



## **Point of sale transactions, costs calculation**

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## **Abstract**

*The costs of point-of sale transactions for merchants can be reduced by having more transactions paid by debit card. If in the Netherlands cash transactions could be reduced by 15% in favour of debit card transactions, the overall costs of payment for merchants will reduce by € 35 million a year. The level of the reduction however depends strongly on the efficiency in handling transactions by the merchant. Internal costs set with 68% by far the largest part of the cost of payments. Fee paid to banks, insurance companies, money transport companies, card operators and service providers cover only 32% of all costs of payments.*

# 1 Introduction

Costs of payments have been measured in the Netherlands for over 15 years. The most recent measurements concern the years 2006 and 2009. These measurements were initiated by the Dutch Association to promote Efficient Payment Systems (abbreviation: SBEB<sup>1</sup>) and the Central Bank of the Netherlands. In the SBEB the central organisations in the sectors retail, petrol and hospitality (hotel, restaurants, bars, and leisure-industry) and the Dutch Banking Association participate. Since 1992 All measurements have been performed by EIM, a Dutch company for economic policy research on business matters. This paper will deal with the measurement that has been performed in 2010 and 2011 and that concerned the year 2009<sup>2</sup>. Nearly 1,000 merchants participated in this measurement. Furthermore 29 of the largest retail companies participated and 4 large commercial banks contributed to this research by giving all the necessary information.

In this paper we will discuss the aim and the organisation of the research, in particular the methodology (chapter 2). The Dutch payment market will be discussed (shortly) in chapter 3. Chapter 4 presents the main results of the research for the Netherlands in total and per payment method. The cost efficiency will be examined in chapter 5. Chapter 6 addresses the cost development since 2006. Also a cost forecast for 2012 based on a growth target of 40% for debit card payments in 2012 compared to 2009 is presented. Finally, chapter 7 presents the conclusions.

<sup>1</sup> The abbreviation will be used in this paper.

<sup>2</sup> This research resulted in the report Point-of-Sale Transactions in 2009 (in Dutch: Toonbankbetalingsverkeer in 2009). The English version of this report can be asked for at the SBEB, see [www.efficientbetalen.nl](http://www.efficientbetalen.nl).

## 2 Aim, method and cost model

### 2.1 Aim

The aim of the study was to provide actual and accurate information on the level and structure of all costs for the merchants to make payments by different methods possible. Thus the scope of the research concerns the external costs (fees to be paid to third parties) as well as internal costs, in particular the economic (cost) value of the time used for payment related activities and the depreciation of equipment to be used for cash or electronic payments.

The research should result in:

- Knowledge about the level and structure of costs of payments in 2009 for each distinguished payment method at national level (Netherlands). In this paper we will focus on *cash payments*, *debit card payments* and *payments by credit card*.
- Knowledge about the level and structure of costs of payments in 2009 per payment method for each of the distinguished (retail) industries. In the study the following industries were distinguished:
  - retail industry: i.e. food and non-food retail taken together;
  - hospitality industry: i.e. hotels, restaurants and bars;
  - petrol stations: i.e. petrol stations with personnel.In this paper these sectors will not be distinguished.
- Knowledge about the changes in costs per payment method and industry for the period 2006–2009.
- Knowledge about the changes in total costs to be expected if the level of debit card transactions would increase with approximately 40% and the number of cash payments would decline by 15% resulting in an unchanged total for all cash and debit card payments.

### 2.2 Method

The methodological fundamentals for the research are:

- A *telephonic survey* among of small and medium sized merchants in the retail and hospitality industries and the petrol stations. 979 merchants (net response) participated in the survey. The questionnaire focussed on:
  - the number of payments;
  - a breakdown of these payments by payment method;
  - the division of the turnover by payment method;
  - the use of payment equipment;
  - the costs of activities related to payments;
  - other payment related internal and external costs.
- A *written questionnaire* sent to the 70 largest retailers in the Netherlands of which 29 provided the necessary information for all business divisions in the company

- *A written questionnaire* sent to the 6 largest commercial banks in the Netherlands of which 4 replied. The questionnaire was focussed on the tariffs these banks apply for payment related services.
- *Desk research* regarding the number of establishments and total turnover for the distinguished industries and regarding tariffs applied by banks, telecom service providers and professional money transporters, etc.
- *Use of external data*: data from Currence were used regarding registered debit card 'pin' transactions<sup>3</sup> and from DNB<sup>4</sup> regarding cash transactions.
- *In situ measurements* of the time needed per payment method to perform the payment transactions in order to calculate the front office cost. The measurements covered over 2,200 payment transactions in 21 shops, restaurants and petrol stations in January 2010.

In order to obtain results at national level the single measurements were reweighted with factors depending on sector and enterprise size, the number of enterprises in a sector in 2009 and the sector turnover in 2009.

The method used was in line with the method used in 2007 that calculated the payment costs for the year 2006, to make sure that the results could be compared without any further methodological constraints.

### 2.3 Cost model

To calculate the costs of payment and to perform further analyses we developed a special cost model. In this model we distinguish 18 cost components, split up by payment method, into internal and external cost and into fixed and variable costs. In case of the variable costs we distinguish transaction related costs and turnover related costs. Table 1 shows the division of payment costs by cost component, payment method and type of costs (fixed or variable). In case a cost component showed to be partly fixed and partly variable we are presenting - as a result of the performed analyses - in table 1 also the share of the fixed part and the variable part in these cost components.

The division in these 18 cost components by type of costs makes it possible to assess:

- the contribution of each component to the total costs of payment;
- the costs of components that may be reduced by transaction related actions;
- the costs of components that may be reduced by investment related actions;
- the costs of components that may be reduced by increasing internal efficiency;
- the costs of components that may be reduced by calculating lower tariffs.

<sup>3</sup> The domestic brand of debit cards in the Netherlands is PIN. Currence is the institute that registers the debit card transactions.

<sup>4</sup> DNB stands for De Nederlandsche Bank, the Central Bank of the Netherlands.

Table 1 The cost model: fixed and variable costs, internal and external costs

Cost component	Payment method		Type of costs		
	Cash	Debit/ credit card	Fixed	Variable transaction related	Variable turnover related
<b>Internal costs</b>					
Front office costs	√	√		√	
Back office costs cash	√		√ (15%)	√(13%)	√(72%)
Back office costs debit/credit card		√		√	
Costs of own money transport	√			√	
Loss of money (theft, fraud)	√				√
Loss of money (interest on cash stored)	√				√
Costs of payment equipment for cash payments	√		√		
Costs of payment equipment for electronic payments		√	√(93%)	√(7%)	
<b>External costs</b>					
Costs of cash insurance	√				√
Bank deposits costs	√				√
Loss of money (interest on deposits)	√				√
Bank costs of acquiring cash	√				√
Professional money transport	√		√		
Processing costs electronic payments		√		√	
Bank fee for handling electronic payments		√	√		
Costs of credit card companies		√		√	
Monthly costs telecommunication companies		√	√		
Costs for telecommunication per transaction		√		√	

Source: EIM, 2012

### 3 The Dutch payment market

In the Netherlands cash payments count for 5.2 billion transactions (year 2010) of which approximately 4.4 billion concern transactions by consumers in shops, on markets (street trading), in the hospitality sector, in petrol stations, museums, cantinas, clubs and institutions where consumers can pay directly (consumer-to-merchant)<sup>5</sup> by cash or card.<sup>6</sup> Debit card transactions account for approximately 2.1 billion transactions in 2010 of which approximately 1.7 billion concern consumer-to-merchant payments (CTM payments).<sup>7</sup>

In 2010 there were approximately 6.4 billion CTM payments in total, of which 66% were handled by cash, 27% by debit card and 1% by the use of credit cards. The remaining 6% concern payments performed with petrol cards, gift cards and bank transfers.

The average size per payment differs by method. The average size of a cash payment (as CTM payment) is approximately € 12; of a debit card payment € 33 and of a credit card payment € 49. In the last few years debit card payments tend also to be used more for low value purchases. The campaign 'Klein bedrag, Pinnen<sup>8</sup> mag' (Small purchase, use debit card please) was a great success. Nowadays, younger people in particular, do not have much cash anymore in their wallets and use their debit card for most of their purchases.

Looking at the value of the payments, about € 51 billion was paid by cash, € 55 billion by debit cards and € 2 billion by credit cards. It is to be expected that the number of payment by debit cards will increase in the coming years since a growing number of merchants accept debit cards for all kind of payments without any charge, thus lowering the constraints for the use of debit cards. Also the policy of merchants to diminish all kinds of risks and costs related to cash payments (e.g. by the use of *pin only checkouts*<sup>9</sup>), will stimulate the debit card payments.

5 We will use the expression consumer-to-merchant payment (CTM) to indicate all transactions where consumers can pay the merchant directly and on site for their purchases. Payments for trips by bus or train or for the use of vending machines and parking meters or person-to-person payments are not included in this number.

6 Source: DNB, Contante betalingen geteld, October 2011. In the EIM research report a lower number of cash and debit card transactions is presented, due to the fact that in the research not all sectors with CTM transactions were covered. The sectors covered were retail industry, hospitality industry, petrol stations and street trade. See also 4.1.

7 Source: Currence 2009, 2010 (see [www.currence.nl](http://www.currence.nl)).

8 PIN is the Dutch domestic debit card brand. Since 2012 this brand is no longer active and has been replaced by debit cards that use the EMV technology (Maestro e.g).

9 Pin only checkouts are checkouts in supermarkets where the consumer cannot pay anymore by using cash. The cashiers at these checkouts will only accept debit cards (in the Netherlands normally indicated by the domestic brand PIN).

## 4 The results at macro level

### 4.1 Total costs of payment

In this chapter we will present and discuss the costs of payment (for CTM transactions) at a macro level (the Netherlands, in total, and per payment method in total). EIM measured the costs related to CTM payments covering 80% of all merchants accepting direct payments on site. The measurements covered about 85% of all CTM payments. For the calculation of the costs we used the cost model as presented in table 1.

Table 2 Fixed and variable costs, internal and external costs (x 1,000)

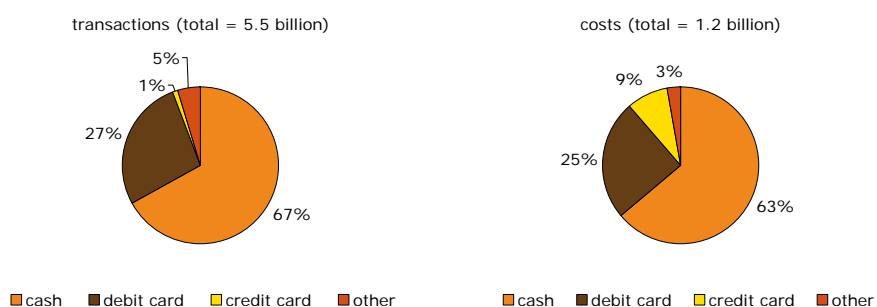
Cost component	Type of costs				Total costs
	Fixed	Variable turnover related	Variable transaction related		
<b>Internal costs</b>					
Front office costs			€ 363,600	€ 363,600	29%
Back office costs	€ 37,400	€ 182,400	€ 62,900	€ 282,700	23%
Costs of own money transport	€ 95,200			€ 95,200	8%
Loss of money (theft, fraud)		€ 26,500		€ 26,500	2%
Loss of money (interest on cash stored)		€ 1,500		€ 1,500	0%
Costs of payment equipment	€ 69,500		€ 3,400	€ 72,900	6%
<b>Total internal costs</b>	<b>€ 202,100</b>	<b>€ 210,400</b>	<b>€ 429,900</b>	<b>€ 842,400</b>	<b>68%</b>
	24%	25%	51%	100%	
<b>External costs</b>					
Costs of cash insurance		€ 9,400		€ 9,400	1%
Bank deposits costs		€ 92,700		€ 92,700	7%
Loss of money (interest on deposits)		€ 300		€ 300	0%
Bank costs of acquiring cash			€ 7,200	€ 7,200	1%
Professional money transport		€ 51,500		€ 51,500	4%
Processing costs electronic payment	€ 7,300		€ 74,500	€ 81,800	7%
Costs of credit card companies		€ 88,300		€ 88,300	7%
Costs of telecommunication companies	€ 17,700		€ 30,900	€ 48,600	4%
Other external costs		€ 9,700	€ 10,500	€ 20,200	2%
<b>Total external costs</b>	<b>€ 25,000</b>	<b>€ 251,900</b>	<b>€ 123,100</b>	<b>€ 400,000</b>	<b>32%</b>
	6%	63%	31%	100%	
<b>Total costs</b>	<b>€ 227,100</b>	<b>€ 462,300</b>	<b>€ 553,000</b>	<b>€ 1,242,400</b>	<b>100%</b>
	18%	37%	45%	100%	

Source: EIM, 2012

In table 2 the costs of payment are displayed in total with a division of the costs by cost component and type of costs (fixed, variable transaction related and variable turnover related). Table 2 shows that two third of the total costs of payment is set by internal cost. One third is covered by the external costs. Only 8% of all costs concern contributions to the banks (for deposits and cash withdrawals) and 7% concern contributions to credit card companies (including interchange fee, processing costs and fee for the scheme). However, this also implies that payments with credits cards result in 23% of all external cost, counting for only 1 percent of all payments. The use of credit cards should have much compensation in other cost components to result in an equal total cost level compared to cash and debit cards. We will discuss this item in chapter 5.

Finally, figure 1, gives an overview of the share of each payment method in total transactions and total costs in 2009.

Figure 1 Total transactions and costs with a breakdown by payment method, 2009



Source: EIM, 2012

#### 4.2 The total costs of payment by method

In the tables 3, 4, and 5 the costs are presented per payment method (cash, debit card and credit card).

Looking at the different methods (tables 3, 4, and 5), we see a clear difference in the cost structure between cash payments, debit card payments and credit card payments.

- The costs for cash payments are dominated by internal costs (80%, in particular back *and* front office costs).
- For debit card payments internal costs count for 59% of all payment costs (in particular front office costs) and external costs count for 41%.
- 83% of the credit card costs are external costs.
- For cash payments, the external costs depend strongly on the costs related to bank deposits.
- For debit card payments the external costs are set for the largest part by processing costs.



- For credit card payments the external costs are almost completely set by the contributions to the credit card companies. This contribution consists of processing costs, interchange fee and scheme fee<sup>10</sup>.

Compared to cash payments and debit card payments, the use of credit cards shows indeed a significant lower share of internal costs in the total costs. Still, the question is whether this lower share will compensate enough the relatively high share of credit cards in the external costs for all payments (see comments earlier under table 2). We will discuss this further in chapter 5.

Table 3 Costs of cash payments (x 1,000)

Cost component	Type of costs			Total costs	
	Fixed	Variable turnover related	Variable transaction related		
<b>Internal costs</b>					
Front office costs			€ 229,300	€ 229,300	29%
Back office costs	€ 37,400	€ 182,400	€ 32,300	€ 252,100	32%
Costs of own money transport	€ 95,200			€ 95,200	12%
Loss of money (theft, fraud)		€ 26,500		€ 26,500	3%
Loss of money (interest on cash stored)		€ 1,500		€ 1,500	0%
Costs of payment equipment	€ 26,500			€ 26,500	3%
<b>Total internal costs</b>	<b>€ 159,100</b>	<b>€ 210,400</b>	<b>€ 261,600</b>	<b>€ 631,100</b>	<b>80%</b>
	25%	33%	41%	100%	
<b>External costs</b>					
Costs of cash insurance		€ 9,400		€ 9,400	1%
Bank deposits costs		€ 92,700		€ 92,700	12%
Loss of money (interest on deposits)		€ 300		€ 300	0%
Bank costs of acquiring cash			€ 7,200	€ 7,200	1%
Professional money transport		€ 51,500		€ 51,500	7%
<b>Total external costs</b>	-	<b>€ 153,900</b>	<b>€ 7,200</b>	<b>€ 161,100</b>	<b>20%</b>
	-	96%	4%	100%	
<b>Total costs</b>	<b>€ 159,100</b>	<b>€ 364,300</b>	<b>€ 268,800</b>	<b>€ 792,200</b>	<b>100%</b>
	20%	46%	34%	100%	

Source: EIM, 2012

<sup>10</sup> We asked the merchant only to indicate the total contribution to be paid for the use of credit cards; we did not split the contribution into the various components.

Table 4 Costs of debit cards (x 1,000)

Cost component	Type of costs			
	Fixed	Variable turnover related	Variable transaction related	Total costs
<b>Internal costs</b>				
Front office costs			€ 116,900	€ 116,900 38%
Back office costs			€ 22,200	€ 22,200 7%
Costs of payment equipment	€ 40,000		€ 3,200	€ 43,200 14%
<b>Total internal costs</b>	<b>€ 40,000</b>	<b>-</b>	<b>€ 142,300</b>	<b>€ 182,300 59%</b>
	22%	-	78%	100%
<b>External costs</b>				
Costs of telecommunication companies	€ 16,300		€ 28,400	€ 44,700 15%
Processing costs electronic payment	€ 6,600		€ 73,900	€ 80,500 26%
<b>Total external costs</b>	<b>€ 22,900</b>	<b>-</b>	<b>€ 102,300</b>	<b>€ 125,200 41%</b>
	18%	-	82%	100%
<b>Total costs</b>	<b>€ 62,900</b>	<b>€ 0</b>	<b>€ 244,600</b>	<b>€ 307,500 100%</b>
	20%	0%	80%	100%

Source: EIM, 2012

Table 5 Costs of credit cards (x 1,000)

Cost component	Type of costs			
	Fixed	Variable turnover related	Variable transaction related	Total costs
<b>Internal costs</b>				
Front office costs			€ 8,900	€ 8,900 8%
Back office costs			€ 8,000	€ 8,000 7%
Costs of payment equipment	€ 1,700		€ 100	€ 1,800 2%
<b>Total internal costs</b>	<b>€ 1,700</b>	<b>-</b>	<b>€ 17,000</b>	<b>€ 18,700 17%</b>
	9%	-	91%	100%
<b>External costs</b>				
Costs of credit card companies		€ 88,300		€ 88,300 81%
Costs of telecommunication companies	€ 1,000		€ 1,100	€ 2,100 2%
<b>Total external costs</b>	<b>€ 1,000</b>	<b>€ 88,300</b>	<b>€ 1,100</b>	<b>€ 90,400 83%</b>
<b>Total costs</b>	<b>€ 2,700</b>	<b>€ 88,300</b>	<b>€ 18,100</b>	<b>€ 109,100 100%</b>
	2%	81%	17%	100%

Source: EIM, 2012

## 5 The cost efficiency of payments

To assess which payment method is handled most efficiently we can look at the costs in different ways:

- The costs per single transaction. This is reflected by dividing the total costs per payment method by the total number of transactions for each distinguished method. This method of comparing costs gives a fair benchmark assuming that costs are not related to the value of the payment, but only to individual handling and processing costs.
- The cost in percentages of the average transaction value. This is reflected by dividing total costs per payment method by the total sales value for all transactions for each distinguished method. This method gives a good indication of the cost pressure of each payment method and is a fairly good benchmark for the efficiency of payment methods assuming that payment costs are in particular related to the transaction value.
- The marginal cost per transaction (i.e. the variable costs for the last added transaction of an average transaction value).

As explained in chapters 2 and 4, costs depend on various factors and will result in fixed or variable costs (transaction related or turnover related). This implies that neither of the first two ways of comparing costs will express differences in efficiencies in a fully clear way covering all relevant scopes. However, by combining these two ways of comparing costs levels, clear conclusions can be drawn for the cost efficiency of each payment method. We will first focus on the costs per single transactions (paragraph 5.1) and then on the costs related to the turnover value (paragraph 5.2). The third paragraph of this chapter presents the marginal costs for each payment method.

### 5.1 The costs per single transaction

In table 6 the costs per transaction are presented for each payment method in € cents. Based on the results presented in table 6 the following conclusions can be drawn:

- The costs of a single debit card transaction are comparable with the costs of a single cash transaction<sup>11</sup>;
- The costs of a single credit card transaction are almost 9 times higher than the costs per transactions of cash and (domestic) debit card;
- In particular the external costs – and that is the component which will interest merchants (in particular in micro or small companies) the most – seem to be fully out of order for credit card costs;
- The external costs of handling cash are still lower than the external costs for handling debit card payments, although in the Netherlands banks al-

<sup>11</sup> Only when low value payments (below approximately € 8) strongly dominate the structure of payments for a single merchant, the costs per payment show to be lower for cash payments than for debit card payments. This situation however hardly occurs in Dutch retail. We will disregard this situation in the analyses and further considerations in this paper.

- ready do not charge any interchange fee for handling debit card payments;
- The front office costs per transaction are still the lowest for cash payments, due to a slightly more efficient process in handling cash payments at the counter. It is to be expected that this advantage of handling cash will disappear in the next few years as a result of improved technical procedures and the introduction of pin only checkouts;
  - The internal back office costs of credit card payments are also relatively high. The reason for this that in the Netherlands the number of credit card payments per shop is very low. Thus, no real economies of scale will be possible for handling credit card payments;
  - Also the front office costs of credit card payments showed to be relatively high. This can be a result of more time consuming handling because consumers and merchants are not very used to pay with and handle credit cards. Also the fact that in most cases the credit card is not used for shop purchases, but for paying for services in the hospitality sector might have influence on front office costs of credit card payments.

Table 6 Costs per transaction for cash, debit cards and credit cards

<i>Cost component</i>	<i>Costs per transaction</i>		
	<i>Cash</i> € (cents)	<i>Debit card</i> € (cents)	<i>Credit card</i> € (cents)
<b>Internal costs</b>			
Front office costs	6.2	7.9	15.4
Back office costs	6.8	1.5	13.8
Costs of own money transport	2.6	-	-
Loss of money (theft, fraud)	0.7	-	-
Loss of money (interest on cash stored)	0.0	-	-
Costs of payment equipment	0.7	2.9	3.1
<b>Total internal costs per transaction</b>	<b>17.1</b>	<b>12.3</b>	<b>32.3</b>
<b>External costs</b>			
Costs of cash insurance	0.3	-	-
Bank deposits costs	2.5	-	-
Loss of money (interest on deposits)	0.0	-	-
Bank costs of acquiring cash	0.2	-	-
Professional money transport	1.4	-	-
Processing costs electronic payment	-	5.4	-
Costs of credit card companies	-	-	152.0
Costs of telecommunication companies	-	3.0	3.6
<b>Total external costs per transaction</b>	<b>4.4</b>	<b>8.4</b>	<b>155.6</b>
<b>Total costs per transaction</b>	<b>21.5</b>	<b>20.7</b>	<b>187.9</b>
<b>Total # transactions (x 1,000)</b>	<b>3,680,400</b>	<b>1,486,200</b>	<b>58,100</b>

Source: EIM, 2012

## 5.2 The costs in percentages of the total turnover

For the single entrepreneur the most important question is at the end: What is the pressure of the payment costs on my turnover and how can I reduce this? To answer the first part of this question we calculated the costs of payment as a percentage of the turnover realised per payment method. The results are illustrated in table 7.

Table 7 The payment costs in % of the turnover by payment method

	<i>Cash</i>	<i>Debit cards</i>	<i>Credit cards</i>
Internal costs	1.37%	0.37%	0.66%
External costs	0.35%	0.26%	3.17%
Total costs	1.73%	0.63%	3.83%

Source: EIM, 2012

The results show that, related to their relevant average turnover, payments by debit cards have the lowest cost pressure on turnover. Also from this point of view payment by credit card is the most expensive method, in spite of the fact that higher amounts are paid by credit card. There are a fewer number of payments by credit card involved per (e.g.) € 100 turnover value (2 payments) than that there will be by cash (8 payments) or by debit card (3 payments).

## 5.3 The marginal costs

A third possibility to assess efficiency differences is to look at the marginal costs only. The marginal costs equal the variable costs of a last added transaction of an average transaction value, assuming that for each payment method the fixed costs will only change in case of a substantial change of the number of transactions. In table 8 these marginal costs are presented assuming that for every payment method the last added transaction has a value of € 19.50 (this is the average transaction value for all CTM payments in the Netherlands in 2009). Also by this approach, debit card payments showed to be the most efficient payment method.

Table 8 Marginal costs by payment method (for transaction with a value of € 19.50)

<i>Payment method</i>	<i>Marginal costs</i>
Cash	€ 0.23
Debit card	€ 0.16
Credit card	€ 0.75

Source: EIM, 2012

Looking at all different approaches for comparing the cost of payment by payment method, we can conclude that payments by debit card have to be preferred over cash and credit card payments.

## 6 Development of costs

In this chapter we will discuss the development of costs during the period 2006-2009. As mentioned before, EIM also measured the payment costs in 2007 (concerning the year 2006), using the same cost model as used in the 2009 measurement. This makes it possible to make a comparison between the level and composition of the costs of payment in 2006 and 2009. At the end of this chapter we will also look forward, considering a scenario of 15% less cash transactions (in favour of debit card transactions) in 2012 compared to 2009.

### 6.1 2006-2009

Table 9 shows the total number of transactions and costs per payment method for the years 2006 and 2009. During this period, the total number of transactions has declined by 3%. Looking at the different payment methods, we see a decrease of cash transactions and an increase of debit and credit card transactions.

Total costs of cash, debit and credit card transactions are 3% lower in 2009 compared to 2006. The payment costs of cash have decreased by 22%. This is partly caused by a substantial lower number of cash transactions (decline of 10%). Furthermore, the front office costs are lowered, because of a small reduction in the average time of a cash transaction. Also the back office costs are lower in 2009 compared to 2006.

The increase in the costs of debit card payments (+ 20%) can be explained for the larger part by the increase in the number of debit card transactions (+ 22%). Total costs do not rise in the same proportion as the number of transactions, because some of the costs are fixed.

Finally, the costs of credit card payments have decreased by 9%. This is particularly the result of a lower average amount per transaction and a reduction in the tariffs for the use of credit cards, resulting in a lower contribution per transaction. The costs of credit card transactions depend to a great deal on the amount of the transaction, since the fee merchants have to pay to the credit card companies, often is a percentage of the transaction value.

It is important to note that not only a lower or higher amount of transactions has resulted in differences in costs between 2006 and 2009. Also changes within the cost components are responsible for lower/higher costs. For example the hourly wage (opportunity costs of time), the bank costs of acquiring cash and the bank deposits cost have increased during the period 2006-2009. On the other hand, processing costs of electronic payments and the costs of payment equipment have decreased.

Table 9 Total transactions and costs per payment method (cash, debit card and credit card), 2006-2009

# Transactions	2006 (x 1,000)	2009 (x 1,000)	2006-2009 (%)
Cash	4,104	3,680	-10%
Debit card	1,221	1,486	22%
Credit card	38	58	53%
Total these methods	5,363	5,224	-3%

Costs	2006 (x 1,000)	2009 (x 1,000)	2006-2009 (%)
Cash	€ 1,010	€ 792	-22%
Debit card	€ 257	€ 308	20%
Credit card	€ 120	€ 109	-9%
Total these methods	€ 1,387	€ 1,209	-13%

Source: EIM, 2012

## 6.2 2012

A major goal for the SBEB is to raise the share of debit card payments each year substantially. The SBEB formulated a target level for 2012 of 2.7 billion debit cards transactions. This implies that the number of debit card transactions should increase with 40% in the period 2009–2012. In order to realize this growth SBEB started or intensified various campaigns towards merchants and consumers.

The question is of course how the cost of payments will change if:

- the number of debit cards payments will increase with 40%;
- the total number of payments will not change;
- each new debit card payment will replace a (former) cash payment;
- as a result the number of cash payments will decline by 15%;
- the fixed costs of debit card payments and credit card payments will not change;
- there will be no further change in the number and costs of credit card payments.

We calculated the payment costs in 2012 for the sectors in the research for the research domain over 2009 (see 2.1). The results of this calculation are shown in tables 10 and 11, only for the use of cash and debit card<sup>12</sup>. The results show that the total costs of payment will decline by approximately 3%. Looking at these results the revenues for the merchants of the increase of debit card payments are not substantial in a financial way, but there are of course also revenues in terms of safety.

<sup>12</sup> We do not present the number and costs of credit cards payments since we assumed that these items will not change over the period 2009–2012.

Table 10 Payment costs in 2012 compared to 2009, assuming a 15% decline in cash payments, resulting in a 40% increase in debit card payments

	<i># Transactions</i> 2009 ( x 1 million)	<i># Transactions</i> 2012 ( x 1 million)	<i>Payment costs</i> 2009 ( x 1 million)	<i>Payment costs</i> 2012 ( x 1 million)	<i>change in</i> <i>costs</i> ( x 1 million)
Cash	3,707	3,093	€ 792	€ 638	-/- € 154
Debit card	1,486	2,100	€ 308	€ 427	+ € 119
Total	5,193	5,193	€1,100	€ 1,065	€ 35

Source: EIM, 2012

## 7 Conclusions

Contracted by the SBEB, EIM measured the costs of payments for consumer-to merchant transactions (CTM transactions) in the Netherlands for the year 2009 based on a cost model that has also been used for the measurement of these costs for 2006. EIM also predicted the cost for 2012 assuming that the number of debit card payments will increase with 40% and the number of cash payments will decline by 15%.

In 2009 the total number of payments (cash, debit card, credit card and other payment methods) was 6.4 million of which 66% were cash transactions, 27% debit card transactions, 1% credit card transactions and 6% other transactions. Referring to the total value of the payments, € 51 billion was paid by cash, €55 billion by debit card and € 2 billion by credit card. Payments by debit and credit card have on average a significantly higher value than cash payments.

The total costs of payment (for 85% percent of all CTM transactions) were in 2009 € 1,242 million (excluding other methods) of which 64% concerned cash payments, 25% debit card payments and 9% credit card payment. The costs of cash transactions are dominated by internal costs (80%), while the costs for credit card payments are dominated by external costs (83%). For debit cards, internal costs set 59% percent of the payment costs.

Payment by debit card, shows to be the most efficient payment method compared to cash and credit card when looking at the costs per transaction, the costs in percentages of the transaction value and the marginal costs.

During the period 2006–2009, total payment costs declined by 3%, in particular caused by a significant lower number of cash payments in 2009 compared to 2006. This illustrates a clear trend: cash payments are declining in favour of debit card payments. A further growth of the share and number of debit cards payments is foreseen for the coming years. The SBEB aims to increase the number of debit card payments in 2012 with 40% compared to 2009. If this will be realised, a further decline of the costs of payments with 3% is foreseen.