number of transactions carried out with that instrument and the turnover generated by that instrument.

To find out how many transactions have been carried out using notes and coins, a survey of the payment behaviour of individuals was required. To this end, the network manager Banksys and the National Bank commissioned a study from the agency INRA/IPSOS, which they funded on a 50/50 basis. Between 1 December 2004 and 15 March 2005, the research institute conducted 3,600 telephone interviews on the use of payment instruments both overall, and broken down by consumption category.

However, the initial interpretation of the results revealed that they were biased in several respects. Various ways of correcting that bias were investigated. Finally, to provide a basis for further work, a decision was made to weight the survey results according to the "raking" technique and to retropolate the data from the survey period to 2003 based on amounts withdrawn at ATMs. This method seemed the most reliable but there still appears to be some uncertainty surrounding the actual number of transactions carried out with notes and coins.

Thus 2,970 million transactions in notes and coins were counted for 2003. According to the Banksys data, debit cards, Proton and credit cards were used 539 million, 107 million and 37 million times respectively in 2003.

As regards the amounts, these payment instruments account for 52.2 billion, 26.8 billion, 0.6 billion and 3.7 billion euro respectively. Thus the average amounts for notes and coins, debit cards, Proton and credit cards are, respectively, 17.57 euro, 49.81 euro, 5.15 euro and 99.02 euro.

Notes and coins therefore account for 81.3 p.c. of transactions at points of sale. However, the market share of notes and coins is just 62.7 p.c. based on turnover. This is due to the high average amounts settled using debit and credit cards.

TABLE 2 USE OF PAYMENT INSTRUMENTS AT POINTS OF SALE

	Notes and coins	Debit card	Electronic purse	Credit card	Total
1. Number of payments (in millions)	2,970	539	107	37	3,653
(percentages of the total)	(81.3)	(14.8)	(2.9)	(1.0)	(100.0)
2. Amounts paid (in millions of euro)	52,185	26,836	553	3,656	83,230
(percentages of the total)	(62.7)	(32.2)	(0.7)	(4.4)	(100.0)
3. Average amount per transaction (= 2 : 1) (in euro)	17.57	49.81	5.15	99.02	22.78

Sources: IPSOS survey, NBB calculations.

3. Summary of the analysis of macroeconomic costs: possible cost savings

If the costs of the payment instruments are compared with the transactions effected, it becomes apparent that the costs per transaction are virtually the same for three instruments. Costs, at 53 euro cents, are lowest for notes and coins, closely followed by Proton (54 euro cents) and by debit cards (55 euro cents). The costs for credit cards are considerably higher (2.62 euro).

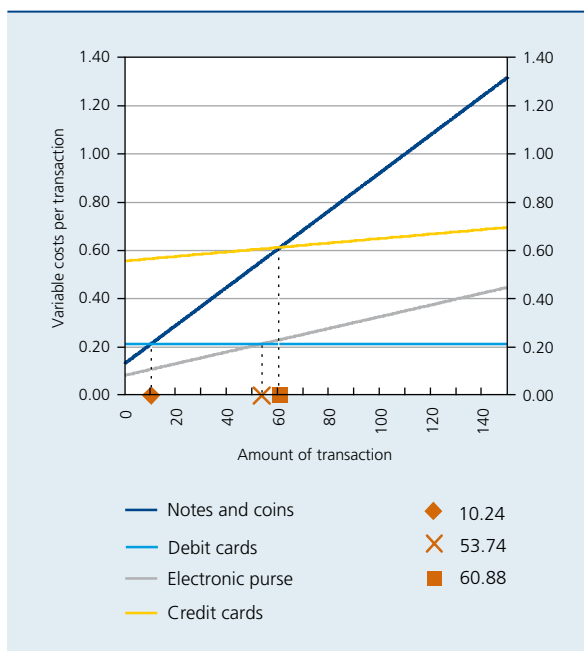
Per euro of turnover, the debit card is the cheapest payment instrument (1 euro cent); much higher costs are associated with notes and coins and credit cards (3 euro cents in both cases) and, above all, Proton.

In order to identify potential efficiency gains, the variable costs of the payment instruments have to be related to the turnover and the volume of transactions.

The variable costs per additional transaction are lowest for the electronic purse, followed by notes and coins, debit cards and credit cards.

The variable costs per euro of additional turnover, however, are highest for notes and coins, for which the variable costs per transaction rise sharply the higher the amount to be paid. Debit cards do not entail variable costs per euro of additional turnover and therefore present a flat trend in variable costs related to turnover.

CHART 2 VARIABLE COSTS PER TRANSACTION
(In euro)



Source : NBB.

The chart illustrates that the variable costs of notes and coins and debit cards are identical for a transaction of 10.24 euro: it is better to settle amounts below this level in cash and amounts above this level by debit card. It must also be stressed that the costs associated with Proton are always lower than those of notes and coins, but as soon as the transaction amount reaches 53.74 euro, Proton becomes more expensive than the debit card. Upwards of 60.88 euro, payment by credit card entails fewer variable costs than notes and coins.

TABLE 3 PAYMENT INSTRUMENT INDICATORS
(In euro)

	Notes and coins	Debit card	Electronic purse	Credit card
Total average costs per transaction	0.53	0.55	0.54	2.62
Total average costs per euro of turnover	0.03	0.01	0.10	0.03
Variable costs per additional transaction (α) ⁽¹⁾	0.1331	0.2139	0.0835	0.5575
Variable costs per euro of additional turnover (β) ⁽²⁾	0.0079	...	0.0024	0.0009
Variable costs per average transaction ⁽³⁾	0.2718	0.2141	0.0960	0.6491

Source : NBB.

(1) Transaction-related variable costs divided by the number of transactions.

(2) Turnover-related variable costs divided by total turnover.

(3) $\alpha + (\beta \times \text{average transaction amount})$.

TABLE 4 SUBSTITUTION SCENARIO

	Notes and coins	Debit card	Electronic purse	Credit card	Total
Situation in 2003					
Number of transactions (in millions)	2,970	539	107	37	3,653
Total amount (in millions of euro)	52,185	26,836	553	3,656	83,230
Average amount (in euro)	17.57	49.81	5.15	99.02	22.78
Total costs (in millions of euro)	1,583	296	58	97	2,034
Simulation					
Change in number of transactions (in millions) . .	-750	500	250	0	0
Number of transactions (in millions)	2,220	1,039	357	37	3,653
Total amount (in millions of euro)	40,935	36,836	1,803	3,656	83,230
Average amount (in euro)	18.44	35.46	5.05	99.02	22.78
Total costs (in millions of euro)	1,394	403	82	97	1,976
Saving (in millions of euro)	189	-107	-24	0	58

Source: NBB.

Finally, any efficiency gains regarding the use of payment instruments can be quantified based on a simulation. To this end, a hypothetical 750 million transactions settled using notes and coins are replaced with 250 million transactions (averaging 5 euro) paid by using Proton and 500 million transactions (averaging 20 euro) settled by debit card. The ultimate saving amounts to around 58 million euro. So, just as in the study "Betalen kost geld", in which a similar simulation was carried out, the saving is in the region of 0.02 p.c. of GDP.

This saving is ultimately relatively modest, even when compared with the level of total costs (0.74 p.c. of GDP). Only the transition to a cashless society could deliver substantial savings. However, this is a purely hypothetical scenario, given that notes and coins are popular with the public. Moreover, we must not lose sight of the fact that the fixed costs of the electronic means of payment would increase sharply in the context of such a radical scenario: this would require heavy investment in infrastructure, and specifically an increase in the number of terminals. Nevertheless, these investments could then in turn produce economies of scale.

4. General analysis of the advantages and drawbacks of the various means of payment

In addition to measurable costs, unquantifiable advantages and drawbacks are also relevant in the assessment of the benefits of the various payment instruments for society as a whole. The working group tried to produce an overview as complete as possible of this for the various payment instruments. It should be pointed out that this analysis is not based on an ad hoc survey of a sample of consumers or traders, but is derived mainly from an in-depth exchange of views between the members of the working group, corroborated by various studies and investigations.

The observation is that notes and coins offer inherent advantages. They remain, for example, the only universally accepted payment instrument, first and foremost due to their status as legal tender and also because no terminal is necessary. Notes and coins can also be used for transactions between individuals. Notes and coins guarantee the confidentiality of transactions and offer complete security with regard to the protection of privacy. The use of notes and coins is also unlikely to lead to excessive debts. Furthermore, it can be a factor for social integration.

Electronic payment instruments are more user-friendly. In addition, the use of these instruments is associated with fewer dangers with regard to security and theft, particularly when theft involves violence. Electronic payments

TABLE 5 USE OF PAYMENT INSTRUMENTS BY SECTOR

(Percentages of the total number of transactions effected in each sector)

	Notes and coins	Debit card	Electronic purse	Credit card	Transfer	Other ⁽¹⁾
Supermarkets	42.1	50.6	0.8	3.0	0.0	3.5
Other specialised stores and retail outlets	77.9	16.3	3.2	1.4	0.4	0.9
Retail trade excluding stores	98.1	1.0	0.9	0.0	0.0	0.0
Petrol stations	40.6	52.9	0.6	2.6	1.5	1.8
Vending machines	84.4	0.7	13.0	1.2	0.0	0.7
Transport	89.8	1.2	2.8	0.0	1.4	4.7
Hotels, restaurants and pubs	90.9	2.7	2.6	1.5	0.0	2.3
Leisure activities	87.1	8.3	0.0	0.9	3.8	0.0
Personal care	88.3	10.0	0.0	0.0	0.0	1.7
Liberal professions	96.6	2.6	0.0	0.0	0.0	0.8
Person-to-person	92.4	0.0	0.0	0.0	6.9	0.7
Other	38.1	6.6	2.0	0.4	50.6	2.3
Total for all sectors ⁽²⁾	70.6	21.1	2.4	1.6	2.4	1.8

Sources: IPSOS survey, NBB calculations.

(1) Luncheon vouchers, store cards, etc.

(2) The figures discussed here relate to the non-adjusted data from the survey. Primarily for this reason, the data for the total of all sectors will differ from the data in Table 2, which contains adjusted data.

leave traces which can be used as evidence in the event of any disputes. For traders, the use of these instruments facilitates reconciliation with their accounts.

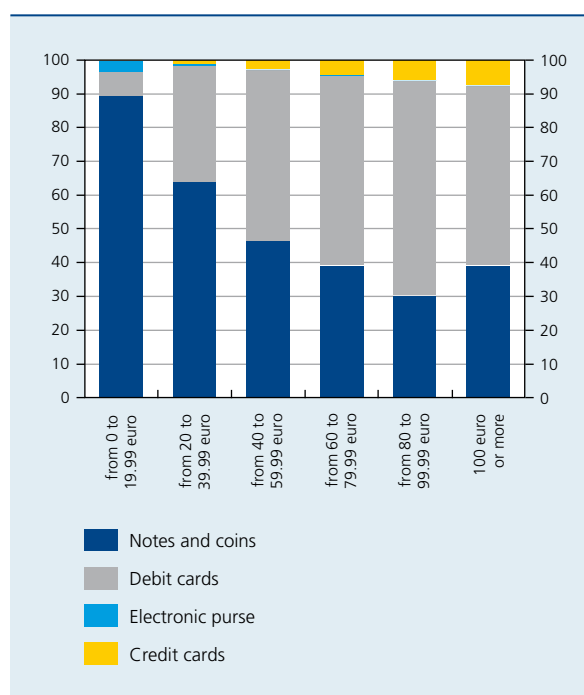
The use of the payment instruments also depends on certain specific factors: the sector in which the purchase is made and the amount involved.

After all, statistics produced on the basis of the survey of consumer payment behaviour show that consumers' habits regarding payments can vary substantially depending on the type of point of sale where they are making their purchases. Debit cards are the most common payment instrument for purchases in supermarkets and petrol stations, whilst cash continues to be the most popular method of payment in specialised stores and retail outlets, hotels, restaurants and pubs and most other sectors. The Proton card accounts for a less significant proportion of transactions in all sectors, but is used relatively more often in transactions effected via vending machines, which may indicate that many of these machines accept this method of payment.

The results of the survey conducted in Belgium regarding the use of payment instruments also highlight the role of the amount to be paid in the choice of payment instrument. It is found, for instance, that cash and the Proton card are used to pay for 89 p.c. and 3.5 p.c.

CHART 3 USE OF PAYMENT INSTRUMENTS BROKEN DOWN INTO AMOUNT BANDS

(Percentages of the total number of transactions)



Sources: Banksys, IPSOS survey, NBB calculations.

respectively of transactions for amounts of less than 20 euro. These percentages fall the greater the amount payable, whereas the rate of use of debit cards presents a rising trend. Credit cards, meanwhile, are mainly used to settle relatively large amounts, although they are not used to a greater extent than debit cards.

From the use made of them by consumers, it emerges that each payment instrument has comparative advantages depending on these two factors (sector and amount) which continue to justify the use of that instrument.

Conclusion

The total macroeconomic costs associated with the use of the means of payment are estimated at around 0.74 p.c. of Belgian GDP in 2003, which is a far from negligible figure. Efforts must therefore be made to improve the suitability and efficiency of the payment instruments, within the bounds of feasibility.

Increasing the market share of the electronic means of payment, which entail lower variable costs, will contribute to improvements of this kind. However, the simulation carried out shows that the saving made is relatively modest. Moreover, this saving only affects macroeconomic costs; if private costs, i.e. payments between the parties involved, are taken into account, this may completely alter the distribution of the efficiency gains achieved.

Furthermore, the spontaneous development of payment traffic is heading in the right direction, given the constant growth of electronic means of payment. Nevertheless, demand for notes and coins continues unabated.

In this context of growth in the use of electronic means of payment, there is no sense in attempting to speed up this development by seeking a sudden change in the payment behaviour of Belgian consumers through radical policy measures.

Although it is essential – partly for the sake of efficiency – that the spontaneous development towards more electronic payment traffic continues, it is fundamentally wrong to strive for a cashless society.

After all, it would be exorbitantly expensive to completely do away with notes and coins, and require huge investments in terminals and so on. Moreover, it is difficult to conceive of a real alternative to the use of notes of coins in a number of situations, such as person-to-person transactions, itinerant trade, etc.

Furthermore, a cashless society governed by a monopoly of one type of means of payment would produce a dangerous situation, with that society running unnecessary risks. The electronic payment system may fail due to a fault in the telecommunications network. If there were no alternative means of payment available in such an event, the consequences for the economy would be incalculable. Therefore the concurrent existence of various means of payment ensures mutual back-up should one of the means of payment suffer serious disruption.

Finally, consumers must be able to continue to choose freely between the instruments they wish to use. The study shows that consumers prefer a diverse range of instruments, in which notes and coins undoubtedly still have their place. After all, consumers remain attached to notes and coins which are an appropriate means of payment for smaller amounts and certain transactions.

A diversification of instruments continues to have positive effects in terms of achieving the most flexible possible settlement of transactions. Moreover, the payment behaviour of consumers – including the success of the cash back facility when paying by debit card is coupled with a cash withdrawal – shows that the means of payment can complement each other.

Finally, in this discussion on the efficient use of payment instruments we must not lose sight of the European dimension of this issue. From a European perspective, Belgian electronic payment instruments are currently working efficiently. With a view to the transition to the Single Euro Payments Area (SEPA) it must be ensured that this level of efficiency is at least maintained or possibly even improved.