



Danmarks
Nationalbank

Costs of payments
in Denmark

COSTS @7 A2J > 6? EDIN DENMARK

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Explanation of symbols:

- Magnitude nil

0 Less than half of unit employed

• No applicable data or data irrelevant

...Data not available

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Preface

Danmarks Nationalbank has completed a survey of the economic costs of consumer payments in Denmark. The survey forms part of a European study coordinated by the European Central Bank, ECB. Once the results from other countries are available, it will be possible to compare them with the calculated costs from the Danish survey.

A survey of payment costs in Denmark was also among the recommendations in a 2010 report on domestic payment transfers, prepared by a working group comprising the most important stakeholders in the Danish payment infrastructure. The working group is in the process of identifying the scope for reducing execution times for these transfers.

The parties involved incur substantial payment costs, but the extent of these costs and their distribution on players have never previously been analysed in Denmark. This survey provides the first overall picture of the costs of the most common payment instruments in Denmark, which is a cornerstone in the continued work in this area.

A number of parties have supplied data for the survey. These include nine Danish banks (Danske Bank, Jyske Bank, Nordea Bank Danmark, Nørresundby Bank, the Danish Amalgamation of Cooperative Banks, Sparekassen Kronjylland, Sparekassen Sjælland, Sydbank and vestjysk-BANK), Nets, SEB Kort and DIBS as well as a large number of retailers and other payees. Danmarks Nationalbank wishes to thank everyone for participating in the survey.

Summary

BACKGROUND AND CONCLUSION

Danmarks Nationalbank has conducted a survey of the costs of typical payment methods at point of sale, at online merchants and for paying bills in Denmark. The survey forms part of a European study, coordinated by the European Central Bank, which will make it possible to compare costs for payments across Europe.

The main contribution of the survey is a calculation of the social costs of various types of payments in 2009. These costs refer to the total resource consumption of all parties involved – both those facilitating the execution of payments, in particular the banks, and the payers and payees, e.g. retailers.

The resource consumption comprises time spent on payment-related tasks, calculated as payroll costs, computer time, expenses for telecommunication, depreciation of relevant equipment, such as ATMs, cash registers and card terminals, as well as costs of materials for the production of banknotes, coins and payment cards, among other things.

The types of payments included in the survey are cash payments, payments with the national debit card, the Dankort, and international cards at point of sale and at online merchants as well as collection of payments via bank transfers and Betalingservice, the direct debit product in Denmark for consumer to business payments. Table 1 provides an overview of the number and value of these payments in 2009.

Main findings

The survey shows that there are considerable social costs linked to payments. For the payment methods covered by the survey, these costs totalled kr. 16.6 billion in 2009, corresponding to 1.0 per cent of the gross domestic product, GDP, cf. Table 2.

Broken down by types of payments, costs of payments at point of sale totalled just over kr. 9 billion. Costs per payment were lowest for Dankort payments at around kr. 3 per payment, while the social costs per cash payment amounted to just over kr. 7. Payments with international cards involved the highest costs per payment.

Costs related to online card payments totalled approximately kr. 300 million in 2009. The volume of these payments has risen sharply in recent years, but they still only account for a minor share of total card pay-

NUMBER AND VALUE OF PAYMENTS, 2009

Table 1

	Number (million)	Value (kr. billion)	Avg. value (kr.)
<i>Payments at point of sale</i>	1,633.5	419.7	257
Cash	786.3	150.5	191
Dankort	790.5	253.1	320
International debit cards	39.3	6.8	173
International credit cards	17.4	9.3	534
<i>Online card payments</i>	46.5	25.9	557
Dankort	38.3	21.9	572
International debit cards	4.3	1.2	279
International credit cards	3.9	2.8	718
<i>Other remote payments</i>	271.4	1,291.4	4,758
Online banking transfers	50.1	240.5	4,800
Other transfers	52.0	656.3	12,621
Betalingsservice	169.3	394.6	2,331

Note: The table only comprises payments from consumers to businesses, both of which must be resident in Denmark. International debit cards comprise Visa Electron and MasterCard Debit, while MasterCard, American Express and Diners Club are examples of international credit cards.

Source: Danmarks Nationalbank.

ments. Dankort payments also involved the lowest costs per payment in terms of online card payments.

Finally, costs for payments collected via bank transfers and Betalingsservice amounted to kr. 7.2 billion. Betalingsservice was the cheapest type of transfer in terms of social costs per payment, while other bank transfers, i.e. mainly transfers carried out at the counter at banks and post offices, were most expensive.

SOCIAL COSTS OF PAYMENTS IN DENMARK, 2009

Table 2

	Total (kr. billion)	Per payment (kr.)
<i>Payments at point of sale</i>	9.1	•
Cash	5.8	7.36
Dankort	2.5	3.15
International debit cards	0.5	11.89
International credit cards	0.4	21.17
<i>Online card payments</i>	0.3	•
Dankort	0.2	4.10
International debit cards	0.1	12.70
International credit cards	0.1	21.49
<i>Other remote payments</i>	7.2	•
Online banking transfers	1.8	36
Other transfers	2.9	57
Betalingsservice	2.5	15
<i>All payments</i>	16.6	•

Note: The social costs include household costs. See also the note for Table 1.

Source: Danmarks Nationalbank.

Advantages of a common infrastructure

For payment services, common solutions and products offer advantages. In Denmark, the banks have, for many years, cooperated on developing a common infrastructure for payments. Key elements are the Dankort and Betalingsservice, which all banks offer their customers.

The low costs for the Dankort according to the survey are due in particular to the large number of payments with this card. Given the existence of fixed costs, payment types with large number of payments will, all else being equal, involve low costs per payment.

The large number of Dankort payments is a result of network effects; a payer finds a payment instrument more attractive if many payees accept it – and vice versa. Thus, network effects promote the use of a given, widely used payment instrument – such as the Dankort.

For Betalingsservice, the low costs per payment also reflect the saved expenses for printing and sending out inpayment forms. Relative to other types of remote payments, the use of Betalingsservice is also less time-consuming than other types of transfers for all parties involved.

THE BANKS' COSTS

In connection with payments, the banks provide payment services. A card payment, for instance, involves two payment services when the payer's and the payee's respective banks book the amount on the accounts. Customers' depositing and withdrawal of cash are also payment services provided by the banks.

The banks' costs related to payment services for the payments comprised by this survey totalled almost kr. 4.4 billion in 2009, cf. Table 3. About half of the costs are attributable to cash, but the banks also incurred significant costs from card payments, bank transfers and Betalingsservice.

Cash handling is more labour-intensive than other payment services, which is the reason for the banks' considerable costs related to cash. This

Kr. million	Costs	Fee income	Float income	Net costs
Cash	2,144	373	0	1,771
Dankort	623	144	31	448
International debit cards	267	70	1	196
International credit cards	240	89	2	149
Bank transfers	715	390	109	216
Betalingsservice	398	399	35	- 36
All payment services	4,387	1,465	178	2,744

Source: Danmarks Nationalbank.

BANKS' COSTS AND WORKLOAD FOR SELECTED PAYMENT SERVICES

Table 4

	Workload	Costs per transaction (kr.)
Online banking transfers	Low	1.5
Betalingservice	Low	2.0
Dankort	Low	0.5
Withdrawal at ATM	Medium	4.5
Withdrawal at the counter	High	31.5
Deposit at the counter	High	43.5
Deposit via night safe	High	60.5

Note: For online banking transfers, Betalingservice and the Dankort, the table indicates the costs of transactions for which the payer is a customer of the bank. For withdrawal at ATM, the transaction implies that the bank's own customer withdraws cash from the bank's ATM. The indicator of the workload related to the payment services is based on a qualitative assessment.

Source: Danmarks Nationalbank.

appears from Table 4, showing the costs per transaction for selected payment services. Deposits and withdrawals involve the highest costs and are also considered to be most labour-intensive.

Banks charge fees for providing payment services. Nets charges a fee from payees for card payments and Betalingservice and passes on part of it to the banks. Furthermore, the banks earn an income from float, which are the banks' saved interest expenses in connection with payments.

From an economic perspective, it is appropriate if the banks charge fees matching the relative costs of the individual payment services. This encourages customers to opt for the payment services that involve the lowest costs for the banks and usually also for the economy overall.

In general, the banks charge the highest fees for payment services involving the highest costs. Overall, the banks' costs exceeded their fee income and income from float in 2009 regarding the payment services included in the survey. An exception was Betalingservice, for which the income and costs largely offset each other.

However, the banks generate other income related to payments that is not included in this survey. These are e.g. float income from businesses' bank transfers, income from cross-border payments as well as the interest expenses saved because the customers' money is deposited in a current account rather than a savings account earning a higher interest rate.

RETAILERS' AND OTHER PAYEES' COSTS

Retailers and other businesses incur costs from receiving payments in the form of e.g. wages for employees who perform payment tasks, depreciation of point of sale equipment and fees to payment service providers.

RETAILERS' AND OTHER PAYEES' PAYMENT COSTS, 2009

Table 5

Kr. million	At point of sale		Remote payments		All payments
	Cash	Payment cards	Payment cards (online)	Transfers	
Internal procedures	1,244.1	194.9	9.0	2,641.6	4,089.6
Payment time	525.3	589.0	•	•	1,114.3
Fees to service provider.....	205.3	313.9	152.6	1,578.0	2,249.8
Equipment at point of sale	205.4	379.9	•	•	585.3
Loss on cash	154.0	•	•	•	154.0
Telecommunication	•	95.3	6.7	•	102.0
Payment gateways	•	•	48.9	•	•
Print and sending	•	•	•	1,026.2	1,026.2
Other costs	49.8	48.6	17.6	114.7	230.7
Total	2,383.9	1,621.6	234.8	5,360.5	9,600.8

Source: Danmarks Nationalbank.

Moreover, they may have costs in connection with printing and sending out inpayment forms, preparing data files for payment collections via Betalingservice, etc.

Table 5 shows costs related to payments for retailers and other businesses in 2009. The table presents the payments broken down by cash and card payments at point of sale as well as online card payments and transfers based on sending out inpayment forms, etc. or Betalingservice.

Retailers' costs of cash and card payments at point of sale totalled just under kr. 2.4 billion and approximately kr. 1.6 billion, respectively. More than half of the costs of cash payments related to the time spent on internal procedures. This covers e.g. cashing up and counting and packaging of cash.

Another significant cost of cash payments was the payroll costs for cashiers for the time spent on executing a payment. This was also a significant cost in connection with card payments. Danmarks Nationalbank has conducted a study showing that the average payment time for both cash and card payments is around 15 seconds.

Other costs of both cash and card payments were expenses for point of sale equipment, i.e. cash registers, card terminals and security equipment, as well as fees to service providers, i.e. cash-in-transit companies, banks and card acquirers, including Nets. Moreover the retailers incurred losses attributable to cash differences.

Retailers' costs of receiving online card payments amounted to kr. 235 million in 2009. Almost two thirds of these costs covered fees to card acquirers. Measured per transaction, these fees exceed those for card payments at point of sale. However, online retailers may surcharge card fees on consumers, while this was not allowed for card payments at points of sale in 2009.

Another cost for online retailers was the expenses for providers of payment gateways, which fulfil the same purposes as card terminals at point of sale. On the other hand online retailers incur no payroll costs for cashiers for the payment time or expenses for cash registers and card terminals.

Businesses' costs of payment transfers totalled nearly kr. 5.4 billion in 2009. These transfers comprise both Betalingservice and payments received after sending out inpayment forms or as ordinary credit transfers, implying that the firm just sends an invoice and an account number.

Printing and sending out inpayment forms and invoices involve considerable costs for businesses. In 2009, these costs exceeded kr. 1 billion. Businesses that collect payments via Betalingservice save those costs, but have higher expenses for service providers, i.e. Nets.

Regardless of whether the businesses send out inpayment forms, etc. or use Betalingservice, they incur considerable costs for internal procedures. These comprise bookkeeping, invoicing, including preparation of data files for Nets in connection with Betalingservice, control of incoming payments and follow-up in case of non-payment.

HOUSEHOLD COSTS

Household costs of payments cover e.g. the time spent on activities concerning these payments, fees to banks and interest income lost on their cash holdings. On the other hand, they have income from float, i.e. the period of time from the execution of the payment until the money is actually debited the payer's account, in particular on credit card payments.

Table 6 shows household costs in 2009, broken down by the same types of payments as in Table 5 and by various relevant costs. As appears from the table, the time spent is by far the largest cost of payments for households. This applies to all payment methods in the survey.

HOUSEHOLD PAYMENT COSTS, 2009

Table 6

Kr. million	At point of sale		Remote payments		All payments
	Cash	Payment cards	Payment cards (online)	Transfers	
Time, cash withdrawal	1,082.8	•	•	•	1,082.8
Time, payment	247.6	263.2	61.5	1,660.3	2,232.6
Time, account statements, etc.	21.6	422.6	23.2	98.0	565.4
Fees to banks, etc.	153.1	200.6	25.5	301.0	680.2
Fees to shops	•	•	32.0	•	32.0
Interest loss on cash	18.4	•	•	•	18.4
Total	1,523.5	886.4	142.2	2,059.4	4,611.5

Source: Danmarks Nationalbank.

Household costs of cash payments totalled around kr. 1.5 billion in 2009. More than two thirds of this is attributable to time spent on cash withdrawals, while household costs of the payment time are calculated at just under kr. 250 million. The remaining costs were primarily fees for cash withdrawals.

For card payments at point of sale and online, household costs totalled approximately kr. 1 billion. Households especially spent time checking the payments in their account statements. Also, households pay fees to the card issuer as well as to online retailers for card payments.

Finally, household costs of other remote payments in 2009 are calculated at just over kr. 2 billion. Most of these costs covered time spent on online banking transfers and other transfers in particular. Households also paid significant fees for payments of inpayment forms at banks and post offices.

INTERNATIONAL COMPARISON

As stated previously, this survey is part of a large European study of payment costs coordinated by the European Central Bank, ECB. Once the results from the other countries are available, it will be possible to compare them with the results of this survey.

Several countries have previously conducted similar surveys. These countries include Norway, Sweden, the Netherlands and Belgium. These surveys differ from the survey in this report in several areas, but the calculated costs can still be compared.

In the surveys for the four countries, the payment costs at point of sale account for between 0.29 and 0.72 per cent of GDP. By this measure, costs are highest in the Netherlands and Belgium, which are also the countries where cash payments are most common in per capita terms.

The social costs per cash payment are higher in Denmark and Norway than in the other countries. This should be viewed in light of the modest number of cash payments in these two countries. In both Denmark and Norway, debit card payments are most widely used, and the costs per debit card payment are relatively low in both countries.

Norwegian and Danish banks offer their customers largely the same payment services. The banks' costs of these services are also largely the same in the two countries. However, for the Norwegian banks a larger share of the costs is covered by fees compared with the Danish banks.

Unlike the Danish survey, the Swedish and Dutch surveys include a breakdown by fixed and variable costs. This provides scope for supplementary analyses. Among the findings of both surveys are that debit card payments above a certain amount involve the lowest social costs.

Chapter 1 – Introduction

BACKGROUND

Each day, consumers in Denmark make a large number of payments relating to purchase of goods and services. These comprise payments at point of sale, i.e. at business premises, and remote payments, such as card payments for online transactions, as well as payment of bills, including regular transfers.

Execution of payments entails resource costs for the parties involved, that are payers, payees, banks, etc. These costs cover e.g. the time spent by the parties, expenses for relevant equipment such as cash registers and card terminals as well as costs of materials for production of coins and notes and payment cards.

The size of these costs and their distribution on various parties have never before been analysed in Denmark. However, such analyses have been conducted in other countries, where they have been highly useful in relation to considerations about changes in payment infrastructures, assessments of legislative amendments, etc.

In 2010, Danmarks Nationalbank therefore decided to carry out a similar survey of payment costs in Denmark. Moreover, it was decided to join a European study, which had been launched by the European Central Bank, ECB, so that the Danish results would be comparable to those of other European countries.

In addition, a survey of payment costs in Denmark was among the recommendations in a report on national payment transfers, which was published in 2010.¹ The report analysed possible solutions to shorten the execution times for these transfers and was prepared by a broadly composed working group including representatives from both banks and users of payment services as well as the central bank (chairman) and other public authorities.

DATA

As part of this survey, Danmarks Nationalbank has collected extensive data from various parties. Firstly, data was collected from nine Danish banks, covering about 70 per cent of the sector overall, counting both

¹ See Danmarks Nationalbank (2010a). In Danish only.

small and large banks. These banks are believed to be representative of the Danish banking sector and provide a true picture of the banks' costs.

The participating banks supplied detailed information about their costs relating to various payment services. Furthermore, data on the banks' income was collected as well as the number and value of transactions for these services. Finally, the banks reported a variety of supplementary information.

Secondly, Danmarks Nationalbank gathered data from retailers and other payees. After validation of these data, this gave rise to usable responses from 231 businesses covering different industries. In total, these firms had approx. 3,000 shops and an annual turnover of about kr. 160 billion.

The retailers provided information on e.g. the time spent on internal procedures relating to payments, expenses for equipment at the counter, loss on cash and expenses for telecommunication. Other payees reported their costs of printing and sending out payment forms and invoices.

Thirdly, Statistics Denmark carried out a survey of households' payment habits on behalf of Danmarks Nationalbank. During four weeks in September and October 2010, responses were collected from almost 1,300 consumers between the ages of 15 and 79 years, considered a representative sample of the population in this age span.

In the survey, consumers were asked about their use of cash over the past week with a view to calculating the total number of cash payments. Furthermore, they were asked to state the time spent on cash withdrawals, checking account statements and payments of bills via their on-line banking facility.

Moreover, information was collected from a number of important players in the Danish payment systems, including Nets, which is involved in all payment methods comprised by the survey except for cash payments. Moreover, a survey of payment times for cash and card payments in Denmark has been completed.

THE REPORT

This report presents the results of the survey, i.e. the social costs of a number of selected types of payment at point of sale and remote payments. The report mainly offers a factual presentation of the calculations and does not include recommended measures to promote specific payment methods.

Obviously, the results are subject to some uncertainty. This particularly applies to the costs of remote payments, estimated on the basis of more sparse data material than the other payment methods. Furthermore, as

this survey is the first of its kind in Denmark, the results cannot be compared with the results of earlier studies.

It should also be emphasised that the analysis of the collected data has not been completed with the publication of this report. In line with the European study, this survey only calculates the total costs and costs per payment. However, a breakdown by fixed and variable costs will provide supplementary information that may be useful in a policy context and further work on the data is therefore being carried out.

Moreover, a thorough comparison with other European countries cannot be performed yet. This will not be possible until the results of similar surveys from the other European countries are available. The report therefore only contains a brief comparison with the calculated costs from previous surveys in Norway, Sweden, the Netherlands and Belgium.

STRUCTURE

The report comprises seven chapters. Chapter 2 presents the purpose and scope of the survey. It specifies the types of payments covered and the contributing parties. It also explains which costs are included and excluded. Furthermore, the chapter discusses a number of advantages and drawbacks of the individual payment methods.

Chapter 3 reviews the banks' costs broken down by main areas and payment services. Banks provide payment services when they execute payments on behalf of customers or allow customers to withdraw or deposit cash. Furthermore, the banks' costs are compared with their income from payment services.

Chapter 4 is a description of the costs incurred by retailers and other businesses when receiving payments. They are broken down by payments at point of sale, online card payments and other remote payments. For payments at point of sale, the costs have also been distributed across industries.

Chapters 5 and 6 sum up the results from the previous two chapters with a view to calculating the social costs of payments at point of sale and remote payments, respectively. The costs for other relevant parties, such as Danmarks Nationalbank, card companies and households, are also included.

These two chapters also present the number and value of payments for the types of payments covered by the survey. This information is necessary for calculating the costs per payment and per krone paid for the individual payment methods. It is also used as a distribution key for a number of costs.

Finally, Chapter 7 compares the results from this survey with costs in the four countries mentioned above. Moreover, results from the Swedish and Dutch studies, based on a breakdown by fixed and variable costs, are presented showing that debit card payments above a certain amount involve the lowest costs.

Chapter 2 – Purpose and Scope

INTRODUCTION AND SUMMARY

This survey calculates the total costs of various types of payments from consumers to businesses in Denmark. The survey comprises cash payments, card payments at point of sale and for online purchases, online banking payments and other bank transfers, as well as payments via Betalingservice (direct debit).

Costs are calculated for banks, Nets, other card issuers and acquirers, cash-in-transit companies, providers of online payment solutions and Danmarks Nationalbank. Costs are also determined for retailers and other payees and for consumers in their capacity as payers.

The focus is on the total resource consumption of these parties, making up social costs. This does not include transfers to other parties, e.g. fees. Such costs are part of private net costs, which are also of importance having more of an impact on the parties choice of payment method.

No distinction is made between fixed and variable costs, partly due to the fact that such a breakdown is difficult to apply in practice. Instead, average costs are compared – a measure which, due to fixed costs, depends on the number of payments. Thus, widely used payment methods typically involve lower costs per payment because the fixed costs are distributed on a larger number of payments.

The survey excludes a number of costs that are difficult to quantify and have less of an impact on social costs. Examples include the time spent by consumers queuing at the point of sale to make their payments and consumers' costs of computers used for online banking transfers.

Also excluded is the loss of interest income for consumers and businesses when making and receiving payments through a current account rather than keeping the funds in a savings account that pays a higher rate of interest. This loss does not constitute a resource cost, but reflects a transfer from consumers and businesses to banks.

In addition to costs, an overall assessment of the various types of payment methods should also include other advantages and drawbacks for payers and payees. But as these are difficult to quantify, this survey includes only a discussion of some general pros and cons of each payment method.

PURPOSE

The purpose of the survey is to determine the social costs of a number of payment methods in Denmark. Social costs relate to the total resource consumption of all parties involved – both the facilitators of payments, including the banks, and the payers and payees.

The resource consumption related to payments comprises e.g. the time consumption of the parties, calculated as payroll costs. It also covers computer-time consumption, depreciation of ATMs, payment equipment at the counter and vehicles used to transport cash, as well as costs of materials used to produce cash and payment cards.

The social costs of a given payment method may be considered in relation to the number of payments, providing an estimate of the average costs of the type of payment in question. Alternatively, they may be divided by the overall value of payments, providing a measure of costs per krone paid.

PAYMENT TYPES

The survey calculates the costs of four types of payments at point of sale and six types of remote payments, cf. Box 2.1.

Payments at point of sale are cash payments and payments with the Dankort, as well as international debit and credit cards issued in Denmark. For the purposes of this survey, as opposed to the definition of so-called physical trading in Danish law, these payments also comprise self-service payments e.g. at petrol stations.

A debit card is a card that withdraws money immediately from the payer's account. In practice, only banks can issue debit cards as the card must be linked to a current account. A debit card may have an overdraft facility attached, e.g. in the form of an agreed credit line.

Credit card payments are debited after a specified period of time, typically once a month. In addition, the payer may have entered into a credit agreement with the card issuer under which part of the outstanding amount is not paid at the regular time of settlement, but is carried on as a loan, known as a revolving credit facility.

International cards are cards that may be used in Denmark and abroad, as they are issued under licence from a card company operating in many countries. Examples of international debit cards include Visa Electron and MasterCard Debit, while the most popular international credit cards in Denmark are MasterCard, American Express and Diners Club.

The Dankort is the national debit card in Denmark. In general, it can be used only in Denmark and the amount is usually withdrawn from the

PAYMENT METHODS INCLUDED IN THE SURVEY

Box 2.1

This survey determines the social costs of the following types of payments:

At point of sale

1. Cash payments
2. Dankort payments
3. Payments with international debit cards
4. Payments with international credit cards

Remote payments

5. Online Dankort payments
6. Online payments with international debit cards
7. Online payments with international credit cards
8. Online banking transfers
9. Other bank transfers
10. Betalingservice transfers (direct debit)

Moreover, all payments must be made by a consumer to a business. In addition both the payer and the payee must be resident in Denmark and the payment must be in Danish kroner.

payer's account on the day of the payment. However, in most cases, the Dankort is co-branded with Visa, entailing that it works as a Visa card for payments abroad and a Dankort for national payments.

International debit cards usually have real-time balance control to ensure that the payer cannot overdraw his account. This type of card is mainly issued for adolescents under the age of 18 and others who are not believed to be suited for holding a Dankort or a credit card, or who do not wish such a card.

Box 2.2 summarises the main characteristics of the various card types.

The *remote payments* included in the survey are payments for online purchases with the Dankort or international debit and credit cards issued

TYPES OF PAYMENT CARDS

Box 2.2

The survey distinguishes between three types of payment cards:

- *The Dankort*, the national debit card in Denmark. With debit cards, the money is withdrawn from the payer's account immediately after the payment. In most cases, the Dankort is a Visa/Dankort, which may be used abroad.
- *International debit cards* with real-time balance control, which are mostly issued to adolescents under the age of 18. Examples of these cards, which may be used both in Denmark and abroad, are Visa Electron and MasterCard Debit.
- *International credit cards* where the money is not withdrawn immediately, but typically once a month. Examples of these cards are MasterCard, American Express and Diners Club, which may be used both in Denmark and abroad.

in Denmark. Costs are also calculated for online banking transfers and other bank transfers and for payments via Betalingservice.

For bank transfers, the payer instructs his bank to make the payment. A bank transfer may be based on an inpayment form, setting out the details of the transfer. Today, a large number of bank transfers are performed using the payer's online bank; alternatively, transfers may be effected at the counter at the bank or the post office.

Betalingservice is the national direct debit scheme for regular transfers from consumers to businesses. This scheme, managed by Nets, is widely used. In the case of Betalingservice, being a direct debit product, the payment instruction is initiated by the payee.

The scope of the survey is limited to payments from consumers to businesses. Moreover, both the payer and the payee must be resident in Denmark and the payment must be in Danish kroner. In other words, cross-border payments by Danish citizens and non-residents' payments in Denmark are not included in the survey.

In practice, this delineation cannot be fully maintained for all payment methods. For example, Betalingservice is also used, to a lesser extent, for business-to-business payments that cannot be separated out. Similarly, many payment cards, especially credit cards, are company cards, which are also included in the survey.

PARTIES INCLUDED IN THE SURVEY

In principle, all parties involved in the payment chain should be included in the calculation of the social costs of payments. Box 2.3 provides an overview of the parties contributing to this survey.

Banks are the main payment service providers in Denmark. They settle payments on behalf of customers, handle cash deposits and withdrawals, issue payment cards and perform other related tasks, cf. Chapter 3. Banks participate in all payment methods included in this survey.

Another key participant is Nets, the result of a merger of PBS of Denmark and Nordito of Norway – which owned BBS, the Norwegian equivalent to PBS and the card company Teller. Nets is the primary provider of payment solutions in Denmark, involved in all payments included in the survey, except for cash payments.

Firstly, Nets is the largest acquirer of card payments in Denmark. An acquirer transmits card payments to the issuer and guarantees payments vis-à-vis the retailer. Nets is the sole acquirer of Dankort payments and, through its subsidiary Teller, the largest acquirer of international cards in Denmark.

PARTICIPANTS IN THE SURVEY

Box 2.3

As part of this survey, Danmarks Nationalbank collected cost data from a number of parties. They are shown in the table below, which also provides an overview of which parties are involved in which payments.

A number of card companies such as MasterCard, Visa, Euroline AB and Entercard Danmark have also contributed information to the survey in the form of data on the number and value of card payments in Denmark.

PARTIES PROVIDING COST DATA

Table 2.1

Participants	At point of sale				Remote payments					
	Cash	Dankort	International debit cards	International credit cards	Dankort	International debit cards	International credit cards	Online banking transfers	Other transfers	Betalings-service
Banks ¹	X	X	X	X	X	X	X	X	X	X
Nets ²		X	X	X	X	X	X	X	X	X
SEB Kort				X			X			
DIBS					X	X	X			
Cash-in-transit companies ³	X									
Danmarks Nationalbank	X									
Payees	X	X	X	X	X	X	X	X	X	X
Households	X	X	X	X	X	X	X	X	X	X

1 The following banks provided data for the survey: Danske Bank, Jyske Bank, Nordea, Norresundby Bank, the Danish Amalgamation of Cooperative Banks, Sparekassen Kronjylland, Sparekassen Sjælland, Sydbank and vestjysk BANK.

2 On behalf of payees, Nets issues paper-based inpayment forms to payers who have not signed up for Betalingservice and, in this connection, pays costs attributable to online banking transfer and other transfers.

3 The two cash-in-transit companies existing in 2009, Loomis and Dansk Værdihåndtering, did not provide data to the survey, but information about their costs was taken from published financial statements.

In addition to acquiring, Nets also provides card issuer services to Danish banks. Nets assists issuers with a number of functions, including handling transactions, sending out PINs, monitoring fraudulent use, etc. In Denmark, Nets provides card issuer services related to both the Dankort and international cards.

Moreover, as already mentioned, Nets is active in connection with Betalingservice. Nets is the scheme owner, enters into agreements with payees and undertakes the collection of payments. On behalf of payees, Nets also sends out inpayment forms to payers who have not signed up for Betalingservice.

In addition to banks, there are a few other issuers of international cards in Denmark, including SEB Kort, a branch of the Swedish company of the same name. In Denmark, SEB Kort is the issuer e.g. of MasterCard,

including Eurocard. SEB Kort also issues Diners Club cards and acquires Diners Club payments.

Other companies involved in payments which are covered by this survey are the two cash-in-transit companies existing in 2009, Loomis and Dansk Værdihåndtering. Cash-in-transit companies pack, sort and transport cash on behalf of banks and retailers, cf. Box 3.1.

A key player in online card payments is DIBS, offering payment solutions, or payment gateways, to provide information to the acquirer, e.g. Nets, about the payment made through a website. There are other providers of these solutions in Denmark, but DIBS is the largest one.

Finally, Danmarks Nationalbank has costs related to cash which should also be included in this survey. The central bank's responsibilities include issuing banknotes and coins, transport of cash to and from cash depots and shredding old banknotes, cf. Box 3.1.

This survey includes all relevant costs of the parties mentioned, but not the costs of e.g. manufacturers of payment equipment for shops such as cash registers, card terminals, safes, etc. Instead, the costs of these companies are included indirectly via retailer costs.

As far as payees are concerned, the survey covers retailers receiving payments at point of sale and online. Costs are also determined for businesses receiving remote payments but not for public authorities that also collect this type of payment.

Finally, costs have been calculated for payers, i.e. households. The calculation of these costs is subject to greater uncertainty than is the case for the other parties involved. Moreover, they mainly comprise household time consumption, which may not be regarded as a resource cost.

Whether other surveys include households costs differ. Thus, in order to facilitate comparisons with these surveys, this study calculates social costs both with and without household costs. This report looks at social costs both with and without household costs to facilitate comparison with the survey findings from other countries.

PRIVATE AND SOCIAL COSTS

A key concept in this type of survey is private costs, i.e. a party's total payment costs. The parties' resource costs, which add up to the social costs, account for some of these costs. In addition, private costs comprise transfer costs to other parties, e.g. fees.

A party's payment of fees to other parties may be referred to as external costs and the party's resource costs, i.e. contributions to social costs, as internal costs. The private costs of the party in question are the sum of external and internal costs.

For example, a retailer typically has internal costs in the form of wages to employees working at the counter counting, sorting and packaging cash and depositing the turnover in a bank night safe. The retailer's external costs include acquisition fees to Nets and costs payable to cash-in-transit companies.

Transfers received from other parties may be deducted from a party's private costs. This results in the party's private net costs. Given that total transfers paid equal total transfers received, social costs may therefore also be calculated as the sum of private net costs of all parties.

Knowing not just a party's contribution to social costs but also his private net costs is essential as decisions are made based on private net costs in combination with other advantages and drawbacks of individual payment methods.

AVERAGE AND MARGINAL COSTS

As already mentioned this survey calculates the total costs of various payment methods and the costs per payment and per krone paid. Costs, however, are not broken down by fixed and variable costs, which would enable the calculation of the costs of an additional payment, i.e. the marginal costs.

An analysis of marginal costs may provide useful information. For example based on such an analysis, an estimate of the savings to society of transferring a certain number of payments to a less expensive payment method can be calculated. It may also be deduced how social costs for various payment methods depend on the amount payable, cf. Chapter 7.

But this type of survey presupposes that assumptions are made about a number of factors, e.g. the time horizon of the analysis. Whether a cost is fixed or variable thus depends on the period considered. Moreover, some costs may be stepwise variable, meaning that they go up if the number of payments reaches a certain level, e.g. a capacity limit.

The interpretation of costs per payment for the various payment methods should take into consideration that payment services involve fixed costs. Therefore, the number of payments influences the calculated average costs. Viewed in isolation, if the number of payments increases, the costs per payment for that particular payment method are reduced.

In Denmark in 2009, the number of cash payments was roughly equal to the number of Dankort payments, cf. Chapter 5. Consequently, it is reasonable to compare the average costs of these two payment methods.

On the other hand, the number of payments with international cards was relatively low, which, other things being equal, translates into high average costs for these cards.

RELEVANT COSTS

The following provides an outline of the costs included in the survey. Also mentioned are a number of costs that, for various reasons, are not included, but which are generally assessed to have less of an impact on social costs.

For *banks*, all direct costs are included, i.e. costs that are unambiguously related to payment services. Moreover, this is also the case for the banks' general costs, e.g. payroll costs of staff functions and rent, allocated between payment services and other business segments according to distribution keys.

An exception is that the banks' marketing costs are not attributed to payment services, as the banks stated that they do not pay these costs to attract customers to the business segment. Reported data showed that, at any rate, these costs are relatively modest.

Furthermore, credit card payment costs do not include the banks' interest costs of revolving credit facilities and expenses related to other services that often accrue to credit card holders, e.g. insurance. The reason is that these services are regarded as supplementary services that do not relate to the actual payment.

As far as credit cards are concerned, the banks' losses on outstanding credit are also disregarded as the banks were unable to quantify this loss. In principle, only the loss on the credit that is settled normally should have been included. Expectedly, a significant portion of the banks' credit card losses is attributable to revolving credit.

For *retailers and other payees*, only direct costs are included, reflecting that receiving payments accounts only for a small part of the overall activities of these businesses. Hence, the general costs to be allocated to payments would be relatively modest.

Also disregarded is the loss of interest income for payees and *households* by making and receiving payments through a current account rather than keeping the funds in a savings account that pays a higher rate of interest. This loss is not a social cost, but rather a transfer from customers to banks.

The payment time, i.e. the period elapsing from the customer is notified of the total amount payable until the payment is completed, represents a cost for both payees and households. This cost is included in the survey without taking into account that the parties may use this time for other purposes.

The calculation of household costs related to the payment time at point of sale does not include the time spent by customers waiting in line when the payment is made. To include this cost would require an estimate of the average number of customers waiting in line.

Finally, a number of overall costs are disregarded, including depreciation of bridges and roads that are required to transport cash and household costs of computers, etc., used in online banking transfers. The share of these costs to be allocated to payments would be very modest and the calculations uncertain.

ADVANTAGES AND DRAWBACKS

This section outlines various pros and cons of the payment methods included in the survey.¹ As already mentioned, the advantages and drawbacks should also be included in an overall assessment of the individual payment methods – although in practice they are difficult to quantify and vary from person to person and from payment situation to payment situation.

In addition to providing an asset for saving purposes, cash offers several advantages in terms of payments *at point of sale*. One advantage is that cash is almost universally accepted. This is underpinned by the statutory requirement that shops accepting card payments must not reject cash payments, cf. Section 56 of the Danish Payment Services Act.

Another advantage to cash payments is that they are settled immediately upon receipt, while e.g. Dankort payments have a settlement time of at least one day, entailing a credit risk. Retailers are usually guaranteed payments up to kr. 4,000, but bear the risk of amounts exceeding this limit.

Some consumers also use cash as a simple budget management tool. If a consumer makes cash payments only and withdraws a certain amount of cash at the beginning of a month or week, his remaining cash holding provides a quick and easy overview of his disposable amount.

On the other hand, if a consumer wants to track his payments for budgetary reasons it is inherently more difficult with respect to cash payments as they do not appear on the account statement. But registration is not an unambiguous advantage, as some consumers may wish that certain payments are known only to them.

Possible drawbacks to cash payments and carrying cash are a heightened risk of being mugged and robbed. Counterfeit banknotes also pose

¹ See also Kaas Jacobsen and Nielsen (2011) for a description of the perceived advantages and disadvantages of various payment methods in Denmark.

a potential risk of loss but in Denmark this risk is negligible as the number of counterfeit banknotes is very limited.

Payment cards are accepted by fewer retailers than cash, but are still widely used. This is especially true of the Dankort, which is accepted by close to 90,000 retailers. Technical problems may incidentally prevent the use of payment cards but general system failures are very rare in Denmark.

International credit cards sometimes offer payers special advantages, e.g. insurance and discounts. These cards also provide additional spending opportunities in relation to, say, the Dankort both on account of the attached credit facility and because these cards have a higher maximum abroad than the Visa/Dankort.

Payment cards, as opposed to cash, can also be used for *online purchases*. In addition, compared with other online payment methods, card payments have the advantage of better refund options and rights for the payer if ordered goods are not delivered or are damaged upon delivery.

As far as *other types of remote payments* are concerned, the direct debit scheme Betalingsservice also offers some advantages. For the payer, the main advantage is that he does not have to remember his regular payments once they have been registered for Betalingsservice. Moreover, this scheme has a refund option if a request for refund is made by the 7th calendar day of the month.

For payees, Betalingsservice entails e.g. improved liquidity management in relation to other types of payment collection, since, as opposed to collection using inpayment forms, they know when they will receive the payments. Betalingsservice also provides for more loyal customers as consumers who have signed up for Betalingsservice often carry on the agreements registered without further considerations.

Chapter 3 – The Banks' Costs

INTRODUCTION AND SUMMARY

In connection with payments, banks provide payment services. For example, a card payment or Betalingsservice (direct debit) transaction involves two payment services when the payer's and payee's banks transfer the amount between the respective accounts. Deposits and withdrawals of cash are also payment services.

The banks' costs of providing services for the payments comprised by this survey amounted to almost kr. 4.4 billion in 2009. A large share of these costs were related to cash, but there were also considerable costs linked to card payments, bank transfers and Betalingsservice.

A comparison of the banks' costs per transaction shows that payment services which require a lot of working time entail the greatest costs. This applies first and foremost to deposits and withdrawals of cash at branch counters and deposits via night safes.

Conversely, the costs of cash withdrawals at ATMs, card payments, online banking transfers and Betalingsservice transactions are relatively low. This is because these services involve a high degree of automation and the fixed costs are distributed on a large number of transactions.

Nevertheless, the overall picture shows that payment services are costly for the banks. Only a small part of these costs are covered by way of fees from customers and float income. However, banks have other relevant sources of income that are not included in the survey.

DATA COLLECTION

As part of the survey of payment costs in Denmark, Danmarks Nationalbank gathered data from nine banks¹, including both nationwide and local banks, that constitute a representative sample of the Danish banking sector. Together these banks covered more than 70 per cent of the sector overall, measured by balance-sheet total.

Data supplied by the banks included information about the costs of and income from services related to the payments included in the survey. The banks provide payment services when they transfer funds be-

¹ Danske Bank, Jyske Bank, Nordea Bank Danmark, Nørresundby Bank, the Danish Amalgamation of Cooperative Banks, Sparekassen Kronjylland, Sparekassen Sjælland, Sydbank and vestjyskBANK.

tween customer accounts in connection with payments at point of sale and remote payments, or when customers deposit and withdraw cash.

To ease the task of reporting the necessary data and filling out the questionnaires, the banks were given a choice of two methods. Most of the banks chose the same method. Moreover, the banks were given assistance for reusing data supplied for other surveys of costs within the various main areas, primarily payment cards.¹

COSTS BROKEN DOWN BY MAIN AREAS

The total costs incurred by the banking sector for providing services related to the payments comprised by the survey amounted to almost kr. 4.4 billion in 2009. Approximately half of the costs was due to handling cash, but the banks also had substantial costs in connection with card payments, bank transfers and direct debiting, i.e. Betalingservice, cf. Chart 3.1.

Cash

The considerable costs for the banks of providing cash services mainly reflect the amount of manual work involved in handling cash. For example, cash needs to be counted, sorted, packed, transported to and from branches and filled into ATMs. Furthermore, banks also spend time on customers who deposit and withdraw cash at branch counters.

Broken down by activities, *processing of deposits* and *processing of withdrawals* account for the largest share of the banks' cash-related costs, cf. Chart 3.2.

The banks' costs tied to deposits amounted to kr. 660 million, equally distributed on deposits at the counter and via night safes, cf. Chart 3.3. The number of deposits at branch counters exceeded the number of night safe deposits, but the latter were of greater value. Both types of deposit involve payroll costs for employees counting and sorting the cash and registering the deposits.

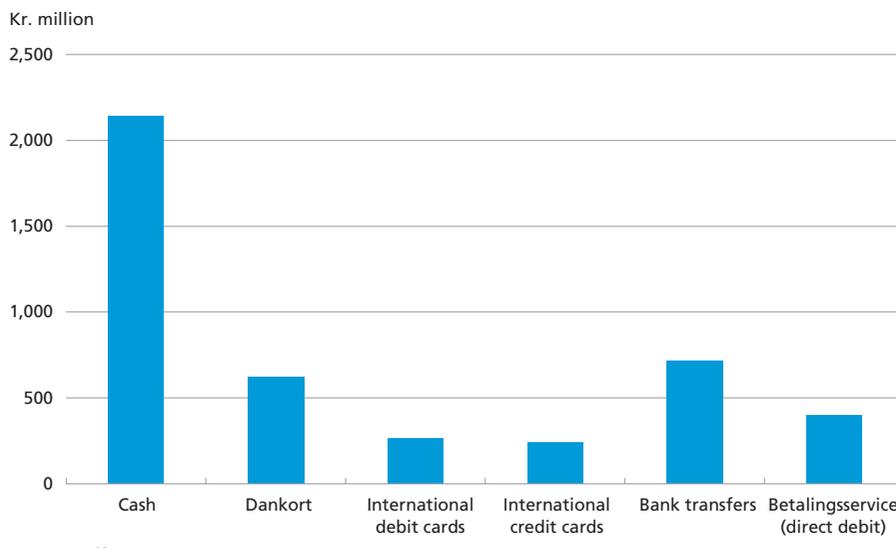
The banks' costs of cash withdrawals were kr. 818 million. Half of this amount was attributable to branch counter transactions, which accounted for only 13 per cent of all withdrawals, cf. Chart 3.4. Withdrawals are mainly made at ATMs. Branch counter transactions are more costly due to the time employees have to spend servicing customers.

Costs of *collection and transport* amounted to kr. 318 million. These activities comprise e.g. the banks' collection of cash from retailers and

¹ The Danish version of the report contains three Appendices. In Appendix 1 data collection from the banks and the calculation of their costs are elaborated.

THE BANKS' COSTS OF PAYMENT SERVICES BROKEN DOWN BY MAIN AREAS, 2009

Chart 3.1

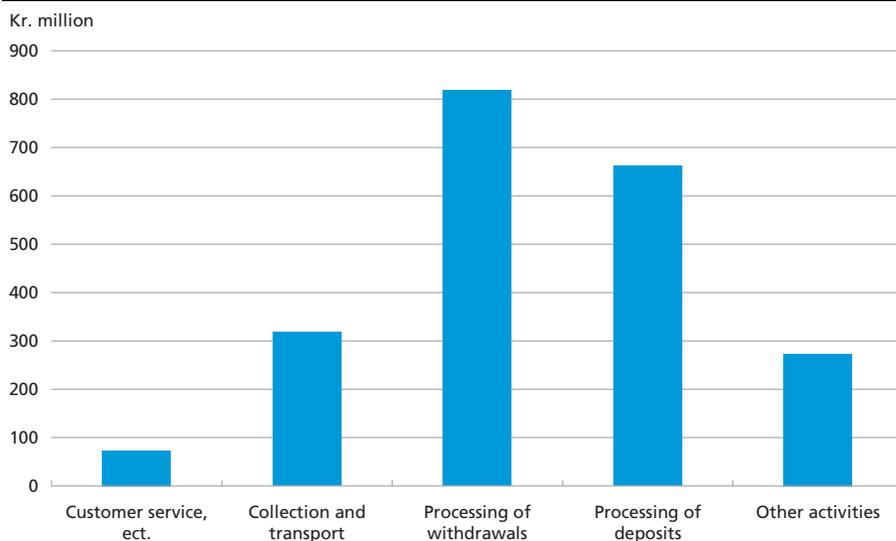


Note: The costs of bank transfers include transfers at post offices and transfers to other private individuals.
Source: Danmarks Nationalbank.

transport to and from cash depots, bank branches, ATMs and Danmarks Nationalbank. The banks' costs of collection and transport also include the banks' payments for services supplied by cash-in-transit companies.

THE BANKS' CASH-RELATED COSTS BROKEN DOWN BY ACTIVITIES, 2009

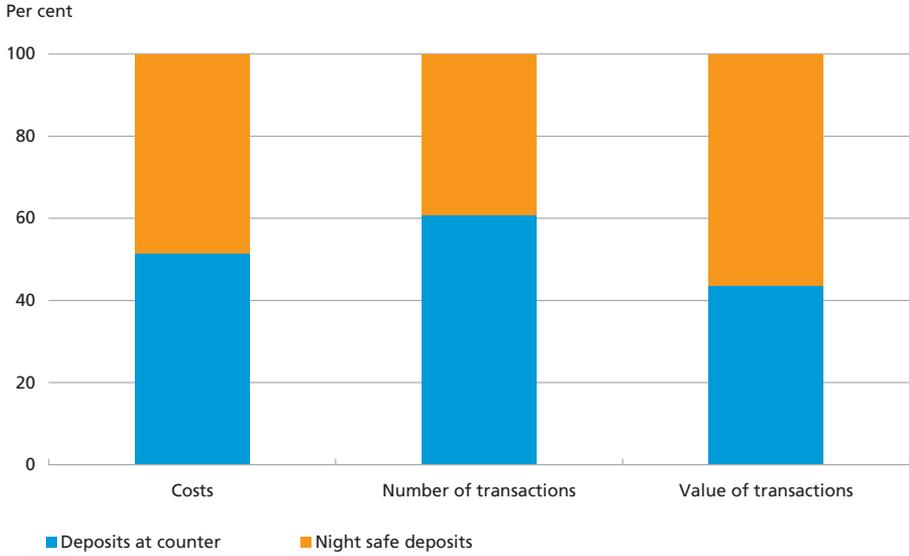
Chart 3.2



Note: Processing of withdrawals and deposits includes not only costs of branch counter transactions, but also costs of ATM withdrawals and night safe deposits.
Source: Danmarks Nationalbank.

DEPOSIT TYPES – COSTS AND TRANSACTIONS, 2009

Chart 3.3



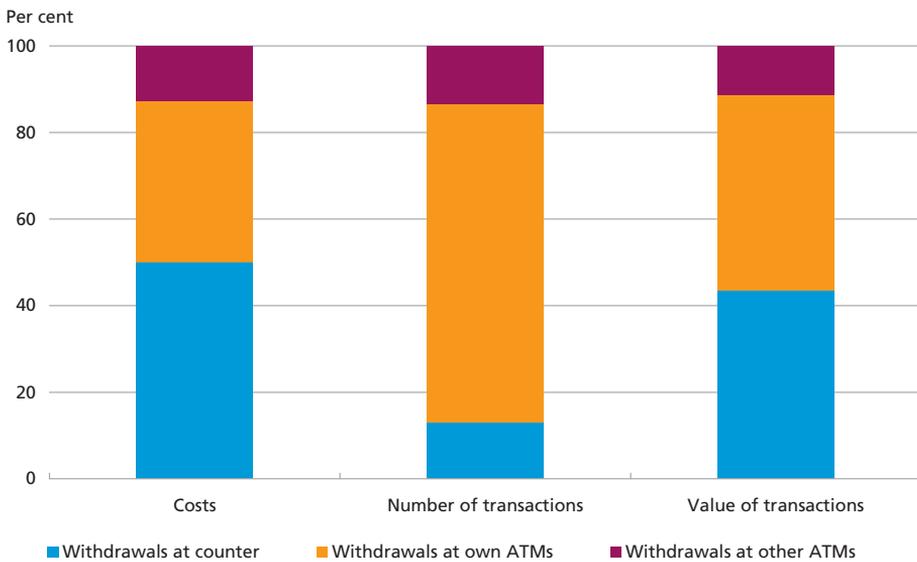
Source: Danmarks Nationalbank.

The task of ensuring the distribution of cash in Denmark is shared between Danmarks Nationalbank, the banks and the cash-in-transit companies, cf. Box 3.1.

Other activities in Chart 3.2 include the banks' compliance with rules to prevent money laundering and financing of terrorism. Under these

WITHDRAWAL TYPES – COSTS AND TRANSACTIONS, 2009

Chart 3.4



Source: Danmarks Nationalbank.

CASH DISTRIBUTION IN DENMARK

Box 3.1

Danmarks Nationalbank holds the overall responsibility for cash distribution in Denmark and must ensure that there is sufficient cash which can be put into circulation. The practical tasks relating to cash distribution are undertaken by Danmarks Nationalbank, banks and cash-in-transit companies.

Distribution of cash currently takes place via a number of cash depots owned by the banks and supplied with cash by Danmarks Nationalbank. Via these depots, the banks are supplied with cash, and excess cash and worn banknotes are returned to the cash depots for dispatch to Danmarks Nationalbank. Danmarks Nationalbank checks the worn banknotes for authenticity before they are shredded and incinerated.

Transport of cash between the cash depots and the banks is undertaken by banks, which also supply local retailers with cash. Such tasks may also be performed by cash-in-transit companies, which also collect cash from retailers and help to pack and sort cash on behalf of banks.

Following several large robberies against cash depots, a working group with representatives from Danmarks Nationalbank and the banks in 2009 presented various proposals for increasing security in connection with cash distribution in Denmark. These proposals were adopted and are now being implemented.

The restructuring of the cash distribution system will ultimately lead to fewer cash depots in Denmark. Moreover, a common security standard has been introduced and should be met by all parties involved in cash distribution in Denmark from December 2013. The standard has been prepared under the auspices of Danish Standards.

In addition, the banks and Danmarks Nationalbank have set up a joint cash-in-transit company, Bankernes Kontantservice, BKS. This company is to operate on an equal footing with other cash-in-transit companies. For example, it is up to the individual bank whether it wishes to use BKS or another cash-in-transit company if it does not undertake certain cash distribution tasks itself.

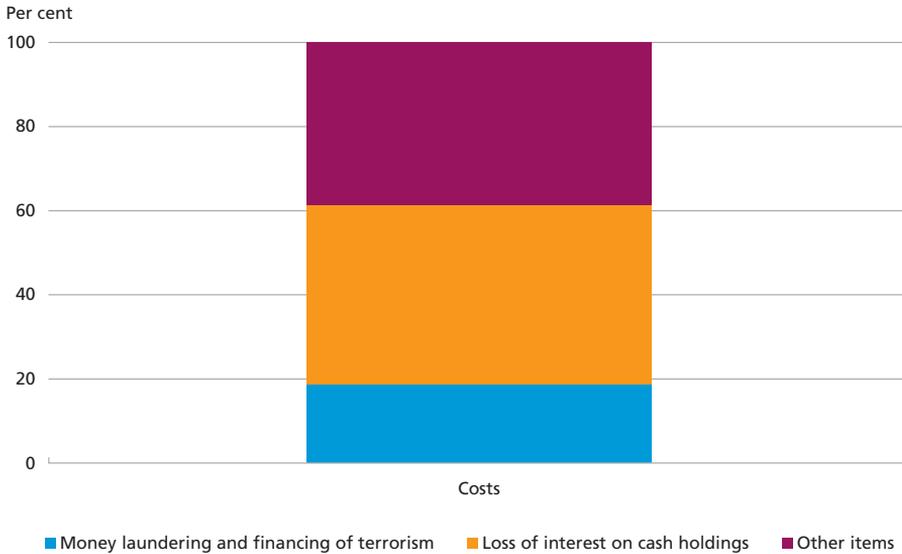
rules the banks must notify the authorities of unusual transactions. For cash services, the costs of those duties totalled kr. 51 million in 2009, corresponding to 19 per cent of the banks' total costs of *other activities*, cf. Chart 3.5.

This item also includes the banks' costs due to robberies, etc. and loss of interest from holding cash. The latter, which can be seen as income for Danmarks Nationalbank, cf. Chapter 5, totalled kr. 116 million in 2009, calculated using the average deposit rate at Danmarks Nationalbank in 2009.

Finally, the banks' costs of *customer service*, etc. related to cash have been estimated at kr. 73 million. This includes a share of general costs, such as costs of setting up new customers and for updating customer data. Moreover, it includes costs, primarily payroll costs, for replying to customer enquiries and for sending out customer information.

THE BANKS' COSTS OF *OTHER ACTIVITIES* BROKEN DOWN BY SUB-ITEMS

Chart 3.5



Note: Other items include e.g. the banks' losses in connection with robberies.

Source: Danmarks Nationalbank.

Dankort

The banks' costs related to the Dankort were kr. 623 million in 2009. The banks issue the Dankort and have costs of producing, sending out and activating cards. In addition, they enter transactions to customer accounts. The acquirer of the Dankort, i.e. the company which guarantees payment to retailers, etc., is Nets, which is also the formal owner of the card scheme.

In practice, when a Dankort transaction is settled, it is initially transmitted by Nets to the cardholder's bank. Usually the amount is debited to the cardholder's account on the same day, or the next banking day if it is a transaction made during the weekend. The following night, funds are exchanged between the banks of the cardholder and the retailer, and the next day the amount is credited to the retailer's account.

The banks' costs of the Dankort have been calculated in other contexts, such as the latest review of the annual fee imposed on retailers for accepting the Dankort, cf. Box 3.2. In this connection, the banks' total costs of operating and developing the Dankort, excluding payments for services supplied by Nets, were calculated at kr. 412 million in 2008, while Nets' costs were kr. 205 million.

Broken down by activities, *customer service, etc.* accounted for 42 per cent of the banks' costs of Dankort payments, cf. Chart 3.6. The reason why this item is considerably larger than the equivalent costs relating to cash is that the banks receive far more customer enquiries about the

SURVEY OF COSTS OF THE DANKORT SYSTEM

Box 3.2

An amendment to the rules for financing the Dankort in 2005 entailed that retailers would in future pay the banks a fixed annual fee for receiving the Dankort in physical payment transactions, i.e. when both the customer and the retailer are present. The total amount initially constituted around 25 per cent and from 1 January 2010 half of the banks' costs of operating the Dankort system.

To obtain a basis for the most recent revision of the annual subscription fee, the Danish Competition and Consumer Authority in 2009 conducted a survey of the banks' and Nets' Dankort-related costs in 2008. The survey was based on a questionnaire distributed to selected banks jointly accounting for around 80 per cent of all Dankort payments in Denmark.

The survey showed that the total costs of operating the Dankort system were kr. 617 million, of which kr. 412 million related to the banks and kr. 205 million to Nets. The survey solely comprised the banks' costs of physical Dankort transactions.

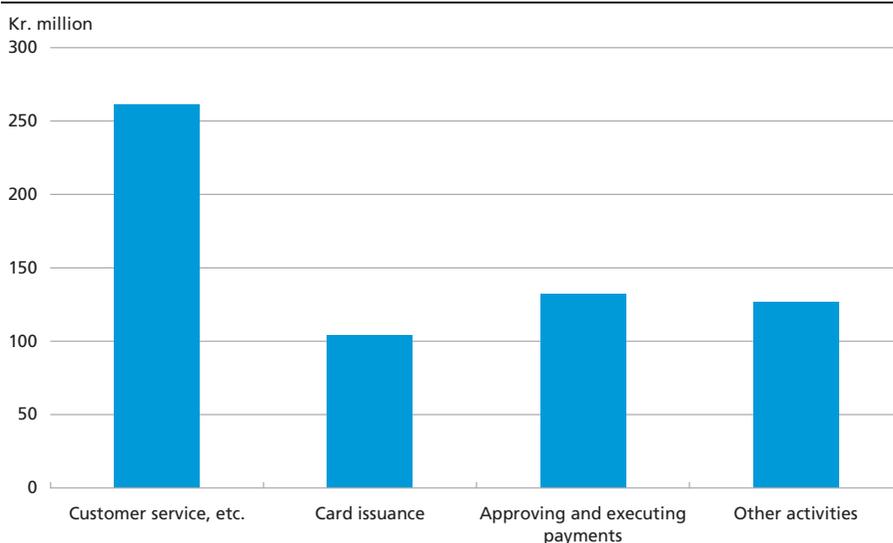
In future, the banks and Nets will examine the costs of the Dankort biennially.

Dankort, including requests for refund of specific payments, which entails payroll costs for the banks.

The banks' costs of issuing the Dankort have been calculated at kr. 104 million, cf. Chart 3.6. These include costs for producing cards, sending out cards and PINs and activating cards. Many banks have chosen to out-source these tasks to Nets, so for them such costs are mainly payments to Nets for the services, known as card issuer services.

THE BANKS' DANKORT-RELATED COSTS BROKEN DOWN BY ACTIVITIES, 2009

Chart 3.6



Source: Danmarks Nationalbank.

The banks' costs for approving and executing payments accounted for around 20 per cent of their total Dankort costs. These costs include costs tied to the approval of payment orders, transaction fees to Nets and other costs of executing the payments, including booking transactions on customer accounts.

In addition, the banks have various other costs related to Dankort payments, e.g. for preparing and updating cardholder rules and procedures. In Chart 3.6, these are included in "other activities", which also include the infrastructure subscription payable by the banks to Nets for participation in the clearing of payments made by the banks' customers.

International payment cards

The international payment cards are owned by companies operating in most countries worldwide. These companies grant licences authorising financial institutions to issue and acquire cards bearing the logo in question, subject to a given set of rules. The financial institutions pay a licence fee for this right. In addition, the international card companies typically operate with transaction-based charges.

The international cards issued by Danish banks are primarily the debit cards Visa Electron and MasterCard Debit and the credit cards MasterCard and American Express. The banks also enter payments to retailers' accounts, but, as is the case with the Dankort, they are not the acquirers of these cards, a task mainly undertaken by Nets in 2009.

The banks' total costs of international cards were kr. 507 million in 2009. As with the Dankort, a large part of these costs were attributable to *customer service, etc.*, cf. Chart 3.7. Besides this, the banks had costs for issuing the cards. The banks' costs of licence agreements with international card companies and other services provided by these companies were kr. 37 million.

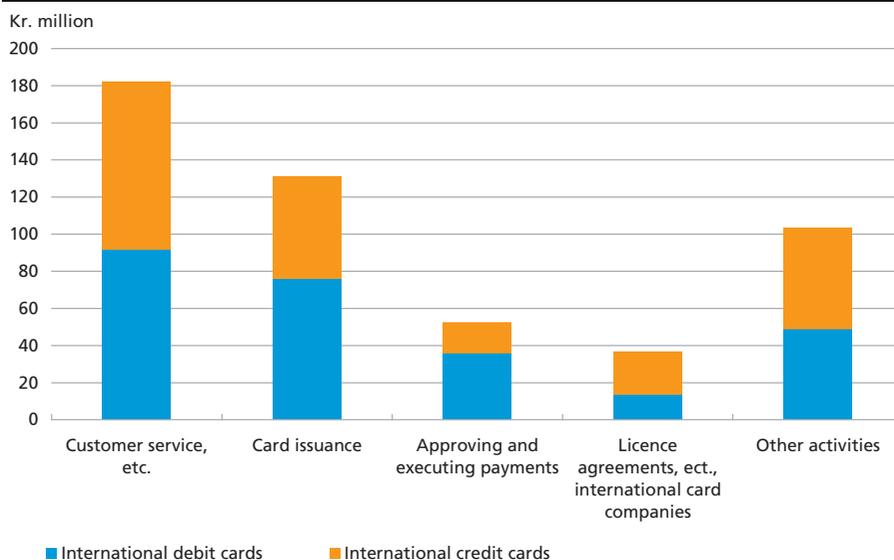
In Chart 3.7, the costs have been broken down by international debit and credit cards. For most activities, the costs are distributed more or less equally on the two card types.

One difference between the two card types is that credit cards involve costs of credit risk assessment of the cardholder and interest costs on the credit granted. These costs are included under *other activities* and were kr. 20 million in 2009. Costs of insurance and similar services typically linked to credit cards and interest costs on revolving credit facilities have not been included in Chart 3.7.

The international debit cards have an embedded automatic real-time balance control, which is why no credit assessment is required. On the other hand, the costs of approving and executing payments are slightly higher for these cards than for credit cards. Overall, the banks' costs of

THE BANKS' COSTS OF INTERNATIONAL PAYMENT CARDS BROKEN DOWN BY ACTIVITIES, 2009

Chart 3.7



Source: Danmarks Nationalbank.

international debit and credit cards were kr. 267 million and kr. 240 million, respectively.

Bank transfers

In 2009, the banks' costs of bank transfers via online banking or transactions at the counter at a branch or post office amounted to kr. 715 million. Branch counter transfers are labour intensive and hence entail payroll costs for the banks. Online banking transfers are automated and therefore less labour intensive, but the system-related costs are higher.

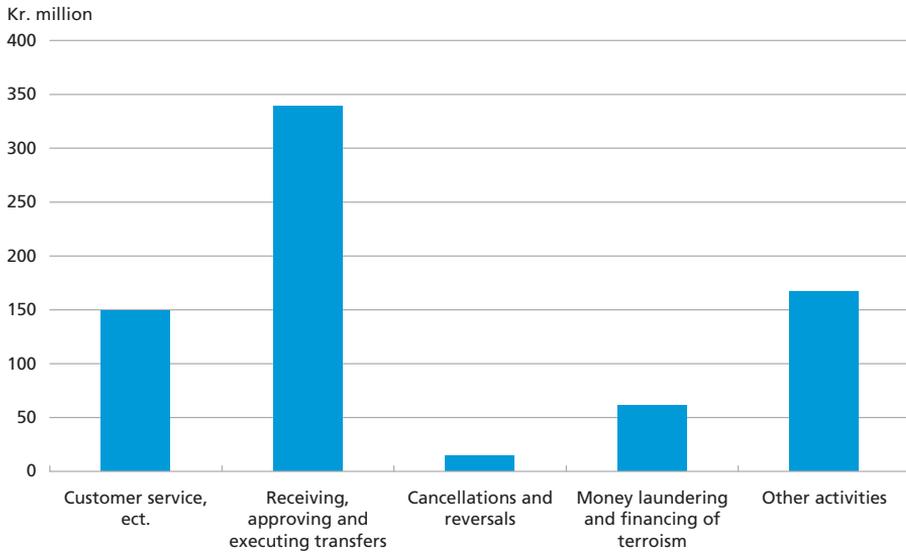
Overall, the sector's highest costs relate to *receiving, approving and executing transfers*, cf. Chart 3.8. These activities cover the costs of receiving transfer orders at the counter or via online banking and approving the execution of such orders. Moreover, they include the costs of subsequently entering outgoing and incoming transfers.

Bank transfers also entail significant customer service costs, while the banks have limited costs in connection with the processing of cancelled or reversed bank transfers. This is because the reversal ratio is low for bank transfers compared with e.g. Betalingsservice, for which it is a key characteristic of the product that payments already executed can be reversed at the customer's request, cf. below.

In addition, the banks' costs of compliance with the rules against money laundering and financing of terrorism for bank transfers amounted to just above kr. 50 million in 2009 – more or less the same as for cash ser-

THE BANKS' COSTS OF BANK TRANSFERS BROKEN DOWN BY ACTIVITIES, 2009

Chart 3.8



Note: See note to Chart 3.1.
Source: Danmarks Nationalbank.

vices. Box 3.3 provides an estimate of the banks' total costs of compliance with legislation on payment services, including the Danish Payment Services Act.

The banks' costs of other activities mainly include system development and maintenance costs related to online banking. Furthermore, this item covers the banks' costs of preparing the NemID log-on system¹, which have been broken down by Dankort, Betalingsservice and bank transfers.

Betalingservice

The banks' costs of Betalingsservice were just under kr. 400 million in 2009. Betalingsservice is used by more than 95 per cent of Danish households, mainly in connection with regular transfers such as interest on and amortisation of mortgage loans, rent, gas, water and heating bills and newspaper subscriptions, etc.

The banks' costs of Betalingsservice are mainly linked to *customer service, etc.* and *concluding and administering payment agreements with debtors*, i.e. the payers, cf. Chart 3.9. According to the banks, both activities involve considerable work at the branches. As with the Dankort, agreements with creditors, i.e. the payees, are concluded by Nets.

¹ NemID is a digital signature for one time login to public and private services on the internet.

THE BANKS' COSTS OF COMPLIANCE WITH LEGISLATION ON PAYMENT SERVICES

Box 3.3

The banks incur costs for adjustments to comply with legislation on payment services. For example, they must observe rules to prevent money laundering and financing of terrorism, as well as the Danish Payment Services Act. The latter implements the Payment Services Directive, which aims to harmonise rules for payment services in Europe.

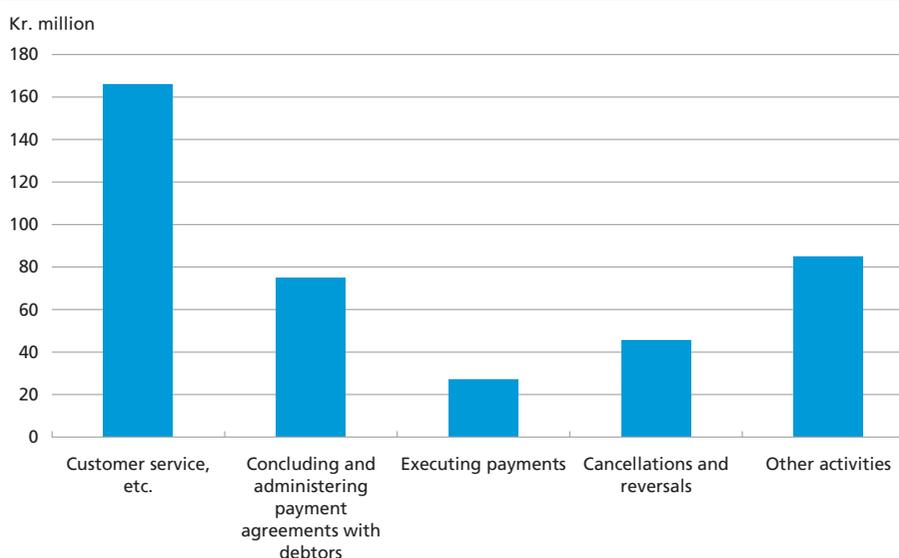
The banks' aggregate costs of compliance with the rules on money laundering and financing of terrorism amounted to kr. 113 million in 2009. The costs, which have been broken down by cash services and bank transfers in this survey, are attributable to the banks' monitoring and following-up of transactions which arouse suspicion of money laundering or financing of terrorism.

The banks' aggregate costs of compliance with the Payment Services Act also amounted to approximately kr. 100 million. Most of these costs were borne in 2009. In connection with the commencement of the Act, the banks had to adapt their systems and procedures. To this should be added costs of distribution of information, including new customers rules, etc.

The actual execution of a Betalingservice payment also entails costs for the banks, primarily in connection with entry of the transaction to the customer accounts. In addition, there are costs related to cancellation and, in particular, reversal of payments. This is because the product allows payments to be rejected even though they have already been settled.

THE BANKS' COSTS OF BETALINGSSERVICE BROKEN DOWN BY ACTIVITIES, 2009

Chart 3.9



Source: Danmarks Nationalbank.

Furthermore, the banks have costs for Betalingservice that are included under *other activities* in Chart 3.9. These include a share of the above-mentioned infrastructure subscription that the banks pay to Nets for participation in the clearing of payments. Moreover, this activity also comprises system development and maintenance costs.

COSTS BROKEN DOWN BY PAYMENT SERVICES

In the following, the banks' costs per transaction are compared for selected payment services. These costs are calculated as the total costs attributable to a given payment service divided by the number of transactions and are a measure of the banks' costs of the individual services.

Since the banks have considerable fixed costs of providing payment services, the cost per transaction will, viewed in isolation, be relatively low for payment services with many transactions. An alternative measure is the cost per krone settled, which differs from the cost per transaction if the average value per transaction varies.

Table 3.1 shows the average costs per transaction for the individual payment services for the nine banks participating in the survey. The costs have been calculated as a weighted average of the individual banks' costs per transaction. For each payment service, the costs have been rounded to the nearest kr. 0.50.

THE BANKS' COSTS PER TRANSACTION AND PER KRONE SETTLED FOR
SELECTED PAYMENT SERVICES, 2009

Table 3.1

Payment services	Costs per transaction, kroner	Costs per krone settled, øre	
Bank transfers	Online banking	1.5	0.91
	Other bank transfers	2.50	0.04
Direct debit	Betalingservice	2.00	0.08
Payment cards	Dankort	0.50	0.23
	International debit cards	4.50	1.62
	International credit cards	20.00	2.84
Deposits	At the counter	43.50	0.41
	Night safe, etc.	60.50	0.32
Withdrawals	At the counter/own customer	31.50	0.55
	Own ATM/own customer	4.50	0.42
	Own ATM/other customer	5.00	0.58
	Other ATM/own customer	7.50	0.55

Note: For bank transfers, Betalingservice and payment cards, transactions are those where the bank is providing service to the payer.

Source: Danmarks Nationalbank.

For payment services such as ATM cash withdrawals, card payments, on-line banking transfers and Betalingsservice the costs per transaction are relatively low. This is because these services require little work and the system-related costs and other costs, e.g. for production of cards and depreciation of ATMs, are relatively small when distributed on the large number of transactions.

In contrast, cash services such as deposits at the counter and via night safes and withdrawals at the counter entail considerable costs per transaction. The primary reason is that these services are very labour intensive and hence involve significant payroll costs for the banks. In addition, the fixed costs are distributed on a relatively small number of transactions.

Payments by credit card involve higher costs per transaction than other card payments. This reflects the costs of performing credit assessments of customers and interest costs on the credit granted, as well as the relatively low number of credit card transactions. Like Chart 3.7, Table 3.1 includes neither costs of insurance and similar services typically linked to credit cards nor interest costs on revolving credit facilities.

Table 3.1 also states the costs in øre (kr. 0.01) per krone settled for selected payment services. Unlike the costs per transaction, the costs per krone settled are higher for online banking transfers than for other bank transfers. The reason is that the value of online transfers is typically lower than the value of other transfers, including branch counter transfers.

For other payment services, calculating the costs per krone settled also modifies the conclusions. This applies to international cards, for which the costs of credit cards are only slightly higher than for debit cards. This is because credit cards are often used for large payments. Likewise, the costs per krone settled are relatively low for deposits at the counter and via night safes and withdrawals at the counter.

The calculated costs per transaction reflect some variation among the banks. As a kind of sensitivity calculation it was examined how the results are affected if banks with particularly high or low costs per transaction are eliminated from the calculation. The conclusion was that it does not change the results significantly.¹

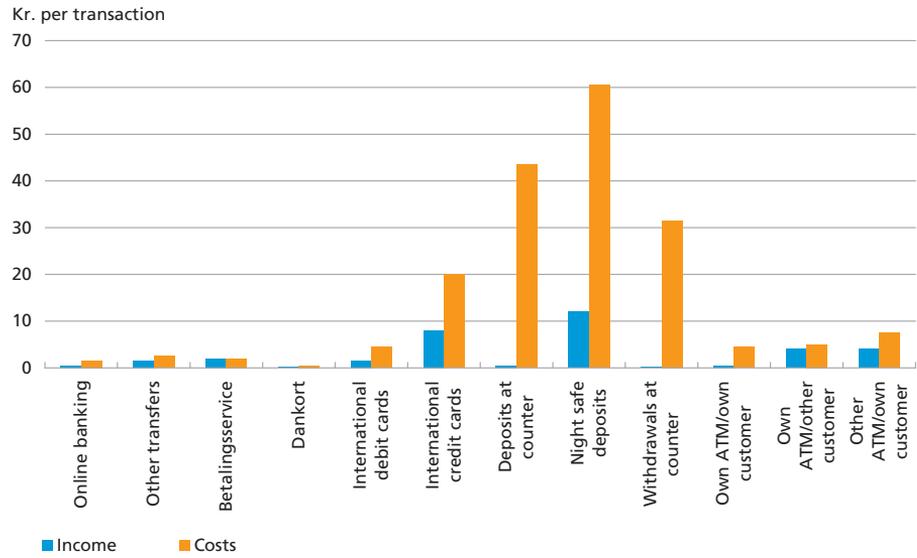
INCOME

The banks' earn income by charging fees for payment services. In connection with card payments and Betalingsservice the payee pays a fee to

¹ The calculations are shown in Appendix 1 of the Danish version of this report.

THE BANKS' COSTS AND INCOME PER TRANSACTION FOR PAYMENT SERVICES, 2009

Chart 3.10



Note: Costs and income per transaction have been rounded to the nearest kr. 0.50, except for Dankort payments. For bank transfers, Betalingservice and payment cards, transactions are those where the bank is providing service to the payer.

Source: Danmarks Nationalbank.

Nets, which then transfers part of this fee on to the banks. For ATM cash withdrawals from banks other than their own, customers typically pay a fee to their own banks, which in turn pay a fee to the bank owning the ATM.

From an economic point of view it is most appropriate that banks charge the highest fees for the payment services that involve the greatest costs. This encourages customers to use the payment methods that are cheapest for the banks; in many cases these are also the cheapest and hence optimal solution for the economy as a whole.

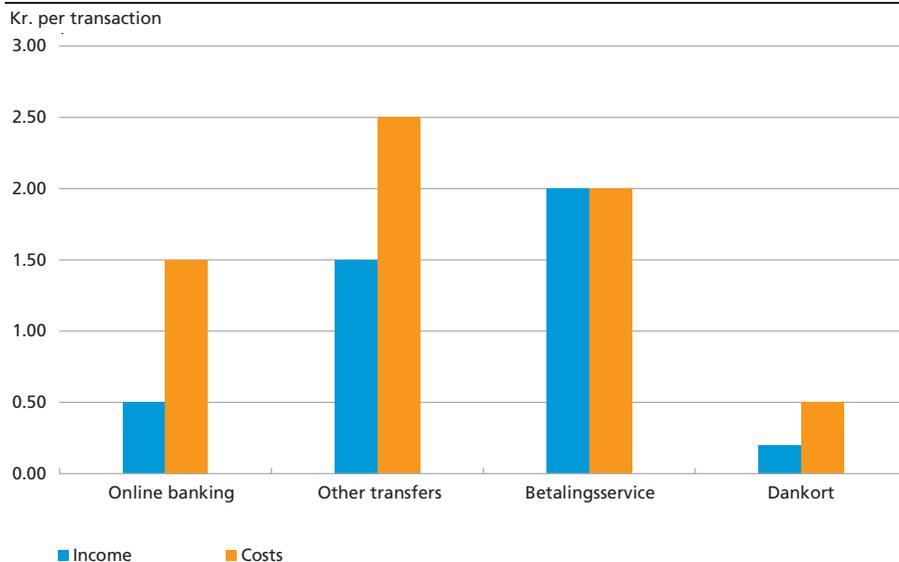
For most payment services, there seems to be such a link between costs and income, cf. Charts 3.10 and 3.11. However, there are services where this is not the case, such as cash deposits and withdrawals at the counter. For both these services, costs per transaction are relatively high, but the bank charges practically no fees to customers.

If only the fees paid by customers are included, the payment services covered by the survey entail a loss for the banks overall, cf. Chart 3.12. This conclusion is not changed by including banks' float income from payments. These gains reflect the settlement procedures of the Danish retail payment system, the Sumclearing, which currently does not allow intraday settlement of payments.¹

¹ See Bakkegaard et al. (2011).

THE BANKS' COSTS AND INCOME PER TRANSACTION FOR SELECTED PAYMENT SERVICES, 2009

Chart 3.11



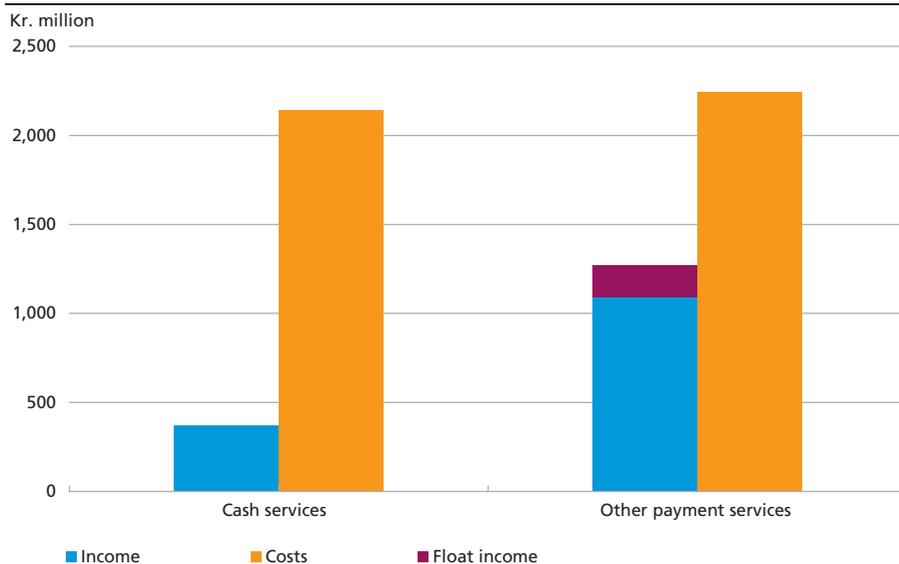
Note: See note to Chart 3.10.

Source: Danmarks Nationalbank.

The relatively modest float income in Chart 3.12 should be viewed in the light of the historically low level of interest rates in 2009. If interest rates had matched the level in, say, 2008, the banks' float income would have

THE BANKS' INCOME AND COSTS OF CASH SERVICES AND OTHER PAYMENT SERVICES, 2009

Chart 3.12



Note: Other payment services include services related to the Dankort, international payment cards, bank transfers and Betalingservice.

Source: Danmarks Nationalbank.

been more than twice as high, cf. Box 3.4. In addition, the banks also have considerable float income from firms' bank transfers, which are not included in the survey.

THE BANKS' FLOAT INCOME

Box 3.4

The banks make float income in connection with payments as it usually takes at least one day from the funds are withdrawn from the payer's account until they are deposited to the payee's account. During that period, the banks neither pay interest to the payer nor the payee for the funds transferred. These interest savings are known as float income.

In 2009, the banks' float income from the payment services included in the survey totalled almost kr. 179 million. This income depends on the level of interest rates as higher interest rates give higher float income. When calculating the banks' float income, a 3-month money-market interest rate (Cibor) has been applied. This was lower in 2009 than in the preceding years.

The table below shows the banks' float income in 2009 if the 3-month money-market interest rate had been at the 2006-08 levels. For example, with the 2008 level the banks' float income in 2009 would have been more than twice as high as the calculated gains. The 2006 and 2007 interest-rate levels would also have yielded higher float income in 2009.

The table also shows the banks' float income in 2009, had the level of interest rates been the same as in the following year. In 2010, money-market interest rates were lower than in the preceding year, and the banks' float income in 2009 would have been roughly halved, had this level applied. Hence, it cannot be said unequivocally that float income in 2009 were lower than usual.

The table also provides estimates of the banks' float income in 2009 from bank transfers performed by firms, calculated at the 2006-10 interest-rate levels. This income is greater than the equivalent income from private individuals' bank transfers. The reason is that the aggregate value of the firms' transfers is greater than the value of the individuals' transfers.

FLOAT INCOME IN 2009, APPLYING THE INTEREST RATES FROM 2006-2008 AND 2010

Table 3.2

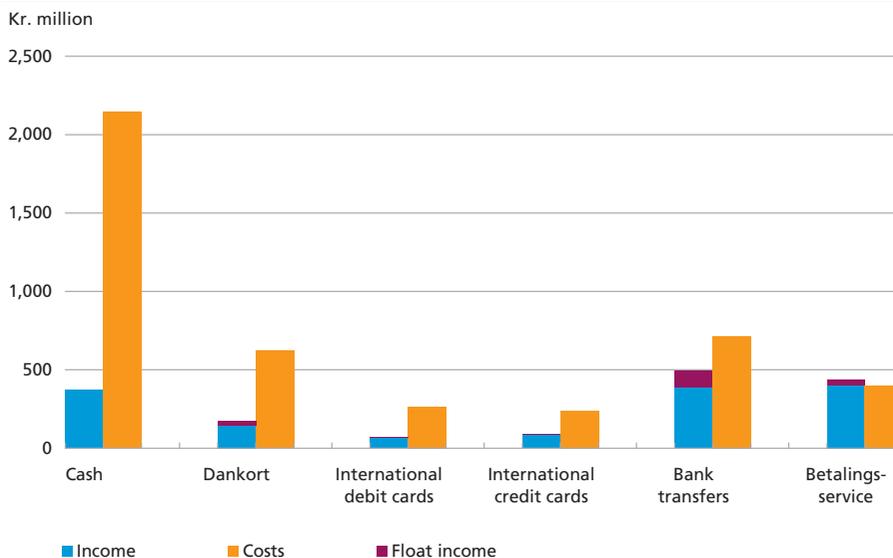
Kr. million	2006	2007	2008	2009	2010
3-month Cibor, annual average, per cent	3.18	4.44	5.28	2.48	1.24
Dankort	39.5	54.9	65.0	30.9	15.6
International debit cards	1.8	2.5	3.0	1.4	0.7
International credit cards	2.8	3.9	4.6	2.2	1.1
Betalingservice	44.8	62.2	73.6	35.0	17.6
Bank transfers	139.5	193.6	229.3	109.2	54.9
Total	228.4	317.1	375.5	178.7	89.9
Bank transfers, firms	348.1	483.0	572.1	272.4	137.0

Note: The table shows the banks' float income in 2009, had the level of interest rates (3-month Cibor) been the same as in 2006-08 and 2010. The calculated estimates of float income from firms' bank transfers are based on information from the Sumclearing.

Source: Danmarks Nationalbank.

INCOME AND COSTS BROKEN DOWN BY MAIN AREAS, 2009

Chart 3.13

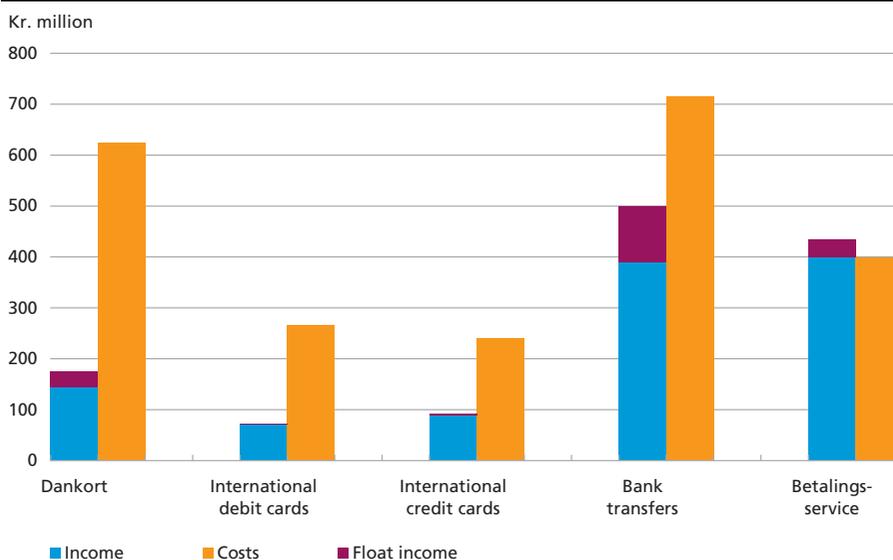


Source: Danmarks Nationalbank.

Broken down by main areas, Betalings-service is the only area where the banks' fee income exceeds their costs, cf. Charts 3.13 and 3.14. In connection with Betalings-service, Nets pays the banks for the services they provide, known as decentralised production. Nevertheless, the banks' profits from Betalings-service are relatively small.

INCOME AND COSTS BROKEN DOWN BY MAIN AREAS, EXCLUDING CASH SERVICES, 2009

Chart 3.14



Source: Danmarks Nationalbank.

In addition to fees and float income, the banks have other relevant income that is difficult to quantify. This could be income from payees who, due to the settlement time for payments in Denmark, must use their overdraft facilities. The banks may also have income from cross-border transfers that exceed the costs of such payments.

However, the main source of further income for the banks in connection with payment services is the interest expenses they save if customers place their funds in current accounts rather than savings accounts, which pays a higher interest. As explained in chapter 2, this survey disregards such income.

Chapter 4 – Retailers' and Other Payees' Costs

INTRODUCTION AND SUMMARY

Receiving payments at point of sale as well as remote payments involves costs for retailers and for other payees, e.g. payroll costs for employees performing payment-related tasks, depreciation of equipment at the counter as well as fees payable to payment service providers, including Nets, banks and cash-in-transit companies.

This chapter reviews retailers' and other payees' costs in relation to the methods of payment included in the survey. The data is derived from a survey on businesses' costs of receiving payments. The survey collected data on a number of relevant costs, which were subsequently also broken down by industry.

In 2009, retailers' costs related to payments at point of sale amounted to approximately kr. 4 billion. More than half of this amount can be attributed to cash payments, which are more resource-consuming for retailers than card payments. For example, it takes time to pick up the change and to prepare the cash register before start of business and to count, package and deposit the cash at the end of the business day.

A significant cost in connection with card payments at point of sale is the fee payable by retailers for receiving such payments, i.e. the acquiring fee. For the Dankort scheme, retailers are charged an annual subscription fee by Nets. For payments with international cards, retailers may, in addition to the acquiring fee, choose to pay a fee for receiving the money sooner than would otherwise be the case.

For all types of payments at point of sale, retailers also incur costs such as wages to cashiers for the payment time, i.e. the time it takes to receive a payment at the checkout. A study has shown that the difference in payment time for cash and card payments is insignificant as both types of payment are estimated to take just under 15 seconds.

In 2009, Dankort payments, calculated both per payment and per krone paid, were the cheapest solution for retailers at point of sale. When calculated per payment, the most costly solution was to accept payments with international credit cards, while cash payments resulted in the highest costs when calculated per krone paid. This reflects that

the average value of cash payments is lower than the average value of payments with international credit cards.

Retailers have no payment time costs in connection with online card payments. On the other hand, they are charged a fee by providers of payment solutions for online shopping, so-called payment gateways, and the acquiring fee is higher than for card payments at point of sale. Overall, retailers' costs related to online card payments amounted to approximately kr. 235 million in 2009.

The costs of receiving other remote payments amounted to more than kr. 5 billion in 2009. Nearly half of these costs were attributable to payments via inpayment forms. In connection with this collection method, payees incur costs, particularly in relation to printing and sending out inpayment forms and payroll costs for employees engaged in invoicing customers, booking and following up on outstanding payments.

The remaining costs were primarily attributable to payments via the Danish direct debit service *Betalingservice*, which is used mainly for regular transfers. Calculated per payment, *Betalingservice* was a cheaper collection method than the other types of remote payment included in the survey. When using *Betalingservice*, businesses pay a fee per payment to Nets.

THE SURVEY

In 2010, Danmarks Nationalbank conducted a survey on retailers' and other businesses' costs of receiving payments¹. The survey comprised the payment methods for which this report calculates the costs, i.e. cash payments, card payments at point of sale, online card payments and other remote payments.

The survey was designed to make reporting as simple as possible for the participants. The questionnaire could be completed electronically via a link in an e-mail, and the participants were only asked questions of relevance to their activities. In addition, information on a number of costs was obtained from other sources, e.g. on the acquiring fees payable by retailers for card payments.

After data validation, 231 usable responses remained, covering around 3,000 shops and an annual revenue of approximately kr. 160 billion. The usable responses mainly stemmed from businesses receiving payments at point of sale. Consequently, the calculated costs of remote payments must be interpreted with more caution than the costs of payments at point of sale.

¹ The survey is described in detail in Appendix 2 of the Danish version of the report.

PAYMENTS AT POINT OF SALE

In 2009, retailers' costs of receiving payments at point of sale amounted to kr. 4.0 billion, cf. Table 4.1. While Dankort payments only accounted for just over a third of the costs, almost 60 per cent of the costs could be attributed to cash payments. The remaining 5 per cent of retailers' costs were due to payments with international payment cards, which constituted a small part of total card payments in 2009.

Retailers' costs of receiving payments at point of sale can be broken down by three main types. Firstly, there is the time spent on internal payment-related procedures, e.g. preparing and closing the cash register, balancing accounts and picking up the change and depositing the day's sales in a night safe at the bank. This entails payroll costs – in 2009 totalling approximately kr. 1.4 billion.

The other main type of costs is wages for cashiers for the time it takes to complete a payment at the checkout. Danmarks Nationalbank conducted a study of the payment time for cash and card payments, cf. Box 4.1. It showed that on average it takes just under 15 seconds to com-

RETAILERS' COSTS OF PAYMENTS AT POINT OF SALE, 2009

Table 4.1

Kr. million	Cash	Dankort	International		Total	Total share of costs (per cent)
			Debit cards	Credit cards		
Internal procedures ¹	1,244.1	182.7	7.3	4.9	1,439.1	35.9
Payment time	525.3	549.6	27.3	12.1	1,114.3	27.8
Other costs	614.4	682.8	59.6	95.5	1,452.3	36.3
Cash handling, external	205.3	•	•	•	205.3	5.1
Holding (change)	28.9	•	•	•	28.9	0.7
Interest-rate loss on cash	9.9	•	•	•	9.9	0.2
Equipment at the counter	205.4	346.4	23.3	10.2	585.3	14.6
Losses due to float ²	11.0	31.9	5.9	8.1	56.9	1.4
Other losses ³	154.0	2.7	0.0	0.0	156.7	3.9
Fees payable to the acquirer	•	213.8	25.6	74.5	314.0	7.8
Telecommunication	•	87.9	4.8	2.6	95.3	2.4
Total costs	2,383.9	1,415.1	94.3	112.5	4,005.8	100.0
Total share of costs (per cent).....	59.5	35.3	2.4	2.8	100.0	
Number of payments (million)	786.3	790.5	39.3	17.4		
Value of payments, (kr. billion) ...	150.5	253.1	6.8	9.3		

¹ Internal procedures include time spent preparing the cash register before opening hours and closing the cash register at the end of the business day, balancing accounts, picking up petty cash and depositing the day's sales.

² Losses due to float are retailers' interest-rate losses from selling goods today while not earning interest on the amount received until a later date.

³ Losses are caused e.g. by cash differences (deficits), receiving counterfeit banknotes and fraudulent use of payment cards.

STUDY OF PAYMENT TIME

Box 4.1

The payment time is the interval from the time the customer is informed of the total amount to be paid until the transaction is completed. For retailers, the payment time involves wages to cashiers and for the customer it gives rise to costs as well, cf. Chapter 5.

In May 2011, Danmarks Nationalbank conducted a study of the payment time for cash and card payments. The study covered 14 retail shops of varying sizes and in various industries. The study included 953 payment observations (405 cash payments and 548 card payments).

According to the study, the difference in payment time for cash and card payments is almost insignificant. The study showed that on average it takes 14.3 seconds to complete a cash payment and 14.9 seconds to complete a card payment. No differences between the different types of cards were observed.

These payment times should be interpreted with some caution as the study also showed substantial differences between different types of shops. For example, the payment time for cash payments at shops where item prices are typically round figures and customers usually purchase one or few items is relatively short.

Moreover, it could be debated whether the payment time should be included or not as a cost in its entirety, as cashiers often use the waiting time to do other things, e.g. to prepare for the next customer.

Furthermore, all card payments in the study were verified by PIN. This is currently the most common procedure, but some payees still ask customers to verify payments by their signature, which will normally extend the payment time.

plete a payment using both methods of payment. Retailers' payment time costs in 2009 were estimated at approximately kr. 1.1 billion.

In addition, retailers incur a number of other costs related to payments at point of sale. They include payment to banks and cash-in-transit companies for cash-related services, losses on cash related to cash-register differences and robbery, expenditure for cash registers and card terminals and fees payable to the acquirer. In 2009, these costs totalled just under kr. 1.5 billion.

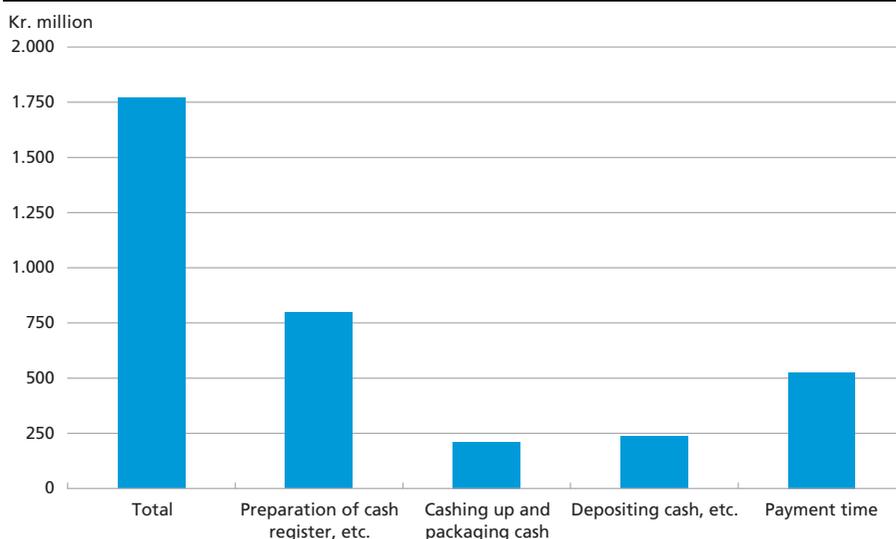
Cash

Just under half of the retailers' costs of receiving cash payments can be attributed to the time spent on internal procedures, cf. Table 4.1. They include preparing the cash register before opening hours, closing the cash register and sorting, counting and packaging cash at the end of the business day and depositing the day's sales in a night safe at the bank, cf. Chart 4.1. In addition, payroll costs related to the payment time are estimated at just over kr. 500 million for cash payments.

Retailers' other costs of receiving cash payments amounted to approximately kr. 600 million. A third of those costs were expenditure for exter-

RETAILERS' TIME CONSUMPTION RELATED TO CASH PAYMENTS, 2009

Chart 4.1



Source: Danmarks Nationalbank.

nal cash handling services, mainly comprising payments to cash-in-transit companies for various services. A small share of the costs was made up of fees payable to banks for depositing cash in night safes, receiving change, etc.

Other large items under other costs included expenditure for equipment at the counter and losses on cash. Equipment at the counter consists of cash registers, card terminals and security equipment to prevent cash robberies. Losses on cash were primarily attributable to cash-register differences and robbery, whereas retailers suffered practically no losses due to counterfeiting. In 2009, only 356 counterfeit banknotes were found in circulation with a nominal value of just under kr. 200,000.¹

Retailers' interest-rate losses on cash kept overnight and their losses due to float were relatively modest in 2009. The latter is because retailers do not receive interest until one or two days after depositing the money at the bank, e.g. via a night safe. The size of retailers' interest-rate losses on cash kept overnight and losses due to float on deposited cash reflect the relatively low level of interest rates in 2009.

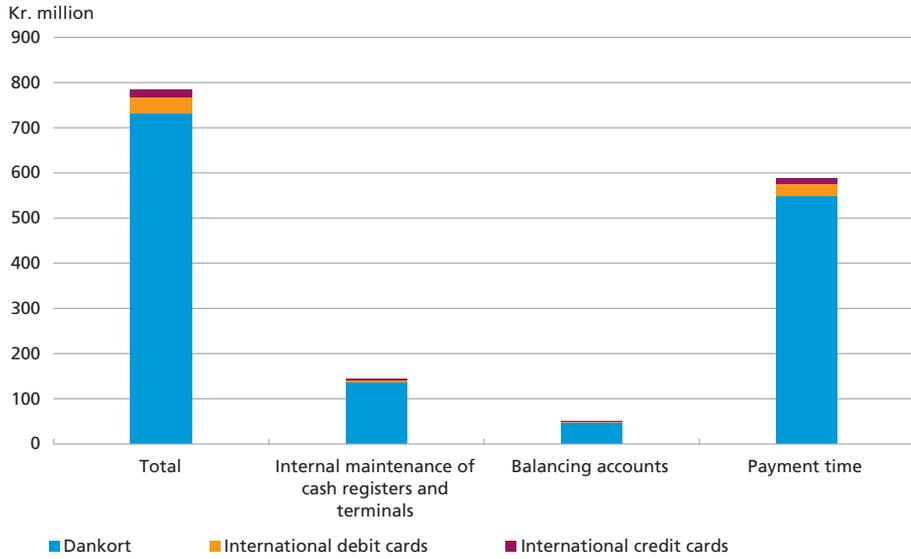
Payment cards

Retailers' time consumption for handling card payments is significantly lower than for cash payments. The time is mainly spent making sure that

¹ Cf. Danmarks Nationalbank (2010b).

RETAILERS' TIME CONSUMPTION RELATED TO CARD PAYMENTS, 2009

Chart 4.2



Source: Danmarks Nationalbank.

cash registers and card terminals are in working order and on balancing accounts, cf. Chart 4.2. The time consumption is broken down by the three card types according to the number of payments. Thus, Dankort payments account for by far the largest share of the costs related to this time consumption.

Retailers' total costs related to the payment time for card payments were estimated at approximately kr. 600 million in 2009. As mentioned, this calculation is based on a time study showing that, as was also the case for cash payments, it takes just under 15 seconds to complete a card payment, regardless of the card type. Like above, due to the large number of payments, Dankort payments account for most of these costs.

Retailers' other costs of receiving card payments were calculated at kr. 838 million in 2009. Fees payable to Nets and other acquirers accounted for just under 40 per cent of that amount. Part of the fees was retailers' subscription payments, etc. for accepting the Dankort, which amounted to kr. 214 million in 2009. The remaining kr. 100 million constituted payment for accepting international cards, including factoring, cf. Box 4.2 and below.

Other large items under other costs included expenditure for equipment at the counter and telecommunication. On the other hand, retailers suffered moderate losses on card payments due to fraud. There were no losses on international cards, and for Dankort payments the losses were limited by Nets' payment guarantee for amounts up to kr. 4,000

RETAILERS' ACQUIRING EXPENDITURE FOR PAYMENTS AT POINT OF SALE

Box 4.2

Retailers must enter into an arrangement with an acquirer to be able to receive card payments. The acquirer forwards the payments to the issuers and guarantees the payments vis-à-vis the retailer. Retailers pay a fee for this service, i.e. the acquiring fee.

The acquiring fee is typically a fixed amount per payment or a percentage of the value of the payment, possibly subject to a cap. For international card payments it is customary to calculate the fee as a percentage of the value of the payment, and this is also the case in Denmark.

Retailers pay a yearly fee to Nets for the acquiring of Dankort payments in physical trade, i.e. trade where the buyer and the seller are both present. This fee was raised on 1 January 2010, so retailers are now paying half the costs of operating the Dankort system, cf. Box 3.2.

In conjunction with the regulation of the Dankort fee, an adjustment was also made to the intervals for the value of the Dankort payments received which determine the size of the individual retailers' fees. Basically, this meant that shops with modest sales have to pay a smaller share of the total subscription.

Until recently, according to the rules governing payments with international credit cards in physical trade, the acquirer could charge the retailer an amount of up to 0.75 per cent of the value of the payment. For payments with international debit cards, the acquirer could charge an amount of up to 0.4 per cent of the value of the payment, but not more than kr. 4 per payment.

In addition, shops may also choose to pay a factoring fee for international cards. This is a fee payable to the acquirer for receiving the money sooner than would otherwise be the case. For example, Nets offers weekly rather than monthly settlement against a fee of 1 per cent of the total sales.

Under the previous Danish rules on card fees, retailers were not allowed to surcharge the acquiring fee to consumers in physical trade. These rules were amended as of 1 October 2011, and retailers are now allowed to surcharge fees for credit cards, but not for debit cards, including the Dankort.

In connection with this amendment, the cap on acquiring fees for international cards was removed. Instead, the general rules on fees in the Danish Payment Services Act apply, preventing the acquirer from charging fees exceeding those which would apply in a competitive market.

The above rules apply to card payments in physical trade. Card payments at point of sale, as defined in this report, also include payments using self-service checkout. The rules on fees for this type of payments are similar to those on payments in non-physical trade described in more detail in Box 4.3.

when using chip and PIN. This means that retailers will incur losses only in connection with larger amounts or when payments are only verified by signature.

Retailers' losses on card payments due to float totalled approximately kr. 45 million. Such losses occur because normally retailers do not receive the payment until one or more days after selling the goods. In connection with Dankort payments, retailers typically lose interest for one day,

RETAILERS' COSTS OF PAYMENTS AT POINT OF SALE, PER PAYMENT AND PER KRONA PAID, 2009

Table 4.2

	Cash	Dankort	International	
			Debit cards	Credit cards
Total costs (kr. million)	2,383.9	1,415.1	94.3	112.5
Number of payments (million)	786.3	790.5	39.3	17.4
Value of payments (kr. billion)	150.5	253.1	6.8	9.3
Cost per payment (kr.)	3.03	1.79	2.40	6.47
Cost per krone paid (øre)	1.58	0.56	1.39	1.21

Source: Danmarks Nationalbank.

but in connection with weekends and public holidays it may be several days.¹ The period is longer for international card payments, but retailers may reduce it by paying factoring fees, cf. Box 4.2.

Costs per payment

In 2009, retailers' costs per Dankort payment at point of sale amounted to approximately kr. 1.79, cf. Table 4.2. Thus, according to that measure, Dankort payments were the cheapest payment method for retailers. The most expensive type of payment was payments with international credit cards at kr. 6.47 per payment. Measured per krone paid, cash payments were the most expensive payment method for retailers, reflecting that the average value of such payments was lower than for credit card payments.

In Chart 4.3, costs per payment for the various payment methods are broken down by the three main types of costs. It appears that time consumption related to internal procedures was only a significant cost for cash payments, accounting for approximately half of the costs of just over kr. 3 per payment. For the three types of card payments, the costs per payment for this time consumption were less than kr. 0.30.

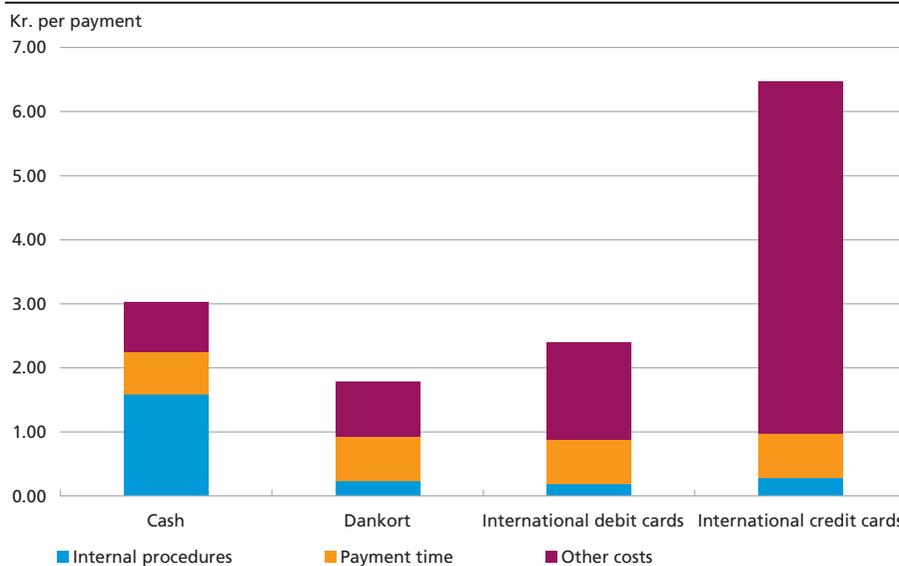
The payment time costs per payment are more or less the same for all payment methods, because the estimated payment time for cash and card payments is almost identical, cf. Box 4.1. Furthermore, the wage rate, which is multiplied by the payment time, is the same for all types of payments. For cash payments, the result is payment time costs per payment of kr. 0.67, and of kr. 0.70 for card payments.

Other costs contribute to a higher cost variation per payment. For international credit cards, they account for more than 5/6 of the costs per payment. This is due to the relatively large acquirer fee – on average, kr. 4.28 per payment – which is a product of the acquiring rate

¹ See Bakkegaard et al. (2011).

RETAILERS' COSTS PER PAYMENT BROKEN DOWN BY MAIN TYPES, 2009

Chart 4.3



Source: Danmarks Nationalbank.

of up to 0.75 per cent of the value of the payment, cf. Box 4.2, and a high average value of credit card payments. The corresponding fee per Dankort payment was kr. 0.27.

Costs broken down by industries

Retailers' costs of receiving payments at point of sale have been broken down by industries, cf. Table 4.3. Costs have been calculated for seven specific industries and for the remaining industries as a whole. For some industries, there are only a small number of responses, and the results in the Table should therefore be interpreted with more caution than the other results in this Chapter. Chart 4.4 also shows costs per payment for the various methods of payment broken down by industries.

The largest number and value of payments was received in the industry *df aVc^ Rc\ Ved R_U UVaRæ^ V_e dtores*. This industry also had the lowest costs per payment for all payment methods, one reason being that the fixed costs involved in receiving payments are distributed on a large number of payments. But the information collected also indicates that retailers in this industry have managed to reduce the variable costs.

The industry *consumer electronics and household products* is unique by its high costs per credit card payment, reflecting that the average value of payments in this industry was higher than in other industries, which leads to a higher acquiring fee. It also explains why the costs per debit card payment in this industry were relatively high. The industry's

RETAILERS' COSTS OF PAYMENTS AT POINT OF SALE, BROKEN DOWN BY INDUSTRIES, 2009 (CONTINUED ON THE NEXT PAGE)

Table 4.3

Kr.	Fashion	Consumer electronics and household products	Food, drinks and tobacco	Supermarkets and department stores	Other non-food
Cash					
Internal procedures	143.8	2.1	41.4	261.4	320.7
Payment time	32.3	6.4	23.2	220.5	78.1
Other costs	93.0	13.7	30.2	159.9	84.2
Total	268.9	22.2	94.8	641.8	483.1
Dankort					
Internal procedures	38.9	0.8	15.9	11.5	14.8
Payment time	33.6	6.7	24.3	230.6	81.7
Other costs	73.0	8.4	34.4	152.6	82.5
Total	145.5	15.9	74.6	394.8	179.1
International debit cards					
Internal procedures	2.1	0.0	0.1	0.6	0.6
Payment time	2.3	0.4	0.3	10.2	3.8
Other costs	9.3	1.8	0.5	11.7	6.3
Total	13.6	2.2	0.9	22.5	10.6
International credit cards					
Internal procedures	0.8	0.0	0.0	0.1	0.2
Payment time	0.8	0.2	0.1	2.7	1.2
Other costs	10.5	6.0	0.8	11.7	11.8
Total	12.1	6.3	0.9	14.5	13.2
Number of payments (million)					
Cash	48.1	9.6	34.8	330.0	116.9
Dankort	48.4	9.6	35.0	331.7	117.6
International debit cards	3.2	0.5	0.4	14.7	5.4
International credit cards	1.2	0.3	0.1	3.8	1.8
Total	100.9	20.0	70.3	680.3	241.7
Value of payments (kr. billion)					
Cash	13.2	4.8	2.8	55.3	24.3
Dankort	22.2	8.0	4.6	93.1	40.9
International debit cards	1.1	0.3	0.0	2.4	1.0
International credit cards	1.0	0.7	0.1	1.5	1.3
Total	37.5	13.7	7.5	152.3	67.4

Source: Danmarks Nationalbank.

acquiring fee per krone paid for payments with international cards was no higher than in other industries.

Petrol stations had high costs per payment, except for credit card payments. This is mainly attributable to expensive equipment at the counter because of the petrol stations' substantial investments in robbery prevention. The low costs per credit card payment are mainly due to the

RETAILERS' COSTS OF PAYMENTS IN SHOPS, BROKEN DOWN BY INDUSTRIES, 2009 (CONTINUED)

Table 4.3

Accommodation and food services	Petrol stations	Other industries	All	
				Cash
81.1	241.9	151.8	1,244.1	..... Internal procedures
55.1	51.3	58.6	525.3	..... Payment time
60.9	112.9	59.6	614.4	..... Other costs
197.1	406.1	269.9	2,383.9	..... Total
				Dankort
19.7	13.1	68.0	182.7	..... Internal procedures
57.6	53.7	61.3	549.6	..... Payment time
67.9	178.4	85.5	682.8	..... Other costs
145.2	245.3	214.8	1,415.1	..... Total
				International debit cards
0.7	1.5	1.8	7.3	..... Internal procedures
2.8	5.6	2.1	27.3	..... Payment time
3.3	21.5	5.1	59.6	..... Other costs
6.8	28.6	9.0	94.3	..... Total
				International credit cards
0.4	0.6	2.7	4.9	..... Internal procedures
1.7	2.1	3.2	12.1	..... Payment time
15.5	13.7	25.6	95.5	..... Other costs
17.6	16.4	31.6	112.5	..... Total
				Number of payments (million)
82.4	76.8	87.6	786.3	..... Cash
82.9	77.2	88.1	790.5	..... Dankort
4.0	8.0	3.0	39.3	..... International debit cards
2.4	3.1	4.6	17.4	..... International credit cards
171.7	165.2	183.4	1,633.4	..... Total
				Value of payments (kr. billion)
9.3	9.5	31.3	150.5	..... Cash
15.7	16.0	52.6	253.1	..... Dankort
0.4	0.9	0.6	6.8	..... International debit cards
1.7	0.9	2.2	9.3	..... International credit cards
27.1	27.4	86.8	419.7	..... Total

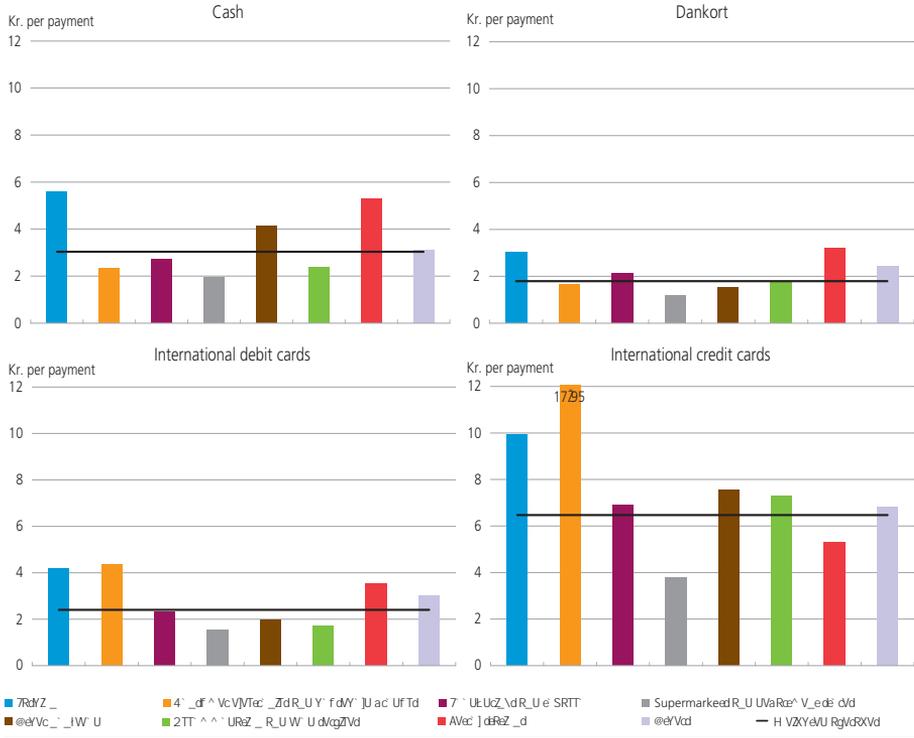
Source: Danmarks Nationalbank.

relatively modest average value of such payments at petrol stations – and hence the size of the acquiring fee.

For *accommodation and food services*, the costs of credit card payments were high, while the costs per payment for other payment methods were lower than in the other industries. The reason is that the average value of credit card payments, unlike the other payment instruments, was relatively high, e.g. because hotel accommodation is to

RETAILERS' COSTS OF PAYMENTS AT POINT OF SALE, PER PAYMENT, BROKEN DOWN BY INDUSTRIES, 2009

Chart 4.4



Source: Danmarks Nationalbank.

a large extent paid for using credit cards. Accordingly, the acquiring fee per payment is also relatively high.

REMOTE PAYMENTS

Remote payments include card payments for online purchases and other remote payments such as direct debits and bank transfers. Below, payees' costs for the two main types of remote payments are described in more detail.

Online card payments

In 2009, retailers' total costs of receiving online card payments amounted to kr. 235 million, cf. Table 4.4. Just under two thirds of these costs were fees payable to the acquirer. There had been no fixed maximum rate for this fee, and in 2009, for all types of cards, retailers paid a larger acquiring fee for online payments than for payments at point of sale, cf. Box 4.3. For several years, however, retailers have been allowed to surcharge this fee to consumers.

RETAILERS' COSTS OF ONLINE CARD PAYMENTS, 2009

Table 4.4

Kr. million	Dankort	International		Total	Total share of costs (per cent)
		Debit cards	Credit cards		
Internal procedures	7.4	0.8	0.8	9.0	3.8
Fees payable to the acquirer	94.3	18.0	40.4	152.6	65.0
Other costs	58.1	6.7	8.3	73.2	31.2
Losses on card payments	9.6	0.5	1.2	11.3	4.8
Payment gateways	40.3	4.5	4.1	48.9	20.8
Telecommunication	5.5	0.6	0.6	6.7	2.9
Losses due to float	2.8	1.0	2.4	6.3	2.7
Total costs	159.8	25.5	49.4	234.8	100.0
Total share of costs (per cent)	68.1	10.9	21.1	100.0	
Number of payments (million)	38.3	4.3	3.9		
Value of payments (kr. billion)	21.9	1.2	2.8		

Source: Danmarks Nationalbank.

Fees paid to providers of payment gateways are another cost for retailers receiving online card payments. A payment gateway sends information about the payment from the website where the purchase is made to the acquirer and is, in a sense, comparable to a card terminal

RETAILERS' ACQUIRING EXPENDITURE FOR ONLINE CARD PAYMENTS

Box 4.3

As is the case with payments at point of sale, retailers selling goods and services on the Internet must enter into an arrangement with an acquirer to be able to receive card payments. Retailers pay a fee to the acquirer that is subject to rules different from those applying to card payments at point of sale, cf. Box 4.2.

The rules applying to fees for online card payments today are the same as in 2009, i.e. the general rules on fees in the Danish Payment Services Act, which do not include a maximum acquiring fee but state that the acquirer is not allowed to charge fees exceeding those which would apply in a competitive market.

In 2009, Nets' acquiring fees for online Dankort payments, which also apply today, were as follows:

- kr. 0.70 for payments of less than kr. 50
- kr. 1.10 for payments of kr. 50-100
- kr. 1.45 + 0.10 per cent of the amount for payments of more than kr. 100.

Nets' acquiring fee for payments with international cards is 1.25 per cent of the amount, but minimum kr. 0.70. That fee and the acquiring fee for Dankort payments are both higher than the corresponding fees for card payments at point of sale, cf. Box 4.2.

In this report, payments using self-service checkout are defined as payments at point of sale, but in a legislative sense they are payments in non-physical trade. For this type of payments, Nets' acquiring fee is kr. 0.50 per Dankort payment.

For online card payments and using self-service checkout, retailers are allowed to surcharge the fee to consumers, irrespective of the card type.

RETAILERS' COSTS OF ONLINE CARD PAYMENTS, PER PAYMENT AND PER KRONA PAID, 2009

Table 4.5

	Dankort	International	
		Debit cards	Credit cards
Total costs (kr. million)	159.8	25.5	49.4
Number of payments (million)	38.3	4.3	3.9
Value of payments (kr. billion)	21.9	1.2	2.8
Cost per payment (kr.)	4.17	5.93	12.68
Cost per krone paid (øre)	0.73	2.13	1.77

Source: Danmarks Nationalbank.

for payments at point of sale. DIBS Payment Services, the leading provider of this service in Denmark, charges retailers a subscription fee and an amount per payment. In 2009, retailers' total fees paid for these gateways amounted to just under kr. 50 million.

In addition, retailers incurred a loss on online card payments of kr. 11 million in 2009. This corresponds to almost 5 per cent of retailers' costs in connection with such payments, which is more than for payments at point of sale. The higher loss reflects that fraudulent use of cards is easier on the Internet as only a few details appearing on the card are needed. Moreover, the acquirer's payment guarantee is lower than that for payments at point of sale.¹

Retailers' remaining costs related to online card payments also differ in other ways from the costs of card payments at point of sale. For example, in connection with online card payments, retailers have no expenditure for equipment at the counter or payroll costs for employees maintaining this equipment. Similarly, retailers have no payment time related payroll costs for cashiers.

Table 4.5 shows the costs per online payment for the three card types. As at point of sale, according to this measure, it is cheaper for retailers to receive Dankort payments than international card payments. However, the costs per payment are higher than at point of sale for all cards, reflecting that the costs saved by online card payments are more than offset by the higher acquiring fee, cf. Chart 4.5.

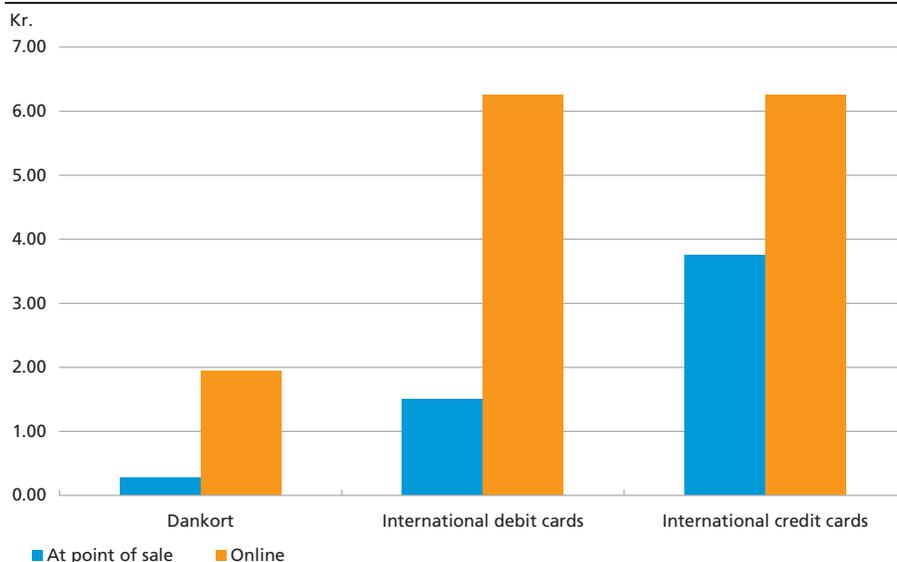
Other remote payments

In terms of other remote payments, this chapter distinguishes between Betalingservice, bank transfers using inpayment forms and credit transfers, i.e. bank transfers not based on inpayment forms. This deviates from the rest of the report which distinguishes between online

¹ See Wagner (2012).

ACQUIRING FEE RELATED TO CARD PAYMENTS OF KR. 500 AT POINT OF SALE AND ONLINE, 2009

Chart 4.5



Note: For payments at point of sale, the acquirer is assumed to charge the maximum amount. For online payments, the acquirer is assumed to charge an amount corresponding to the Nets fee, cf. Box 4.3.
Source: Danmarks Nationalbank.

banking transfers and other bank transfers. However, for payees it is more relevant to distinguish between payments using or not using inpayment forms than to focus on where the transfer originated.

In 2009, businesses' costs of receiving other types of remote payments amounted to slightly more than kr. 5 billion, cf. Table 4.6. Around half of these costs stem from payments via Betalingservice. Most of the remaining costs were attributable to receiving payments via inpayment forms, while credit transfers where businesses just send an invoice and an account number accounted for only a small part of the costs.

BUSINESSES' COSTS OF OTHER TYPES OF REMOTE PAYMENTS, 2009

Table 4.6

Kr. million	Bank transfers		Betalingservice (direct debit)	Total
	Credit transfers	Inpayment forms		
Printing and sending, etc.	137.5	888.7	•	1,026.2
Internal procedures	134.5	819.7	1,687.5	2,641.6
Other costs	74.1	673.7	800-1,100	1,548-1,848
Total costs	346.1	2,382.0	2,488-2,788	5,216-5,516
Number of payments (million) ..	9.8	92.3	169.3	
Value of payments (kr. billion) ..	86.4	810.4	394.6	

Note: For reasons of anonymity, costs related to Betalingservice are shown as an interval.
Source: Danmarks Nationalbank.

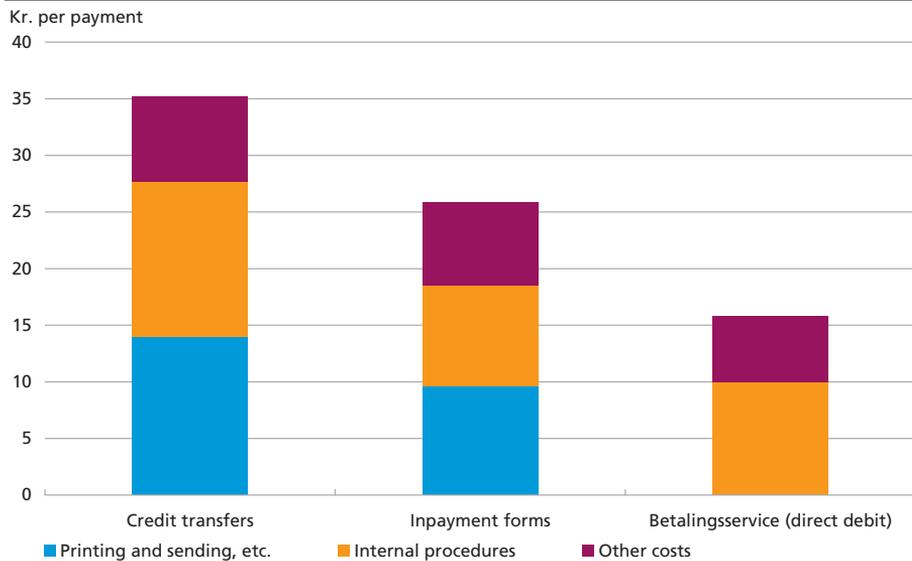
Payroll costs for employees handling internal procedures constituted half of businesses' costs of receiving bank transfers and collecting payments via Betalingservice. These procedures comprise bookkeeping, invoicing, including preparation of data files for external suppliers, including Nets, checking payments received and following up on outstanding payments. In 2009, such costs were estimated at kr. 2.6 billion.

For businesses choosing to send out inpayment collection forms, the costs of postage amounted to kr. 1.0 billion in 2009, while the overall expenditure incurred by all businesses for external suppliers totalled more than kr. 1.5 billion. Payment to Nets for services related to Betalingservice and sending inpayment forms to customers who had not joined the Betalingservice scheme accounted for a large part of the latter expenditure. Finally, businesses incurred minor losses due to float on such payments.

Calculated per payment, collecting payments via Betalingservice was the cheapest solution for businesses, cf. Chart 4.6. This reflects that when using Betalingservice, businesses do not themselves incur costs by sending out inpayment forms. While businesses pay a fee per payment to Nets, they generally benefit from Nets' ability to achieve economies of scale when collecting payments.

BUSINESSES' COSTS OF REMOTE PAYMENTS, PER PAYMENT, 2009

Chart 4.6



Note: For Betalingservice, the calculation is based on an average of the cost interval in Table 4.6.
Source: Danmarks Nationalbank.

Chapter 5 – Payments at Point of Sale

INTRODUCTION AND SUMMARY

The focus of the preceding two chapters has been on the costs of banks and payees. This chapter combines the findings of Chapters 3 and 4 with information on costs of other parties in order to calculate the social costs of payments at point of sale.

In this respect, other parties are Danmarks Nationalbank and the two cash-in-transit companies existing in 2009. Also included are the costs of card companies, i.e. Nets, providing card issuer services and acquiring, and other acquirers and issuers of international payment cards.

In addition, household costs are calculated, comprising primarily household time consumption. As these costs could arguably be omitted in the calculation of total resource costs, social costs are shown both including and excluding household costs.

Costs are stated both per payment and per krone paid. In this connection, it is necessary to know both the number of payments and the value of payments for the various payment methods. For payment cards, these figures can be determined relatively accurately, but for cash payments they have been estimated with some uncertainty.

The calculations in this chapter show that, for society as a whole, Dankort payments were the least expensive payment method at point of sale. This applies both in terms of costs per payment and per krone paid, and regardless of whether social costs are calculated including or excluding household costs.

Calculated per payment, social costs were lower for cash than for international cards. The reason is that fixed costs of international credit cards are distributed on fewer payments. Measured in terms of costs per krone paid, cash payment costs were only slightly lower than those of international credit cards.

In 2009, all parties incurred net costs of payments at point of sale. For retailers and households, this reflects that they are provided with a payable service. For banks, it should be taken into account that they receive income which is not included in the survey and which presupposes that they provide payment services, cf. Chapter 3.

NUMBER AND VALUE OF PAYMENTS

This section explains and presents the estimates of the number and value of cash and card payments which are used throughout Chapter 5.

Cash payments

In the absence of any precise information on the volume of cash payments, estimates must be applied. Estimates may e.g. be based on surveying a sample of the population about their cash payments over a given period of time, say one week, and subsequently translate this information into annual data for the entire population.

Statistics Denmark, on behalf of Danmarks Nationalbank, conducted a survey of payment habits in Denmark over a four-week period in the autumn of 2010. In the survey Danish consumers were asked e.g. about their use of cash in shops during the past week.¹

Table 5.1 shows the estimated volume of cash payments in 2009, based on the survey. The estimates have been converted to 2009-data using Statistics Denmark's retail trade index. It has also been assumed that the distribution of cash payments over the year is the same as for Dankort payments.

In the table, the number and value of cash payments are broken down by age group. The total number of cash payments in Denmark in 2009 was calculated at kr. 786.3 million, with an estimated total value of kr. 150.5 billion, corresponding to an average amount per payment of kr. 191.

This may for various reasons underestimate the volume of cash payments in Denmark. Firstly because the survey covers only consumers aged between 15 and 79. Younger and older consumers also make cash payments – probably even to a greater extent than other consumers in relation to their total payments.

Secondly, the design of the survey, asking respondents about their payments during the past week, entails a risk that consumers may forget certain payments, especially small amounts. Consequently, both the number and value of cash payments are underestimated, while the average payment amount is overestimated.

Card payments

The volume of card payments can be estimated more accurately than that of cash payments, given that the data can be provided by the card issuers or acquirers of card payments, i.e. the party receiving the card

¹ The survey is described in more detail in Appendix 3 of the Danish version of this report.

CASH PAYMENTS IN DENMARK, 2009		Table 5.1
Age group	Number (million)	Value (kr. billion)
15 - 24 years	111.6	12.5
25 - 34 years	141.9	22.5
35 - 44 years	131.4	33.5
45 - 54 years	151.5	33.3
55 - 64 years	133.3	24.3
65 - 79 years	116.4	24.6
Total	786.3	150.5

Source: Danmarks Nationalbank.

payments from retailers, transmitting them to the issuer and guaranteeing the payments vis-à-vis the retailers.

Table 5.2 shows the number and value of Dankort payments and international debit and credit card payments at point of sale in 2009. Information on the Dankort has been provided by Nets, the sole acquirer of Dankort payments. For international cards, figures are calculated based on information provided by the largest issuers and acquirers.

The number of card payments in Denmark is in line with the estimated number of cash payments. In other countries, except the Nordic countries, the number of cash payments significantly exceeds the number of card payments, cf. Chapter 7. In Denmark, the relatively modest number of cash payments is no doubt due to the widespread holding and acceptance of the Dankort.

OTHER PARTIES' COSTS

Other parties than banks and retailers that incur costs of payments at point of sale include Danmarks Nationalbank, cash-in-transit companies, card companies, including Nets, and households. This section describes the costs of these parties.

NUMBER AND VALUE OF PAYMENTS AT POINT OF SALE, 2009			Table 5.2
	Number (million)	Value (kr. billion)	Average value (kr.)
Total	1,633.5	419.7	257
Cash	786.3	150.5	191
Total cards	847.2	269.2	318
Dankort	790.5	253.1	320
International debit cards	39.3	6.8	173
International credit cards	17.4	9.3	534

Source: Danmarks Nationalbank.

Danmarks Nationalbank

Danmarks Nationalbank produces banknotes and coins and performs a number of tasks related to cash distribution in Denmark, cf. Box 3.1. These costs should be included in the calculation of social costs of cash payments. Box 5.1 describes the calculation of Danmarks Nationalbank's costs in relation to cash.

Table 5.3 shows the calculated costs. In 2009, Danmarks Nationalbank's total costs of production and handling of cash were estimated at just under kr. 130 million, about half of which were staff costs. Other major items were production costs and costs related to Danmarks Nationalbank's buildings.

All costs set out in Table 5.3 are resource costs, which are included in their entirety in the calculation of the social costs of cash payments. Thus, it has not been taken into account that part of the total cash in circulation is used for purposes other than payments, e.g. savings.

Danmarks Nationalbank achieves a gain when other parties carry around cash that does not earn interest. In the survey, this is included as a transfer to Danmarks Nationalbank from other parties. The calculation includes only cash that these parties are deemed to have for payment purposes, cf. below.

Cash-in-transit companies

In 2009, two cash-in-transit companies operated in Denmark: Loomis Danmark A/S, a subsidiary of the Swedish company Loomis AB, and Dansk Værdihåndtering A/S. At the end of the year, the two companies employed 92 and 243 staff, respectively.

CALCULATION OF DANMARKS NATIONALBANK'S COSTS

Box 5.1

Three departments at Danmarks Nationalbank are engaged in the production and handling of cash: the Banknote Printing Works, Banking Services and the Royal Mint. The calculation of Danmarks Nationalbank's costs in relation to these tasks includes all operating costs of the three departments.

Also included are costs incurred by departments that perform administrative and service tasks on behalf of the Banknote Printing Works, Banking Services and the Royal Mint – tasks for which the Banknote Printing Works, Banking Services and the Royal Mint would be responsible if they were independent units. The costs of these departments have been allocated using distribution keys, e.g. number of employees.

Finally, some of Danmarks Nationalbank's costs of buildings and energy consumption, i.e. water, heating and electricity, are included. The floor area of the departments has been used as the distribution key. Premises costs are based on comparable rental prices in the areas where Danmarks Nationalbank's buildings are located.

DANMARKS NATIONALBANK'S COSTS, 2009		Table 5.3
Cost type	Kr. million	Per cent
Staff costs	62.9	48.5
Production costs	25.3	19.5
Buildings	22.9	17.6
Energy consumption	5.1	3.9
Depreciation	13.6	10.5
Total	129.8	100.0

Source: Danmarks Nationalbank.

Cash-in-transit companies supply, collect and transport cash on behalf of banks and retailers. They also provide a limited range of other services, e.g. protection of valuables, but this is disregarded in the calculations below, i.e. it has been assumed that the two companies in 2009 offered cash-in-transit services only.

Information about the companies' costs has been retrieved from their published financial statements. Costs in respect of employees and depreciation of fixtures and fittings, tools and equipment, totalling kr. 159.4 million in 2009, are included. These costs do not comprise transfers to other parties – i.e. they are included as total resource costs.

Card companies

Card companies may both issue cards and acquire card payments. Nets, the largest acquirer in Denmark, is the sole acquirer of Dankort payments at point of sale and responsible for acquiring a large share of payments with international cards. In fact, the number of other active card acquirers in Denmark is relatively modest.

Card companies do not issue the Dankort or international debit cards. The reason is that this requires access to withdraw funds from customers' accounts directly – which is, in practice, the prerogative of banks. However, a number of card companies do issue international credit cards, e.g. SEB Kort and Entercard Danmark.

In addition to issuance and acquisition, card companies may also provide card issuer services, e.g. assist issuers with the handling of transactions, sending out of PINs and monitoring of fraudulent use. In Denmark, Nets provides card issuer services to Danish banks regarding both the Dankort and international cards.

Table 5.4 shows the costs of the card companies in 2009. For companies that issue cards and provide card issuance services, these costs amounted to approximately kr. 365 million, about half of which can be attributed to other activities, comprising operation and development of system platforms. Costs related to approving and executing payments totalled just under kr. 100 million.

CARD COMPANY COSTS OF PAYMENTS AT POINT OF SALE, 2009

Table 5.4

Kr. million	Card issuance/ issuer services	Card acquisition	Total
Customer service, etc.	54.9	43.0	97.9
Card issuance	26.7	•	26.7
Payment approval and execution	98.0	198.1	296.1
Of which interbank fees	•	104.4	104.4
Other activities	184.8	40.3	225.1
Total	364.4	281.4	645.8

Source: Danmarks Nationalbank.

The costs of companies providing card acquisition were kr. 281 million, the largest item being their interbank fees, i.e. the fees payable to card issuers per payment or as a fixed amount. As this fee represents a transfer to other parties, it is not a resource cost to be included in social costs.

Households

Household costs of payments at point of sale are comprised first and foremost of the time spent on activities related to these payments. Examples are the time spent withdrawing cash from ATMs, the actual payment time or the time spent checking account statements.

Household costs also include fees payable to banks for cash withdrawals and annual subscription fees for payment cards. In 2009, households paid no fees to retailers for payments at point of sale, as there was a ban on such fees, cf. Box 4.2.

Households also incur costs in the form of loss of interest income from their cash holdings. Consumers hold cash for several reasons, e.g. as savings. As already mentioned, this survey includes only the loss of interest income on the part of the consumers' cash holdings that is held solely for payments.

Finally, households may also have certain kinds of income from payments. Such income might be in the form of a gain due to float if they receive interest on the amount paid for a period of time after they have made a purchase. This occurs if they make Dankort payments during the weekend, as the funds are not withdrawn from the payer's account until Monday.¹

For credit card payments, households also benefit from an interest-free credit. The amount due on a credit card is typically calculated around the 20th calendar day of the month and settled at the end of the month. Assuming that payments are evenly distributed over the month, the convenience credit period will be an average of 25 days.

¹ See Bakkegaard et al. (2011).

HOUSEHOLD COSTS OF PAYMENTS AT POINT OF SALE, 2009

Table 5.5

Kr. million	Cash	Dankort	Internat. debit cards	Internat. credit cards	Total
Time, cash withdrawals	1,082.8	•	•	•	1,082.8
Time, payments	247.6	245.6	12.2	5.4	510.8
Time, account statements	21.6	394.3	19.6	8.7	444.2
Fees, cash withdrawals	153.1	•	•	•	153.1
Subscription fees, cards	•	81.7	45.0	73.9	200.6
Interest loss on cash	18.4	•	•	•	18.4
Total costs	1,523.5	721.6	76.8	88.0	2,409.9
Value date/Convenience credit	•	3.4	0.1	15.7	19.2
Total net costs	1,523.5	718.2	76.7	72.3	2,390.7
Net costs, per payment, kr. ..	1.9	0.9	2.0	4.2	
Net costs, per krone, øre	1.0	0.3	1.1	0.8	

Source: Danmarks Nationalbank.

Table 5.5 shows household costs of payments at point of sale, broken down by cash, the Dankort, international debit cards and international credit cards and various types of costs and gains. Box 5.2 provides a detailed description of the calculation of these costs and gains.

According to the table, time consumption accounted for the largest share of household costs of payments at point of sale in 2009. For cash payments, this was especially the time spent withdrawing cash. Costs in this respect accounted for more than two-thirds of total household costs of cash payments.

Household time consumption also accounted for most of their costs of Dankort payments. For these payments, it is mainly attributable to the time spent checking account statements. This particular time consumption is distributed on payment instruments using the number of payments as the distribution key, cf. Box 5.2.

For international cards, the annual subscription fee makes up the largest household cost. For international credit cards, issuer costs related e.g. to insurance services, lounge access, etc., often offered with these cards, are deducted from this fee to adjust for the fact that part of the fee was payment for these services.

The remainder of the fee for international credit cards may be perceived as payment for interest-free credit. In addition, a minor part of the fee may be seen as a premium for the global acceptance of the card – same as international debit cards and the Visa/Dankort. In principle, the latter part should not be included in this survey.

In Table 5.5, household time consumption is a resource cost and thus a contribution to social costs. Other costs are transfers to other parties and

Household costs of payments at point of sale, cf. Table 5.5, are calculated based on a number of sources. The most important source was Danmarks Nationalbank's survey of payment habits in Denmark. Information on the banks' income from the survey of bank costs, cf. Chapter 3, has also been applied.

The time consumption of households accounts for a large share of the household costs of individual payment methods. In the survey, Danish consumers specified their time consumption for various tasks. The time consumption has been multiplied by an average hourly wage rate, calculated from the survey, less a tax rate equivalent to the average tax burden in Denmark.

According to the information provided, each Danish consumer spends a little more than three hours per year making cash withdrawals, including transport time to and waiting time at ATMs. Consumers also spend time checking account statements. This time consumption is allocated to individual payment instruments based on the number of payments and it is assumed that no consumer spends more than 15 minutes per month reviewing his account statement.

The information about the time spent on payments is taken from Danmarks Nationalbank's study of payment times for cash and card payments, cf. Box 4.1. The study showed that the payment time is virtually the same for cash and card payments. The time spent by other consumers waiting in line is not included but assuming, say, that on average one consumer is waiting in line, the payment time costs would have doubled.

The calculation of household fees for cash withdrawals and subscription fees is based on the reporting to this study by banks and other card issuers. In the calculation of the subscription fee for international cards, including the Visa/Dankort, issuers have deducted a percentage corresponding to the use of the card for payments abroad that are not included in the survey.

For credit cards, the banks' costs of e.g. insurance services and lounge access, typically offered with these cards, were deducted from the calculation of household subscription fees. It is assumed that part of the subscription fee represents payment to the issuer for these services and that this payment is equivalent to the issuer's costs.

The calculation of households' interest loss on cash includes only the cash in their purse or wallet according to the survey on payment habits. In other words, it is assumed that other household cash is earmarked for savings or other purposes. As in the calculation of other parties interest loss on cash, Danmarks Nationalbank's current-account rate has been applied.

Households may also reap financial gains from payments by way of value-date gains or convenience credit. These gains are modest for debit cards, i.e. the Dankort and international debit cards, and are realised only when consumers make payments for goods or services over the weekend in which case the funds are withdrawn from the account on the following Monday.

Household gains are greater for credit card payments. These gains arise because the amount outstanding is typically calculated around the 20th calendar day of the month and settled at the end of the month. Assuming that payments are evenly distributed over the period, this results in a convenience credit period of an average of 25 days. 3-month Cibor has been used in the calculation of the value of this time.

are included only in the calculation of households' private net costs of each payment instrument.

SOCIAL COSTS

This section adds the costs of banks and retailers from Chapters 3 and 4 to the findings of the previous section. This provides an estimate of the social costs of cash payments and payments with the Dankort and international cards at point of sale.

Social costs can be calculated by summing up the resource costs, or internal costs, of all relevant parties, cf. Chapter 2, as presented in Table 5.6. For Danmarks Nationalbank and the cash-in-transit companies, as already mentioned, this corresponds to their total costs, but for other parties, transfers to other parties have been eliminated.

For banks, the costs of a number of payment services have been summed up and allocated to the relevant payments. For example, costs of all types of deposits and withdrawals are classified under cash payments. For card payments, costs have been reduced by a factor corresponding to the use of the particular type of payment card for online purchases.

In 2009, the social costs of cash payments and payments with the Dankort and international cards at point of sale amounted to just over kr. 7 billion, excluding household costs. Total costs including households were kr. 9.1 billion – or 0.55 per cent of GDP.

Broken down by types of payments, cash payments accounted for more than half of these costs. Including households, the costs of cash payments were just under kr. 5.8 billion. Dankort payments accounted

SOCIAL COSTS OF PAYMENTS AT POINT OF SALE, 2009 Table 5.6

Kr. million	Cash	Dankort	Internat. debit cards	Internat. Credit cards	Total
Danmarks Nationalbank	129.8	•	•	•	129.8
Banks	1,988.5	488.9	197.0	148.2	2,822.6
Cash-in-transit companies	159.4	•	•	•	159.4
Card companies	•	189.3	175.8	176.2	541.3
Retailers	2,157.8	1,169.4	62.8	29.9	3,419.9
Total, excl. households	4,435.5	1,847.6	435.6	354.3	7,077.8
Total, excl. households, per payment, kr.	5.64	2.34	11.08	20.36	•
Households	1,352.0	639.9	31.8	14.1	2,037.8
Total	5,787.5	2,487.5	467.4	368.4	9,110.7
Total, per payment, kr.	7.36	3.15	11.89	21.17	
Total, per krone paid, øre	3.8	1.0	6.9	4.0	

Note: The table presents the parties resource costs, i.e. their contribution to social costs.
Source: Danmarks Nationalbank.

for about 27 per cent of total costs, while international cards accounted for just under 10 per cent.

If costs are seen in relation to the number of payments, Dankort payments were the least expensive payment method for the economy as a whole. Excluding households, the total costs of Dankort payments were kr. 2.34 per payment, and including household costs were kr. 3.15 per payment.

Dankort payments are followed by cash payments, with social costs of kr. 5.64 per payment excluding household costs and kr. 7.36 including household costs. The most expensive payment method, calculated in this manner, was credit card payments with social costs exceeding kr. 20 per payment.

Costs may also be seen in relation to the value of payments, cf. Table 5.6. By this measure, Dankort payments were also the least expensive payment method at point of sale, while credit card payment costs were only slightly higher than cash payment costs, reflecting the relatively high average value of credit card payments.

Interpretation

As explained in Chapter 2, costs per payment with high fixed costs extensively depend on the number of payments. For both cash and the Dankort, fixed costs are distributed on a large number of payments. This points towards relatively modest costs per payment for these payment instruments.

It is important to underline that this measure cannot be used to compare the costs of an additional payment, i.e. the marginal costs, for two or more payment methods. This would require a breakdown of costs by fixed and variable costs, which is not part of this survey.

In Denmark, payments with the Dankort and international cards are essentially executed in the same manner, i.e. on the same technical platform at Nets, using the same card terminals and with the same payment time. Accordingly, there is no reason to believe that the marginal costs of the two payment methods differ significantly.

On the other hand, foreign surveys indicate that cash payments may be subject to higher marginal costs than card payments for payments exceeding a certain amount, cf. Chapter 7, reflecting that the resource consumption for cash payments, as opposed to card payments, depends on the amount of the payment.

PRIVATE NET COSTS

Table 5.6 presents resource costs broken down by individual parties. The table does not, however, show their transfers in the form of fees, etc., to

and from other parties, i.e. their private net costs. Instead, these are presented in Table 5.7, where banks are included, along with card and cash-in-transit companies.

For banks, etc., retailers and households, all payment methods at point of sale entail net costs. For retailers and households, this reflects that they receive a service that is payable by themselves, and in addition they incur internal payment costs.

For banks, etc., this result is consistent with Chapter 3, i.e. it does not change the overall picture to include card and cash-in-transit companies. As already mentioned, banks have income that is not part of the survey and which presupposes that they provide payment services.

As regards the individual payments methods, it makes most sense to compare the results of cash and Dankort payments, as the number of payments is roughly the same. It appears that for all parties, private net costs were clearly lower for Dankort payments than for cash payments.

In terms of international cards, banks, etc., have higher net costs than both retailers and households. The reason is that banks and card com-

PRIVATE NET COSTS OF PAYMENTS AT POINT OF SALE, 2009					Table 5.7
Kr. million	Internal costs	Fees, etc., paid	Private costs	Fees, etc., received	Private net costs
Cash					
Danmarks Nationalbank	129.8	0,0	129.8	155.1	- 25.3
Banks, etc.	2,147.9	115.8	2,263.7	358.3	1,905.4
Retailers	2,157.8	226.2	2,384.0	0.0	2,384.0
Households	1,352.0	171.5	1,523.5	0.0	1,523.5
Total	5,787.5	513.5	6,301.0	513.5	5,787.5
Dankort					
Banks, etc.	678.3	0.0	678.3	324.0	354.3
Retailers	1,169.4	245.7	1,415.1	0.0	1,415.1
Households	639.9	81.7	721.6	3.4	718.2
Total	2,487.6	327.4	2,815.0	327.4	2,487.6
International debit cards					
Banks, etc.	372.5	0.0	372.5	76.4	296.1
Retailers	62.8	31.5	94.3	0.0	94.3
Households	31.8	45.0	76.8	0.1	76.7
Total	467.1	76.5	543.6	76.5	467.1
International credit cards					
Banks, etc.	324.3	15.6	339.9	156.4	183.5
Retailers	29.9	82.6	112.5	0.0	112.5
Households	14.1	73.9	88.0	15.7	72.3
Total	368.3	172.1	540.4	172.1	368.3

Note: Fees, etc. paid and received, respectively, comprise all transfers between parties the table, incl. interest loss and interest income on cash and value-date losses and value-date gains. Banks, etc. comprise banks, cash-in-transit companies and card companies.

Source: Danmarks Nationalbank.

panies have high fixed costs in relation to international cards and that their income depends on the value of payments by these cards – which was relatively modest in 2009.

Chapter 6 – Remote Payments

INTRODUCTION AND SUMMARY

This chapter explains the calculation of social costs related to remote payments, i.e. online card payments as well as bank transfers and transfers via Betalingsservice. As was the case in the previous chapter, the results from Chapters 3 and 4 are added to the costs of other parties involved in these payments.

In this chapter, other parties include the same card companies as in Chapter 5, as well as providers of payment solutions for online purchases. In addition, Nets incurs costs in connection with Betalingsservice and, to a lesser extent, bank transfers. Finally, as in Chapter 5, household costs are also estimated.

Furthermore, this chapter presents an estimate of the number and value of payments for the various types of remote payments. The volume of online card payments has risen considerably in recent years, yet in 2009 they amounted to only approximately 5 per cent of total card payments. A relatively large part of those payments were executed using international cards.

Measured by the number of payments, Betalingsservice was the most widely used method of payment collection in 2009, but bank transfers accounted for the largest share of the total amount transferred via other methods of remote payment. This is because many of those transfers are typically one-off payments, some of which involve very large values.

In 2009, the total costs of online card payments amounted to just under kr. 300 million. As was the case with card payments at point of sale, Dankort payments, when calculated per payment, constituted the cheapest online payment method. Again, this reflects in part that the fixed costs related to Dankort payments are distributed on a large number of payments.

In 2009, the costs per Dankort payment, excluding household costs, were lower for online payments than for payments at point of sale. The main reason is that in connection with online card payments, retailers have no costs related to the payment time, which is a substantial cost of card payments at point of sale.

When including household costs, however, the costs per Dankort payment were higher for online payments than for payments at point of

sale. The main reason is the longer payment time for online card payments than for card payments at point of sale, because users have to enter card information, etc.

The total costs of bank transfers and transfers via Betalingservice were substantially higher than for online card payments, in 2009 amounting to just over kr. 7 billion, including household costs. When calculated per payment, Betalingservice was the cheapest payment collection method for society as a whole.

For online Dankort payments, Betalingservice and bank transfers other than via online banking facilities, the fee income of payment service providers taken as one exceeds their costs. For the other types of remote payments, service providers' costs exceed their fee income.

NUMBER AND VALUE OF PAYMENTS

The estimated number and value of online card payments and other remote payments are presented below.

Online card payments

Like card payments at point of sale, the volume of online card payments can be calculated relatively accurately, as relevant information can be obtained from a few card issuers and acquirers. Table 6.1 shows the number and value of online payments using the various types of cards based on the same sources as in Chapter 5.

The number of online card payments has multiplied rapidly in recent years,¹ but remains relatively modest. In 2009, online payments constituted almost 5 per cent of all card payments. In terms of value, the share was slightly higher, as the average value of online card payments was greater than at point of sale.

Consumers use international cards more frequently than the Dankort on the Internet relative to total payments with these cards. In 2009, almost every fifth payment with an international credit card was an online payment, while almost 10 per cent of all payments with international debit cards were online payments.

The more extensive use of international cards online relative to the use at point of sale may be attributable to more Internet shops accepting international cards. Moreover, paying for goods and services on the Internet using international credit cards may entail certain benefits for consumers, e.g. insurance services.

¹ Cf. statistics on the number of card payments on Nets' website, www.nets.eu.

NUMBER AND VALUE OF REMOTE PAYMENTS, 2009

Table 6.1

	Number (million)	Value (kr. billion)	Average value (kr.)
Remote payments, total	317.9	1,317.3	•
Cards on the Internet, total	46.5	25.9	557
Dankort	38.3	21.9	572
International debit cards.....	4.3	1.2	279
International credit cards.....	3.9	2.8	718
Other remote payments, total	271.4	1,291.4	4,758
Online banking transfers	50.1	240.5	4,800
Other bank transfers	52.0	656.3	12,621
Betalingservice	169.3	394.6	2,331

Source: Danmarks Nationalbank.

Other remote payments

Table 6.1 also shows the volume of other remote payments in 2009. The data on transfers via Betalingservice was supplied by Nets, whereas the number and value of online banking transfers and other bank transfers are estimates calculated on the basis of the reporting from banks, cf. Chapter 3.

Measured by the number of payments, Betalingservice was the most commonly used payment collection method in Denmark. As mentioned above, this product is used mainly for regular transfers, and the number of payments stated corresponds to approximately 40 transfers per adult being made via Betalingservice in 2009.

Bank transfers are more frequently used for single payments. Such payments may be of substantial value, e.g. in connection with purchases of homes or cars, etc. This explains why the average value of these transfers, particularly bank transfers other than online banking transfers, is significantly higher than that of Betalingservice transfers.

It should be emphasised that the number and value of bank transfers stated in Table 6.1 are estimates. Consequently, these figures and the calculated costs per payment and per krone paid for such transfers must be interpreted with more caution than in the case of Betalingservice.

OTHER PARTIES' COSTS

In addition to banks and payees, a number of other parties incur costs related to remote payments. For online card payments, these parties are issuers of payment cards other than banks, acquirers of card payments, including Nets, and providers of payment solutions for Internet trade, so-called payment gateways.

Furthermore, Nets incurs costs in connection with both Betalingservice and bank transfers. For bank transfers the reason is that Nets, on behalf

of payees, sends out inpayment forms to payers who have not registered for the Betalingservice scheme. Such inpayment forms can be paid via online banking facilities or another type of bank transfer.

The costs of card companies and providers of online payment solutions are presented below, followed by household costs related to remote payments. Nets' costs in connection with Betalingservice and bank transfers are not shown separately, but are added to banks' costs below.

Card companies, etc.

The card companies incurring card payment costs at point of sale, cf. Chapter 5, also incur costs in connection with online card payments. These costs are allocated to payments at point of sale, cf. the previous chapter, and online payments based on the number of payments as the distribution key.

In addition, the costs of providers of online payment solutions are included. As part of the survey information from DIBS Payment Services, the leading provider of these solutions in Denmark, has been collected. DIBS' costs have then been converted to the total number of online card payments according to the company's share of such payments.

These parties costs of online card payments are shown in Table 6.2. In the table, the costs of providers of online payment solutions are placed under Acquisition, etc. In 2009, the total costs of card companies, etc. amounted to kr. 156 million, with interbank fees, which are not a resource cost, accounting for one third.

Households

Tables 6.3 and 6.4 show the estimated household costs of remote payments in 2009. As a main rule, these estimates are calculated in the same way as for payments at point of sale, cf. Chapter 5. Box 6.1 describes the calculation of the costs not incurred in connection with payments at point of sale.

COSTS OF CARD COMPANIES, ETC. RELATED TO ONLINE CARD PAYMENTS, 2009

Table 6.2

Kr. Million	Card issuance/ issuer services	Acquisition, etc. ¹	Total
Customer service, etc.	8.5	15.2	23.7
Card issuance	3.9	•	3.9
Payment approval and execution	11.9	58.3	70.2
Of which interbank fees	•	50.2	50.2
Other activities	27.0	30.8	57.8
Total	51.3	104.3	155.6

¹ Acquisition, etc. includes the costs of providers of online payment solutions.
Source: Danmarks Nationalbank.

HOUSEHOLD COSTS OF ONLINE CARD PAYMENTS, 2009

Table 6.3

Kr. Million	Dankort	Internat. debit cards	Internat. credit cards	Total
Time, payments	50.7	5.7	5.2	61.6
Time, account statements	19.1	2.1	1.9	23.1
Annual subscription fees, cards	4.0	4.9	16.6	25.5
Fees payable to retailers	19.4	3.9	8.8	32.0
Costs, total	93.2	16.6	32.5	142.2
Income due to float and interest-free credit	0.3	0.0	4.7	5.0
Total net costs	92.9	16.6	27.8	137.2
Net costs, per payment, kr.	2.4	3.8	7.1	
Net costs, per krone paid, øre	0.4	1.4	1.0	

Source: Danmarks Nationalbank.

For online card payments, the payment time accounts for a larger share of household costs than is the case for card payments at point of sale. The payment time for online card payments includes the time it takes to enter the card information and wait for the payment to be approved, but not the customers' ordering of goods and services.

Household costs of online card payments also include transaction fees payable to retailers, i.e. the fees collected from retailers by the acquirer, which retailers are allowed to surcharge on their customers, cf. Box 4.3. The survey assumes that one fourth of all retailers pass on this fee.

The payment time is also a substantial cost for households in connection with both types of bank transfers. In connection with online banking transfers, households spend time completing the transfers on their computers, and for other transfers, the payment time includes travel time and waiting time at bank branches and post offices.

HOUSEHOLD COSTS OF OTHER REMOTE PAYMENTS, 2009

Table 6.4

Kr. Million	Online banking transfers	Other transfers	Betalings- service	Total
Time, payment	370.5	1,289.8	0.0	1,660.3
Time, account statement, etc. ¹	2.8	3.0	92.3	98.1
Fees	12.7	288.3	0.0	301.0
Costs, total	386.0	1,581.1	92.3	2,059.4
Costs, per payment, kr.	7.7	30.4	0.5	
Costs, per krone paid, øre	0.2	0.2	0.0	

¹ For Betalingservice, this cost includes the time spent having payments reversed.

Source: Danmarks Nationalbank.

CALCULATION OF HOUSEHOLD COSTS

Box 6.1

The households' costs of remote payments in Tables 6.3 and 6.4 are calculated largely in the same way as their costs of payments at point of sale, cf. Box 5.2. This box describes the calculation of costs that are not incurred in connection with payments at point of sale.

The payment time for online card payments has been set at 1 minute. It does not include the time spent ordering goods or services on the Internet, but only the time it takes to enter card information, including a security code, if any, and to wait for the payment to be approved.

For bank transfers, the payment time has been calculated on the basis of information from the survey on payment habits. It is assumed that it takes just under 5½ minutes to conduct an Internet banking transfer and approximately 19 minutes to conduct other transfers, including travel time and waiting time at the bank or post office.

In connection with Betalingsservice, households do not spend time on the payment itself, but to have the payments reversed requires some time. It is assumed that this applies to 0.7 per cent of payments, and that each reversal takes 5 minutes. Households' time consumption related to registering for the Betalingsservice scheme is excluded.

For online card payments, it is assumed that, according to an estimate by Forenningen for Distance- og Internethandel (FDIH - the Danish Distance Selling and E-business Association), one fourth of all retailers surcharge the acquiring fee on their customers. The calculation of the fees that are passed on assumes that the amount is always so high that retailers pay the highest rate, cf. Box 4.3.

For other remote payments, the banks and Post Danmark typically charge a fee for transfers conducted at the counter. Information on the size of these fees has been retrieved from the reporting by banks.

For transfers via Betalingsservice, it is assumed that households do not spend time on the payment itself. Instead, they are assumed to spend time having payments reversed. Historically, payers require only few payments to be reversed. In the survey, this is assumed to apply to 0.7 per cent of payments.

Households' expenditure for fees in connection with other transfers is also relatively large. It mainly includes fees payable when households conduct transfers at the counter at a bank or post office. A large part of the expenditure for fees in Table 6.4 is related to payments via inpayment forms at post offices.

SOCIAL COSTS

This section presents the social costs of online card payments and other remote payments, i.e. bank transfers and transfers via Betalingsservice. These costs are calculated by adding the costs estimated in Chapters 3 and 4 to the above results and adjusting for transfers between the various parties.

SOCIAL COSTS OF ONLINE CARD PAYMENTS, 2009

Table 6.5

Kr. Million	Dankort	Internat. debit cards	Internat. credit cards	Total
Banks	23.7	21.6	33.2	78.5
Card companies, etc.	41.2	23.1	41.0	105.3
Retailers	22.5	2.0	2.5	27.0
Total, excluding households	87.4	46.7	76.7	210.8
Total, excluding households, per payment, kr.	2.28	10.86	19.67	•
Households	69.8	7.8	7.1	84.7
Total	157.2	54.5	83.8	295.5
Total, per payment, kr.	4.10	12.70	21.49	
Total, per krone paid, øre	0.7	4.5	3.0	

Note: The table presents parties' resource costs, i.e. their contribution to the social costs. Card companies, etc. comprise providers of payment solutions for online purchases.

Source: Danmarks Nationalbank.

Tables 6.5 and 6.6 show the total resource costs for online card payments and other remote payments, respectively, broken down by the relevant parties. In Table 6.5, as above, card companies, etc. also comprise providers of online payment solutions, and in Table 6.6, banks, etc. also include Nets.

Online card payments

The social costs of online card payments are substantially lower than the costs of card payments at point of sale. For all cards, these costs totalled kr. 211 million in 2009, excluding household costs, and just under kr. 300 million, including household costs. Of this amount, around half can be attributed to Dankort payments.

When calculated per payment, the social costs were lowest for Dankort payments. The total costs of an online Dankort payment, including

SOCIAL COSTS OF BANK TRANSFERS AND BETALINGSSERVICE, 2009

Table 6.6

Kr. million	Online banking transfers	Other transfers	Betalingservice	Total
Banks, etc.	165.2	364.9	600-800	1,130-1,330
Firms	1,241.2	1,287.3	1,688	4,216
Total, excl. households	1,406.4	1,652.2	2,288-2,488	5,346-5,546
Total, excl. households, per payment, kr.	28.07	31.77	13.51-14.69	•
Households	373.3	1,292.8	92.3	1,758
Total	1,779.5	2,945.0	2,380-2,580	7,104-7,304
Total, per payment, kr.	35.53	56.63	14.06-15.24	
Total, pr. krone paid, øre	0.7	0.4	0.6-0.7	

Note: The table comprises parties' resource costs, i.e. their contribution to the social costs. Banks, etc. comprise banks and Nets. For reasons of anonymity, costs related to Betalingservice are shown as intervals.

Source: Danmarks Nationalbank.

household costs, amounted to kr. 4.10. This is significantly lower than for international cards and should be seen in light of the larger number of online Dankort payments.

Measured per krone paid, online Dankort payments were also cheaper for society than payments with international cards. By this measure, the costs of international credit cards were also lower than for international debit cards, reflecting that the value of credit card payments is higher than for the other types of cards.

These costs can be compared to the costs at point of sale, cf. Table 5.6. Despite fewer payments, the costs per Dankort payment, excluding household costs, are lower online than at point of sale. The main reason is that retailers on the Internet have no payment time costs.

On the other hand, the costs per Dankort payment, including household costs, were higher online than at point of sale, primarily because consumers, i.e. households, are estimated to spend more time per online card payment than per card payment at point of sale, cf. Boxes 5.2 and 6.1.

Other remote payments

In 2009, the social costs of the other types of remote payments constituted approximately kr. 5.5 billion, excluding household costs. The total costs, including household costs, amounted to just over kr. 7 billion, or 0.43 per cent of the gross domestic product, GDP.

Excluding households, bank transfers, accounted for just over half of the total costs of other remote payments. The costs of bank transfers, including households, constituted approximately two thirds of the costs, reflecting that households spend more time on these transfers than on Betalingservice.

Betalingservice, calculated per payment, was considerably cheaper for society than the other two types of remote payments. The reason is that Betalingservice does not involve expenditure for printing and sending out inpayment forms and invoices, and that the time consumption for all parties is lower than for bank transfers.

The social costs, calculated per krone paid, for bank transfers other than via online banking facilities were lower than for the other payment collection methods. This reflects that, as previously mentioned, bank transfers are primarily single payments, some of which involve large amounts.

PRIVATE NET COSTS

Tables 6.7 and 6.8 show the various parties private net costs for online card payments and the three other types of remote payments. In the

PRIVATE NET COSTS OF ONLINE CARD PAYMENTS, 2009

Table 6.7

Kr. million	Internal costs	Fees, etc. paid	Private costs	Fees, etc. received	Private net costs
Dankort					
Banks, etc.	64.9	0.0	64.9	141.1	- 76.2
Retailers	22.5	137.4	159.9	77.4	82.5
Households	69.8	81.4	151.2	0.3	150.9
Total	157.2	218.8	376.0	218.8	157.2
International debit cards					
Banks, etc.	44.7	0.0	44.7	28.4	16.3
Retailers	2.0	23.5	25.5	15.0	10.5
Households	7.8	19.9	27.7	0.0	27.7
Total	54.5	43.4	97.9	43.4	54.5
International credit cards					
Banks, etc.	74.2	4.7	78.9	63.5	15.4
Retailers	2.5	46.9	49.4	35.0	14.4
Households	7.1	51.6	58.7	4.7	54.0
Total	83.8	103.2	187.0	103.2	83.8

Note: Fees, etc. paid and received comprise all transfers between parties in the table, including losses/gains due to float. Banks, etc. comprise card companies and providers of online payment solutions in addition to banks.

Source: Danmarks Nationalbank.

PRIVATE NET COSTS OF BANK TRANSFERS AND BETALINGSSERVICE, 2009

Table 6.8

Kr. million	Internal costs	Fees, etc. paid	Private costs	Fees, etc. received	Private net costs
Internet banking transfers					
Banks, etc.	165.2	0.0	165.2	93.0	72.2
Firms	1,241.2	80.3	1,321.5	0.0	1,321.5
Households	373.3	12.7	386.0	0.0	386.0
Total	1,779.5	93.0	1,872.5	93.0	1,779.5
Other transfers					
Banks, etc.	364.9	0.0	364.9	407.7	- 42.8
Firms	1,287.3	119.4	1,406.7	0.0	1,406.7
Households	1,292.8	288.3	1,659.6	0.0	1,659.6
Total	2,945.0	407.7	3,352.7	407.7	2,945.0
Betalingservice					
Banks, etc.	600-800	0.0	600-800	800-1,100	-500-0
Firms	1,688	800-1,100	2,488-2,788	0.0	2,488-2,788
Households	92	0.0	92	0.0	92
Total	2,380-2,580	800-1,100	3,088-3,588	800-1,100	2,380-2,580

Note: Fees, etc. paid and fees, etc. received include all transfers between sectors in the table, including losses/gains due to float. Banks, etc. comprise Nets and Post Danmark in addition to banks. For anonymity reasons, costs and fees related to Betalingservice are shown as intervals.

Source: Danmarks Nationalbank.

first table, banks, etc. also comprise card companies and providers of online payment solutions. In Table 6.8, banks, etc. also include Nets, as in Table 6.5.

For online Dankort payments, the fee income, etc. of banks and other providers of payment services exceeds their costs. The same applies to Betalingsservice and bank transfers other than via online banking. For the other payment methods, the costs for the banks, etc. exceed their fee income.

The other parties incur net costs for all types of remote payments, reflecting that they have payment-related internal costs, and that they have to pay for payment services received. For online card payments, retailers receive fees from households, but, as previously mentioned, these only cover part of the fees to the acquirer payable by retailers.

Chapter 7 – International Comparison

INTRODUCTION AND SUMMARY

Danmarks Nationalbank's survey of payment costs in Denmark is, as mentioned, part of a European study, coordinated by the European Central Bank, ECB. Once the results from the other countries are available, it will be possible to compare them with the calculated costs in the Danish survey.

Surveys of payment costs at point of sale have previously been conducted in other countries, including Norway, Sweden, the Netherlands and Belgium. These surveys vary in several ways, but can still be compared with the results in this report.

In the surveys for the four countries mentioned above and Denmark, the costs of payments at point of sale account for between 0.29 and 0.72 per cent of the gross domestic product, GDP. By this measure, costs are highest in the Netherlands and Belgium, which are also the countries where cash payments are most common.

In Denmark and Norway, debit card payments are widely used, while cash payments account for a modest share of all payments, particularly in Norway. Given fixed costs, this partly explains why costs per debit card payment are relatively low in the two countries, while costs per cash payment are higher than in the other countries.

Norwegian and Danish banks basically offer their customers the same payment services. The banks' costs relating to these services are also largely the same in the two countries. However, for the Norwegian banks a significantly larger share of the costs is covered by fees compared with Denmark.

The Swedish and Dutch surveys distinguish between fixed and variable payment costs. This provides scope for calculating how the social costs depend on the size of the payment. Both surveys show that debit card payments above a certain amount involve the lowest costs.

PAYMENTS AT POINT OF SALE

Several countries often compared with Denmark have, in recent years, conducted surveys of the social costs of payments at point of sale. These include Norway, Sweden, the Netherlands and Belgium.¹

¹ See Gresvik and Haare (2009), Bergman, Guibourg and Segendorf (2007), Brits and Winder (2005) and Banque Nationale de Belgique (2005).

The surveys vary in terms of method and scope. While household costs are not part of the Dutch and Belgian surveys, they are included in the Nordic studies. Moreover, the surveys were conducted in different years. These differences should be considered when comparing the calculated costs.

Furthermore, the significant differences in national payment card structures should be taken into account. For instance, both Denmark and Norway have a national debit card, Dankort and BankAccept, which are very widely used. In Sweden consumers primarily use international cards, and credit cards are more common than in the other countries.

Table 7.1 shows the calculated social costs of cash payments and payments with debit and credit cards at point of sale in the four countries as well as in Denmark according to the survey in this report. Household costs are disregarded, allowing for comparison across all countries.

The table confirms that there are considerable social costs linked to payments at point of sale. In the Nordic countries, these costs are estimated at 0.3-0.4 per cent of GDP and in the Netherlands and Belgium

SOCIAL COSTS OF PAYMENTS AT POINT OF SALE¹

Table 7.1

	Denmark 2009	Norway 2007	Sweden 2002	The Netherlands 2002	Belgium 2003
All payment methods: ²					
Total costs, kr. million	7,070	6,681	5,792	20,857	14,683
Of which cash, per cent	63	37	78	76	80
Of which cards, per cent	37	63	22	24	20
Total costs, percentage of GDP	0.43	0.32	0.29	0.60	0.72
Cash:					
Total costs, kr. million	4,438	2,460	4,502	15,767	11,763
No. of payments, million	786	285	1,407	7,167	3,016
No. of payments per capita	142	61	158	444	291
Costs per payment, DKK	5.6	8.6	3.2	2.2	3.9
Debit cards:					
Total costs, kr. million	2,273	2,556 ³	1,041	3,864	2,199
No. of payments, million	830	805	521	1,073	536
No. of payments per capita	150	171	58	66	52
Costs per payment, DKK	2.7	3.2	2.0	3.6	4.1
Credit cards:					
Total costs, kr. million	359	1,665	249	1,226	721
No. of payments, million	17	•	80	46	37
No. of payments per capita	3	•	9	3	4
Costs per payment, DKK	20.6	•	3.1	26.7	19.5

¹ Costs exclude households' costs.

² Payment methods comprise cash payments and payments with debit and credit cards, but not payments with e.g. cheques and electronic money.

³ Information about debit card payments in Norway covers only BankAccept, as it is not possible to split up costs relating to international cards into debit and credit cards.

Source: Danmarks Nationalbank, Greswik and Haare (2009), Bergman, Guibourg and Segendorf (2007), Brits and Winder (2005) and Banque Nationale de Belgique (2005).

around twice as much. Cash payments account for the largest share of costs in all the countries, except Norway.

Norway stands out in the use of cash, as Norwegian consumers made considerably fewer cash payments than consumers in the other countries. This means that the fixed costs for cash are distributed on fewer payments, partly explaining the high costs per cash payment observed in Norway.

Among the other countries, the costs per cash payment were highest in Denmark. This should also be viewed in light of the number of cash payments, which was lower in Denmark than in the other countries. This is particularly evident in comparisons with the Netherlands and Belgium, where the number of cash payments per capita was up to three times that in Denmark.

Conversely, debit card payments are more widely used in Denmark and Norway, and in both countries the number of debit card payments exceeded that of cash payments in the year of the survey. This might be attributable to the countries' national debit cards and contributes to their relatively low costs per debit card payment.

In Sweden, the calculated costs per debit card payment are lower than in Denmark and Norway. This is to some extent due to methodological differences, as the Swedish survey disregards certain costs, which are included in the Danish and Norwegian surveys, e.g. the banks' general costs.

These differences are also a significant contributory factor to the relatively low social costs per credit card payment in Sweden. Moreover, credit cards are, as mentioned, more commonly used in Sweden than in the other countries, implying that the fixed costs are distributed on a larger number of payments.

THE BANKS' COSTS

In the Norwegian – as in the Danish – survey, the costs for the banks' payment services have been calculated, and information about their income has been collected. Norwegian and Danish banks basically offer their customers the same payment services, so the results for the two countries are comparable.

Table 7.2 presents the Danish and Norwegian banks' costs per transaction for equivalent payment services. There are clear similarities between the banks' costs. The same services entail high costs in both countries, and the level of these costs is more or less the same.

In both Denmark and Norway, the banks' costs are highest for the most time-consuming payment services such as deposits and cash withdrawals at the counter and deposits via a night safe. These services re-

**DANISH AND NORWEGIAN BANKS' COSTS PER TRANSACTION FOR
SELECTED PAYMENT SERVICES**

Table 7.2

Kr. per transaction ¹	Denmark, 2009	Norway, 2007
Online banking transfers ²	1.5	2.0
Direct debit ^{2,3}	2.0	2.5
National debit cards ^{2,4}	0.5	1.0
Deposits at the counter	43.5	57.0
Deposits via night safe	60.5	40.5
Withdrawals at the counter	31.5	36.0
Withdrawals in own ATM/own customer	4.5	6.5
Withdrawals in own ATM/non-customer	5.0	5.5
Withdrawals in other bank's ATM/own customer .	7.5	8.0

¹ Costs are rounded to the nearest kr. 0.5.

² The payment service is the service, for which the bank is the payer's bank.

³ Direct debit covers Betalingservice in Denmark and AvtaleGiro in Norway.

⁴ The national debit cards in Denmark and Norway are Dankort and BankAccept.

Source: Danmarks Nationalbank and Gresvik and Haare (2009).

quire time for counting and sorting cash at the banks, and transactions conducted at the counter require time for customer service.

For both Danish and Norwegian banks, payments with the national debit cards – executed by the cardholder's bank – involve the lowest costs per transaction of all payment services. This should be viewed in light of the large number of payments with these cards in both Denmark and Norway, cf. above.

Cost recovery

The Norwegian central bank, Norges Bank, has argued on several occasions that banks should charge fees that reflect the relative costs of their payment services. This encourages customers to opt for the payment services that involve the lowest costs for the banks and for the economy as a whole.

Since 1988, Norges Bank has carried out four surveys of the banks' costs of and income from payment services.¹ They show that the banks have complied with Norges Bank's request and that electronic services have gained ground. This has reduced the banks' costs despite the fact that the number of transactions has increased sharply.

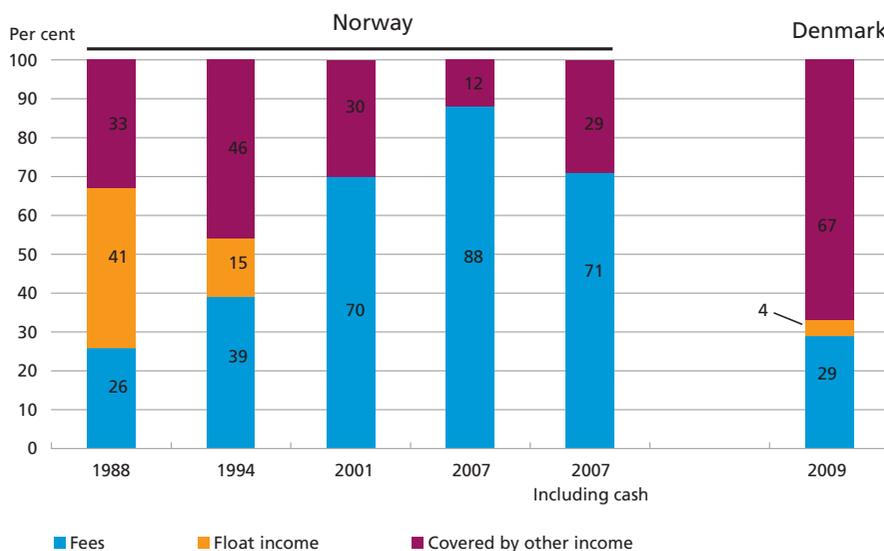
From 1988 to 2007, the Norwegian banks also increased their share of costs of payment services covered by fees. In 1988, 26 per cent of costs of these services, excluding cash withdrawals and deposits, were offset by fee income, but in 2007, this share had risen to 88 per cent, cf. Chart 7.1.

For all payment services, including cash withdrawals and deposits, the Norwegian banks' cost recovery was 71 per cent in 2007. This figure masks

¹ See Fidjestøl, Flatraaker and Vogt (1989a,b), Robinson and Flatraaker (1995a,b), Gresvik and Øwre (2003) as well as Gresvik and Haare (2009).

BANKS' COST RECOVERY FOR PAYMENT SERVICES

Chart 7.1



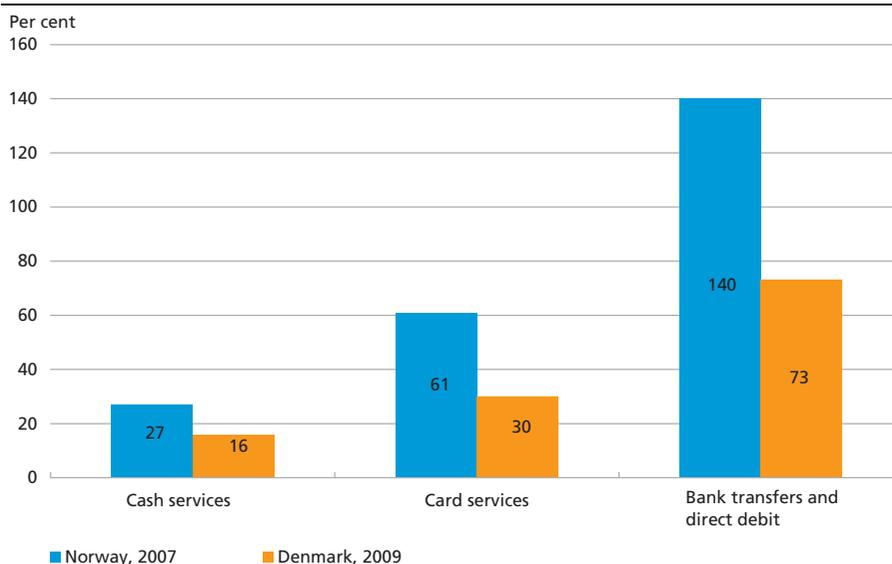
Note: Norges Bank's first three surveys of the banks' costs of payment services did not include deposits and cash withdrawals. The Danish survey is therefore most comparable with the Norwegian survey from 2007, which includes cash. A legislative amendment in 2000 banned income due to float for Norwegian banks.

Source: Danmarks Nationalbank and Gresvik and Haare (2009).

a considerable variation between individual services. For cash services, the cost recovery was 27 per cent, while it was 140 per cent for bank transfers and direct debit, cf. Chart 7.2.

BANKS' COST RECOVERY IN FEES FOR VARIOUS TYPES OF PAYMENT SERVICES

Chart 7.2



Source: Danmarks Nationalbank and Gresvik and Haare (2009).

In Denmark, a considerably lower share of the banks' costs for payment services is offset by fees, cf. Chart 7.1. Overall, more than 70 per cent of the banks' costs related to payment services included in this survey were to be covered by other income in 2009.

As in Norway, the Danish banks obtain the highest cost recovery for bank transfers and direct debit. This result is mainly attributable to Betalingservice, for which the banks' fee income matches their costs, cf. Chapter 3. Viewed in isolation, cash services are associated with considerable losses for banks in Denmark.

FIXED AND VARIABLE COSTS

In line with the European study of payment costs, this report does not distinguish between fixed and variable costs. However, the distinction is made in the Swedish and Dutch surveys. Such distinction is subject to considerable uncertainty, but provides scope for supplementary analyses.

Both the Swedish and Dutch surveys break down costs into three categories: (i) fixed costs independent of whether an additional payment is made, (ii) costs varying with the number of payments, and (iii) costs varying with the value of the payment.

Examples of fixed costs are the banks' expenses for card issuance, depreciation of ATMs and costs in connection with systems development. The shops pay fixed costs in the form of expenses for cash-register equipment and time spent on depositing the daily turnover in a night safe.

Costs varying with the number of payments include for the banks time spent on transactions at the counter and customer enquiries, and for retailers and households the payment time. Another cost for households that depends on the number of payments is the time spent on checking account statements.

Costs in the latter category may comprise banks' payroll costs for counting, sorting and packaging cash as well as filling up ATMs. For shops, it may be the fees paid to the acquirer, which are, however not social costs. For households, costs varying with the value of the payment can be time spent on withdrawing cash.

Social costs

Both the Swedish and Dutch surveys include calculations of how the social costs for an additional payment with cash or card depend on the size of the amount. Fixed costs viewed as sunk costs, i.e. costs that cannot be recovered, are disregarded. The calculation is explained in detail in Box 7.1.

DECOMPOSITION OF COSTS OF AN ADDITIONAL PAYMENT

Box 7.1

Both the Swedish and the Dutch surveys break down costs for each payment method j into fixed costs, F^j , costs varying with the number of payments, $V_{A^j}^j$, and costs varying with the value of the payment, $V_{V^j}^j$.

If N^j is the number of payments with payment method j , the average of costs varying with this number per payment can be calculated as

$$a^j = V_{A^j}^j / N^j$$

If, correspondingly, S^j is the value of payments with payment method j , the average of costs varying with this value per paid krone can be calculated as

$$b^j = V_{V^j}^j / S^j$$

The costs of an additional payment of value s with payment method j can subsequently be divided into a component due to the additional payment, a^j , and a component reflecting the value of the payment, $b^j * s$, giving

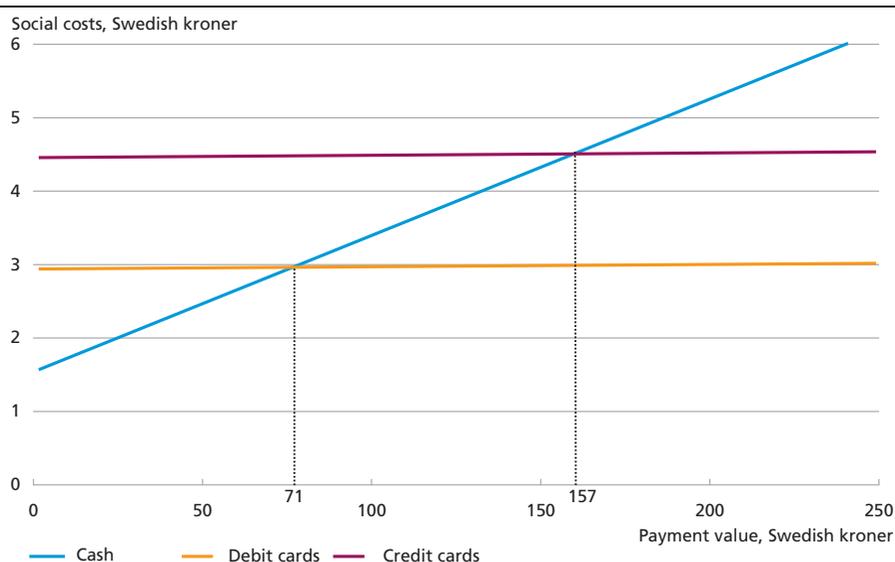
$$OMK^j(s) = a^j + b^j * s$$

In a diagram with the payment value on the first axis and the costs on the second axis, this can be depicted as a straight line cutting the second axis in a^j and having the slope b^j .

Charts 7.3 and 7.4 illustrate the results of the two surveys. As appears from both charts, the social costs of a cash payment increase in parallel with the size of the amount. This reflects that cash handling, unlike

SOCIAL COSTS OF PAYMENTS AT POINT OF SALE IN SWEDEN, 2002

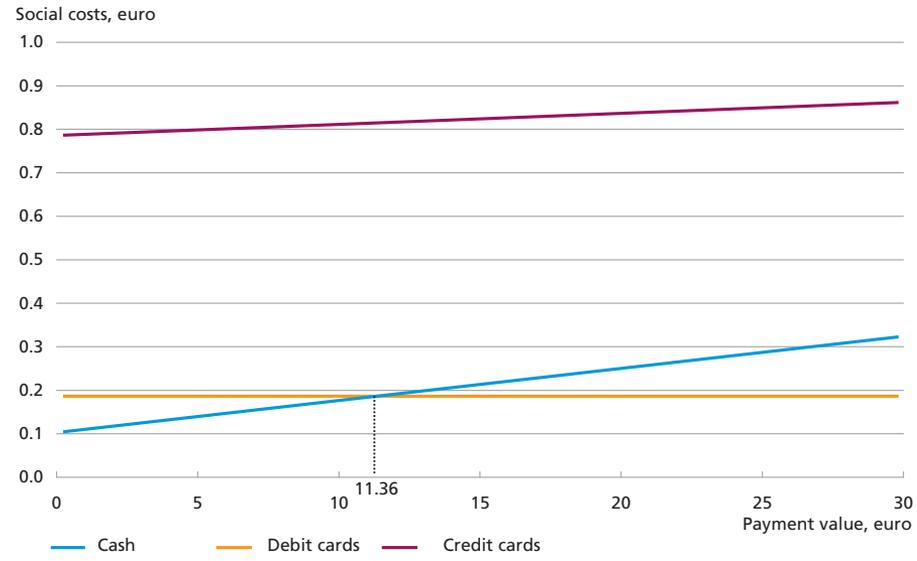
Chart 7.3



Source: Bergman, Guibourg and Segendorf (2007).

SOCIAL COSTS OF PAYMENTS AT POINT OF SALE IN THE NETHERLANDS, 2002

Chart 7.4



Source: Brits and Winder (2005).

electronic card payments, is associated with resource costs that vary with the value of the payments.

Both surveys conclude that small payments are cheapest for society if they are made in cash. In Sweden, this is the case for payments of less than 71 Swedish kronor, and in the Netherlands, for payments up to almost 12 euro. For payments above these amounts, debit cards involve the lowest social costs.

According to both the Swedish and the Dutch surveys, credit card payments involve higher costs than debit card payments regardless of the size of the amount. Part of the reason is that losses and misuse occur more frequently for credit cards, but also that both surveys assume a longer payment time for credit cards than for debit cards.

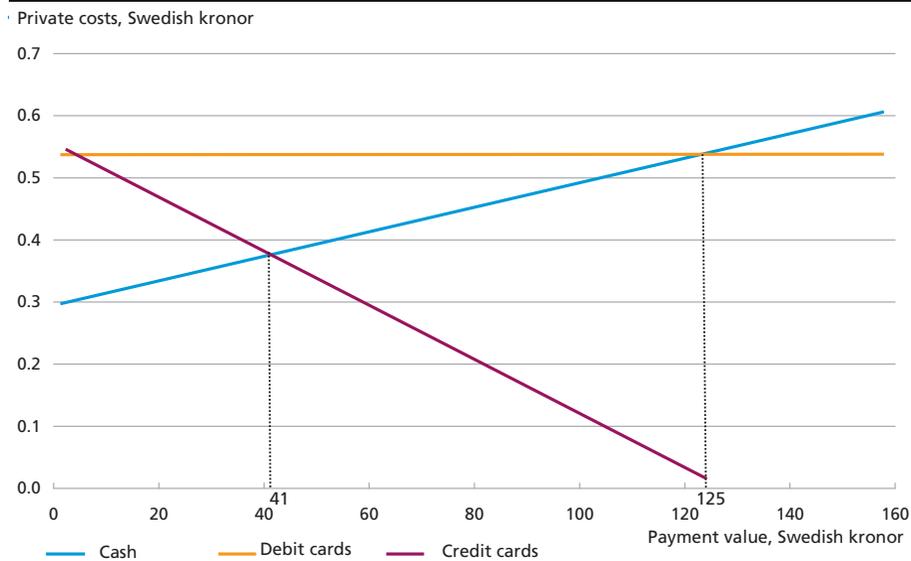
Private net costs

Usually, it is the consumer who chooses the payment method, as most shops accept both cash and cards. The consumers can only be expected to take their private net costs into consideration. It is therefore interesting to investigate whether they deviate from the social costs.

This is illustrated in Chart 7.5, showing a Swedish consumer's private net costs for the same three types of payments as in Chart 7.3. The result is that for small amounts cash payments are also cheaper for consumers. In other words, the private net costs and the social costs are consistent.

HOUSEHOLDS' PRIVATE NET COSTS FOR PAYMENTS AT POINT OF SALE IN SWEDEN, 2002

Chart 7.5



Source: Bergman, Guibourg and Segendorf (2007).

For payments exceeding 41 Swedish kronor, the consumers' private net costs are lowest for credit card payments. The reason is the period of interest-free credit that the consumer obtains in connection with these payments. For the consumer, the value of the credit increases with the size of the amount, and therefore the private net costs decrease.

For amounts exceeding 41 Swedish kronor, it is thus cheaper for the consumer to pay with a credit card than to use other payment methods. However, this is not beneficial to the overall society, as it would be better if the consumer paid amounts up to 71 Swedish kronor in cash and with a debit card for amounts above this limit, cf. Chart 7.3.

It should be underlined that the consumer's choice of payment instrument does not depend on private net costs alone. As described in Chapter 2, the individual payment methods present other advantages and drawbacks that also affect this choice.

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Glossary

Acquiring fee

Fee payable by retailers to the acquirer per payment. The fee can also be a fixed payment, as is the case with the Dankort.

Acquirer

Company that receives retail card payments, transmits them to the issuer and guarantees payment vis-à-vis the retailer, e.g. Nets.

Bank transfer

Transfer ordered by the payer. Examples of bank transfers are transfers via online banking facilities and transfers executed at the counter of a bank or at a post office.

Betalingservice (direct debit product)

Payment method used for regular transfers, such as rent, newspaper subscriptions, TV licence fees etc. The product is administered by Nets, which is in charge of the payment collection on behalf of the payees.

Card issuer services

Services provided on behalf of a card issuer, including transaction handling, sending out PINs and monitoring of fraudulent use. Nets performs card issuer services for Danish banks.

Cash-in-transit company

Company dealing with transport and safe-keeping of values, such as cash. Examples are Dansk Værdihåndtering and Loomis.

Cibor

Cibor (Copenhagen Interbank Offered Rate) is a reference interest rate for liquidity offered in the inter-bank market (in Denmark) on an uncollateralised basis with maturities from 1 week to 12 months.

Clearing

Statement, reconciliation and in some cases also confirmation of payment orders before the payment is settled.

Credit card

Payment cards that can be used for purchase of goods and services based on granted access to credit. Credit card payments are debited after a specified period of time, typically once a month.

Credit transfer

Bank transfers executed without an underlying inpayment form.

Current account

Account with a bank, from which payments can be made, e.g. a wage account.

Dankort

The national debit card in Denmark.

Debit card

A payment card characterised by the direct withdrawal of money from the payer's account immediately after payment execution. The card must therefore be linked to a deposit account. The Dankort is an example of a debit card.

Direct debit

Type of payment collection, typically for regular payments, with the payee instructing the banks to transfer money. Betalingsservice is based on direct debit.

Factoring

Fee payable by retailers to the acquirer for receiving money before the usual time of settlement.

Income due to float

Banks' saved interest expenses in connection with payments. The income arises because the money is debited to the payer's account one or more days before it is credited to the payee's account.

Infrastructure subscription

Payment from banks to Nets for participating in the clearing of payments made by the banks' customers.

Inpayment forms

Standardised form, including information about a bank transfer, about the payee and, if relevant, about the size of the amount.

International payment cards

Debit and credit cards issued under license by international card companies, including Visa and MasterCard. The cards can be used for purchases abroad.

Payment gateway

Software passing on information about online card payments from the website where the purchase is made to the shop's acquirer. A payment gateway can be compared with a card terminal in physical shops.

Physical trade

Transaction for which both the buyer and the seller are physically present.

Remote payments

Card payments for online purchases and payment collection via bank transfers and Betalingsservice.

Revolving credit

Outstanding credit that is not repaid at the fixed time of settlement for a credit card, but is continued as a loan according to agreement with the acquirer.