

---

# Payment Habits in Denmark

---

*Johan Gustav Kaas Jacobsen and Søren Truels Nielsen, Payment Systems*

---

## INTRODUCTION AND SUMMARY

---

The Dankort, the national debit card, is just as popular as cash for retail transactions in Denmark. In this respect, the Danes resemble the Swedes and Norwegians, who also make extensive use of payment cards, but differ from consumers in most other European countries, where cash remains the most popular payment method.<sup>1</sup>

This article reviews the findings of a survey of payment habits in Denmark, based on responses from just under 1,300 consumers aged between 15 and 79. The survey was conducted by Statistics Denmark on behalf of Danmarks Nationalbank in the autumn of 2010. For more information on the survey, see Jacobsen and Nielsen (2011).

The survey findings may be used e.g. to assess the consequences of statutory changes in the payments area. For instance, the Danish rules on card fees have recently been changed, entailing that, in future, retailers may charge consumers a fee for credit card transactions. Retailers may not charge a fee for debit card transactions such as Dankort transactions.

According to a statistical analysis presented in the article, this change will lead to an increase in Dankort transactions rather than in cash transactions. This is an important conclusion as the social costs of cash transactions, especially large ones, are higher than for card transactions.

---

## PREVALENCE OF PAYMENT INSTRUMENTS

---

For retail transactions, the Danes typically have a choice between cash, various types of payments cards and cheques, cf. Box 1.

The Dankort is by far the most popular payment instrument: about eight in ten Danes aged between 15 and 79 are Dankort holders, cf. Chart 1. The percentage of Danes holding a Dankort is highest for consumers over 24 and rises with income.

---

<sup>1</sup> See Nyberg (2010), Gresvik and Haare (2008), Jonker (2005) and Mooslecher et al. (2006).

PAYMENT INSTRUMENTS IN DENMARK

Box 1

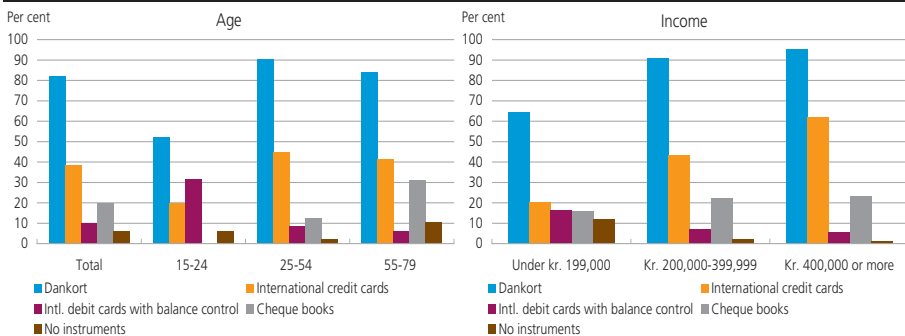
- The *Dankort* is the national debit card in Denmark. With debit cards, the money is withdrawn from the payer's account immediately after the transaction. In most cases, the Dankort is a Visa/Dankort, entailing that it works as a Dankort for national transactions and a Visa card for transactions abroad.
- *International credit cards*, e.g. MasterCard, American Express and Diners Club, are payment cards for the purchase of goods and services in Denmark and abroad, subject to the line of credit granted to the cardholder. The credit extended is repaid, in full or in part, at the end of a specified period, typically one month.
- *International debit cards with real-time balance control*, e.g. Visa Electron and MasterCard Debit, differ from the Dankort by having real-time balance control to ensure that the payer cannot overdraw his account. Moreover, like international credit cards, these cards may be used for transactions abroad.
- There are also a number of *other payment cards*, e.g. the payment card of the Consumption Association estbl. 1886. These cards work as credit cards – but only for transactions at designated points of sale. The prevalence and use of these cards are not described in this article.
- *Cheques* are written orders by which the issuer of the cheque by his signature instructs his bank to allow another person to withdraw the value of the cheque from his account.

International credit cards are also most popular in the highest income brackets. One reason could be that consumers in high income brackets tend to travel more frequently than others, both for business and for pleasure, and thus have a greater need to make transactions abroad. Moreover, they can benefit from the higher daily withdrawal limit on credit cards relative to other types of cards. Also, the credit rating of consumers in lower income brackets sometimes means that they will not be offered payment cards with credit or overdraft facilities.

International debit cards with real-time balance control are most popular among young people aged between 15 and 24. The primary

PREVALENCE OF PAYMENT INSTRUMENTS

Chart 1



Source: Danmarks Nationalbank.

## PERCENTAGE OF DANISH CONSUMERS WITH ACCESS TO SEVERAL PAYMENT INSTRUMENTS

Table 1

Who also have:	Cheque book	Dankort	Intl. credit card	Intl. debit card
Consumers with cheque books .....	100	89	41	4
Consumers with Dankort .....	22	100	42	4
Consumers with international credit card .....	21	88	100	7
Consumers with international debit cards .....	9	33	27	100

Note: The rows show the percentage of individuals with access to the payment instrument in question, as well as the payment instrument in the corresponding column.

Source: Danmarks Nationalbank.

reason is that young people under the age of 18 are usually not eligible for a Dankort and that people who have just turned 18 may have held on to the card rather than applying for another type of payment card. International debit cards are also well-suited for lower-income consumers, who may, as already mentioned, have difficulty being approved for a payment card with an overdraft facility. Accordingly, these cards are more widespread among consumers in low income brackets.

Finally, retailers usually accept cheques for retail purchases. Although the number of cheque transactions is relatively small today, cf. below, about one fifth of the Danish population aged between 15 and 79 still has a cheque book, cf. Chart 1. Cheque books are most popular among consumers over the age of 55, while virtually no-one under 25 has a cheque book.

Many Danes have access to several other payment instruments in addition to cash, cf. Table 1. For instance, 88 per cent of the Danes holding an international credit card are also Dankort holders, while this is only the case for three in ten Danes holding a debit card with real-time balance control. Credit cards are thus a more frequent alternative to the Dankort than international debit cards.

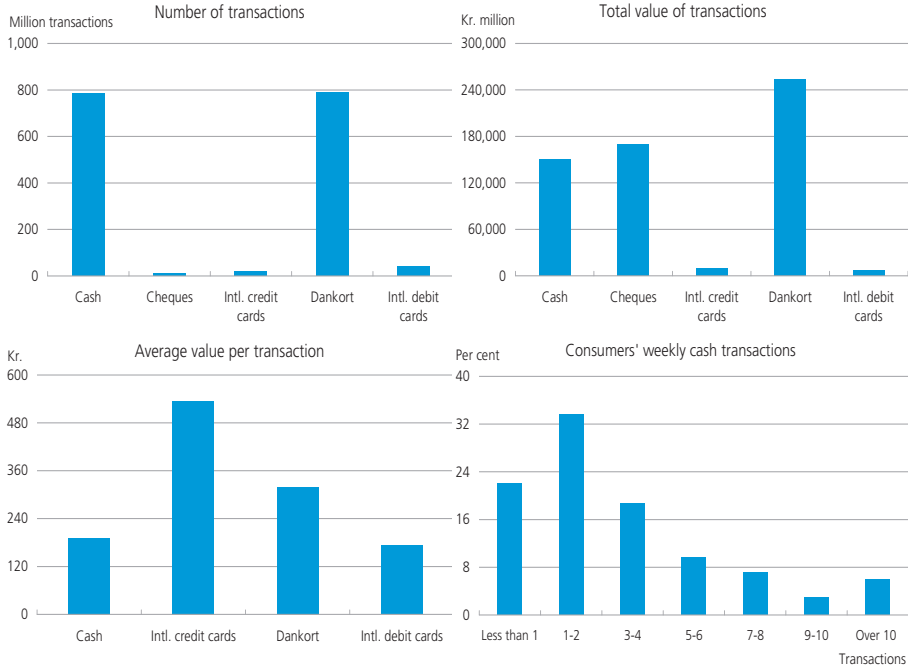
About 6 per cent of all Danes aged between 15 and 79, or approximately 260,000 people, have neither a payment card nor a cheque book and hence no alternative to cash.

## VOLUME OF TRANSACTIONS

A total of 790 million Dankort transactions were made in 2009, at a total value of about kr. 250 billion, cf. Chart 2. By comparison, retail sales amounted to kr. 269 billion in 2009. The reason for the relatively high value of Dankort transactions is that some of these transactions are not included in retail sales, e.g. payments for car purchases and restaurant and hotel transactions.

TRANSACTIONS CARRIED OUT USING DIFFERENT PAYMENT METHODS IN 2009

Chart 2



Source: Danmarks Nationalbank and the Danish Bankers Association.

This means that the Dankort is the most widely used payment method in Danish retail outlets in terms of value, while the number of Dankort transactions is in line with the number of cash transactions, cf. below. The volume of transactions using international cards is significantly lower, as the value of these transactions in 2009 totalled kr. 16 billion.

In general, international credit cards are used for large-value transactions, presumably because these cards have a higher daily withdrawal limit than other payment instruments. Conversely, the value of transactions using international debit cards is relatively low compared with other payment methods, reflecting that these cards are most popular among lower-income consumers, i.e. typically consumers with lower consumption and, accordingly, smaller transaction values.

The use of cheques differs from payment cards by comprising a small number of large-value transactions. In 2009, cheque transactions accounted for less than 1 per cent of the total number of transactions, but at an average amount of about kr. 17,700 per cheque, the total value of cheque transactions was approximately kr. 170 billion. The explanation is that cheques are used primarily for large-value transactions to and from firms and public authorities.

Cash remains a popular alternative to payment cards. In 2009, the number of cash transactions in retail outlets in Denmark is estimated to have been in line with the number of Dankort transactions. However, the total value of that year's cash transactions, an estimated kr. 150 billion, is lower than that of Dankort transactions.

Cash thus remains a popular payment method among the Danes, although most Danes do not use cash on a daily basis, cf. Chart 2. In light of the widespread use of payment cards and the acceptance of payment cards by most retailers, the volume of cash transactions must reflect a deliberate choice by Danish consumers.

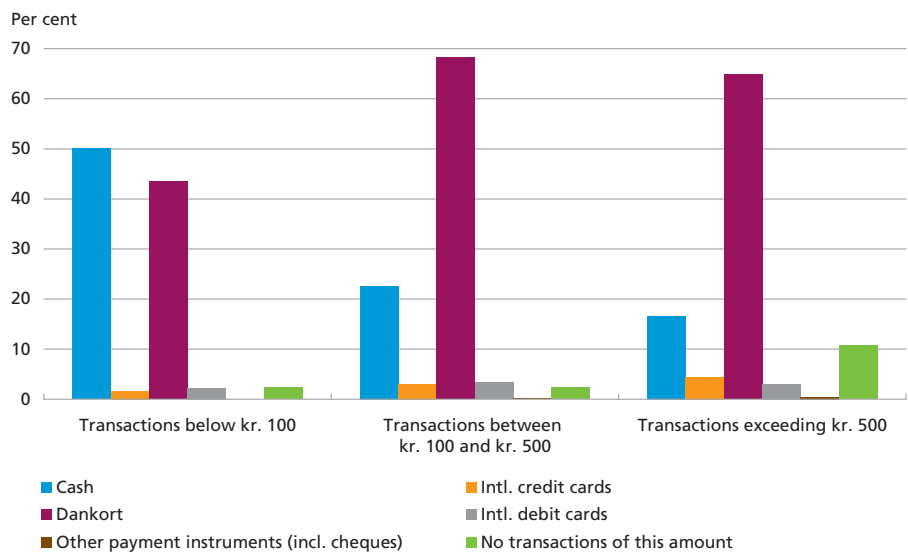
### PREFERRED PAYMENT METHODS OF DANISH CONSUMERS

The survey of payments habits in Denmark also asked respondents about their preferred payment method for transactions of various amounts.

For small amounts, i.e. purchases below kr. 100, almost half of the respondents replied that they preferred cash transactions, cf. Chart 3. For transactions exceeding kr. 100, on the other hand, the Dankort is by far the most popular payment method.

Few respondents replied that they preferred to pay by international payments cards, either credit or debit cards, irrespective of the amount. Chart 3 includes all respondents in the survey, but the percentage of respondents preferring international cards does not increase considerably

PREFERRED PAYMENT METHODS OF DANISH CONSUMERS Chart 3



Source: Danmarks Nationalbank.

if only consumers holding both a Dankort and an international payment card are included, cf. Jacobsen and Nielsen (2011).

Using this data, we have conducted an analysis to calculate the probability of consumers preferring to use either cash, the Dankort or an international credit card for transactions, based on a number of individual characteristics. Only consumers with access to the various payment instruments are included in the calculations. The analysis and its results are described in Box 2.

The analysis shows that men are more likely than women to prefer cash transactions. Moreover, cash is often the preferred payment method among elderly consumers and consumers in low income brackets, while the Dankort is often preferred by young and middle-

**ANALYSIS OF DANISH CONSUMERS' PREFERRED PAYMENT METHODS**

Box 2

Based on data from the survey of payment habits in Denmark, we have attempted to identify how the consumers' choice of payment method is affected by personal characteristics such as gender, age, income and education. The model applied is a logistic regression, calculating the probability of payment in cash, by Dankort and international credit cards on the basis of these characteristics.

Only data from consumers who actually have access to the relevant payment instruments has been used. Hence, the Dankort and credit card models comprise only consumers who have indicated that they hold the card in question. Consumers under 18 years of age have been excluded, as they usually have a choice between cash and international debit cards only.

Personal characteristics that may with statistical certainty be expected to increase the probability of a consumer preferring either cash, the Dankort or international credit cards are specified below. For example, it is seen that men are more likely than women to prefer paying in cash, while people below 35 are more likely to pay by Dankort than older people. Moreover, on average, more people with higher education tend to prefer paying by Dankort than e.g. unskilled workers.

**Cash:**

- Men
- People over 45
- People with lower secondary school education only
- People with an income below kr. 200,000.

**Dankort:**

- No significant gender difference
- People under 35
- People with long or medium education
- People with an income exceeding kr. 200,000.

**International credit cards**

- Women
- No significant age difference
- No significant educational difference
- People with an income below kr. 400,000.

As stated above, the model includes only people with access to the various payment instruments. When, say, women are expected to prefer credit card transactions to a greater extent than men, this applies only when both parties have a credit card. This way, adjustment is made for the greater popularity of credit cards among men. For an in-depth description of the model and its findings, see Jacobsen and Nielsen (2011).

aged consumers and by consumers with higher education and an annual income exceeding kr. 200,000.

Among consumers holding an international credit card, women are more likely than men to prefer using this card.

Our calculations also show that credit card holders with an income of less than kr. 400,000 tend to prefer paying by this card more often than those with a higher income.

## PROS AND CONS

The respondents in the survey of payment habits in Denmark were also asked about the pros and cons of various possible retail payment methods.

### Pros

Among Dankort holders, 60 per cent of the respondents highlighted convenience as their reason for using the card, which is significantly higher than for other payment methods, cf. Table 2. This presumably reflects a combination of the acceptance of the Dankort by most retailers and the fact that by using the Dankort, consumers do not have to withdraw and carry cash.

REASONS FOR USING VARIOUS PAYMENT METHODS		Table 2
<b>Reasons for using cash:</b>		<b>Reasons for using the Dankort:</b>
1. It is convenient (34 per cent)		1. It is convenient (63 per cent)
2. Control of my finances (16 per cent)		2. I had no other option (11 per cent)
3. I had no other option (11 per cent)		3. Control of my finances (6 per cent)
4. To get rid of cash (9 per cent)		4. Instant payment (4 per cent)
Other reasons (29 per cent)		Other reasons (16 per cent)
<b>Reasons for using debit cards with balance control:</b>		<b>Reasons for using international credit cards:</b>
1. It is convenient (37 per cent)		1. It is convenient (33 per cent)
2. I had no other option (26 per cent)		2. To use the credit facility (27 per cent)
3. Control of my finances (11 per cent)		3. I had no other option (19 per cent)
4. Instant payment (10 per cent)		4. Control of my finances (13 per cent)
Other reasons (16 per cent)		Other reasons (9 per cent)

Note: Each respondent in the survey has been able to indicate the payment method he or she primarily uses for transactions of three amounts. In addition, the respondents have been asked why they use this method. Consequently, each respondent has provided up to three replies. The percentage distribution of the reasons specified, irrespective of amounts, has been calculated in the table.

Source: Danmarks Nationalbank.

Several of the respondents point out that payment in cash helps them take better control of their finances, cf. Table 2, possibly because the cash in their wallets or purses provides a quick and easy overview of their spending money. Further, the use of cash does not entail the same credit or overdraft facilities as credit cards and the Dankort.

Moreover, about one in ten respondents indicate that sometimes cash is the only option, either because they do not have access to any payment instruments or because the retailers in question only accept cash.

Only one fourth of the respondents preferring to pay by credit card do so for the credit facility. Just under 20 per cent of the respondents indicate that credit cards enable them to pay in situations where they have no alternative payment option. One example could be that some large transactions exceed their daily limit on Dankort transactions. Another that a limited balance in their bank accounts means that the credit card is their only option at the time of payment.

**Cons**

The drawback experienced by most consumers in relation to cash transactions is that they need to have cash at hand, cf. Table 3. About one fifth of the respondents mention the risk of theft as a drawback. The risk of receiving counterfeit banknotes is considered to be a small prob-

**DRAWBACKS OF THE VARIOUS PAYMENT METHODS** Table 3

<b>Drawbacks of cash:</b>	<b>Drawbacks of the Dankort:</b>
1. Requires cash at hand (31 per cent)	1. Cannot be used in the event of system failure (19 per cent)
2. Risk of theft/robbery (20 per cent)	2. Risk of "excessive spending" (17 per cent)
3. No payment summary (8 per cent)	3. Risk of misuse (15 per cent)
4. Risk of counterfeit banknotes (5 per cent)	No drawbacks (24 per cent)
No drawbacks (21 per cent)	

**Drawbacks of debit cards with balance control: Drawbacks of international credit cards:**

1. Not universally accepted (23 per cent)	1. Not universally accepted (18 per cent)
2. Cannot be used in the event of system failure (14 per cent)	2. Risk of "excessive spending" (14 per cent)
3. Risk of misuse (13 per cent)	3. Cannot be used in the event of system failure (13 per cent)
No drawbacks (17 per cent)	No drawbacks (23 per cent)

Note: The table specifies the most frequently cited drawbacks of the payment methods in question.  
 Source: Danmarks Nationalbank.



lem, which tallies well with the very modest volume of counterfeit banknotes in Denmark.

The risk of system failure is seen by many as a drawback of payment cards – and a greater problem than, say, the risk of misuse of their payment cards. This highlights the importance of high system reliability for payment cards. Today, system failures are very rare, but the survey findings indicate that in case of an increase in the number of system failures, more respondents will consider resorting to alternative payment methods such as cash.

A few other payment card drawbacks are also stressed. As far as international payment cards are concerned, the primary problem is that they are not universally accepted, as the number of retailers accepting these cards is lower than the number accepting the Dankort. Furthermore, several respondents state that the overdraft and credit facilities of the Dankort and credit cards present a risk of excessive spending.

## **FEES AND SUBSTITUTION BETWEEN PAYMENT CARDS AND CASH**

---

As already mentioned, many consumers often have a choice between cash transactions and one or more types of payment cards. Therefore, it is interesting to identify the extent to which they tend to switch between cash and payment cards, i.e. whether these payment methods are *substitutes*.

If two payment methods are substitutes, changes in the payment terms for one of the methods will typically lead to a change in the payment pattern. Such changes could include the introduction of a fee for transactions using one of the payment methods. This will normally cause the use of the non-fee payment method to increase.

Experience shows that the Danes respond strongly to the imposition of fees, at least in the short term. This was illustrated when, for a short period in early 2005, retailers were authorised to charge a fee of up to kr. 0.50 for Dankort transactions. In response, the number of Dankort transactions dropped sharply, while ATM cash withdrawals increased.

This behaviour is confirmed by Danmarks Nationalbank's survey of payment habits. Asked about their response to fees, more than half of the respondents replied that they would switch to an alternative payment method. Less than 10 per cent stated that they would use the payment instrument in question regardless of the fee.

### **Substitution effects**

Based on data from the survey of payment habits in Denmark, we have conducted a statistical analysis of the degree of substitution between cash

and the various types of cards. To this end, we have examined how the consumers' use of cash is impacted by holding a Dankort, an international credit card or an international debit card, controlling for demographic factors such as gender, age, income and education. The analysis and its results are described in Box 3.

ANALYSIS OF CONSUMER SUBSTITUTION BETWEEN  
CASH AND PAYMENT CARDS

Box 3

To examine the willingness of consumers to switch between various payment methods, a quantitative analysis has been conducted on the basis of the responses from the survey of payment habits in Denmark. For more details on the analysis, see Jacobsen and Nielsen (2011). Below, an overall description of its method and results is provided.

The analysis examines the effect on cash transactions of holding a Dankort, an international credit card or an international debit card. The analysis seeks to identify an isolated effect of holding one or more of these types of payment cards, i.e. it is taken into account that the consumers have different characteristics, such as gender, age, education and income, which also impact the use of cash.

The main findings of the analysis are presented in Table 4. Each row shows the effect of holding a specific payment card on the value of cash transactions per week (first column) and the number of cash transactions per week (second column). It is seen that, other things being equal, Dankort holders make 25 per cent fewer cash transactions per week than non-Dankort holders. Moreover, Dankort holders purchase for kr. 282 less using cash than non-Dankort holders.

These findings indicate a significant negative effect of holding a Dankort on the level of cash transactions. If international credit cards and debit cards with real-time balance control are considered, the effect measured is somewhat lower and there is no statistical certainty that a consumer's number or value of cash transactions is impacted by holding one of the international payment cards.

RESULTS OF ANALYSIS OF PAYMENT HABITS

Table 4

Change in cash transactions	Value of cash transactions (per week)	Number of cash transactions (per week)
The consumer holds a:		
Dankort .....	<b>kr. - 282</b>	<b>- 25 per cent</b>
International credit card .....	kr. - 32	- 2 per cent
International debit card .....	kr. - 53	10 per cent

Note: Significant coefficients in the table are in highlighted in bold.  
Source: Danmarks Nationalbank.

The analysis indicates that cash and the Dankort may, to some extent, be regarded as substitutes, as a statistically significant negative correlation exists between the two payment methods. This is not the case for cash and international payment cards. The data available does not allow a similar analysis of whether the Dankort and credit cards or the Dankort and international debit cards are substitutes.

The conclusion is that Dankort holders make no less than 25 per cent fewer cash transactions than other consumers. Holding an international credit card, on the other hand, has no impact on the number of cash transactions.

These results indicate that the Dankort and cash are substitutes, as access to Dankort transactions reduces the use of cash. Conversely, there is no basis for referring to cash and international credit cards as substitutes, as holders of these cards make the same number of cash transactions as other consumers.

### **Amended fee rules in Denmark**

Danish rules on card fees are being amended. The amendment is undertaken at the request of the European Commission, which has stated that the current rules do not comply with the rules of the single market. Under the new rules, the "split model" will be introduced, authorising retailers to pass on to consumers the bank fees charged for credit card transactions. Retailers are not authorised to pass on the fees for debit card transactions, e.g. Dankort transactions.

A point of criticism levelled against the split model has been that passing on fees to the consumers will induce more consumers to use cash, the social costs of which are higher than for other payment methods, especially for large-value amounts, cf. surveys conducted in Sweden and the Netherlands<sup>1</sup>. Based on our analysis, there is no reason to expect such substitution. It seems more likely that consumers will switch from credit cards to the Dankort.

---

<sup>1</sup> Bergman et al. (2007) and Brits and Winder (2005).

## LITERATURE

---

Bergman, Mats, Gabriella Guibourg and Björn Segendorf (2007), The cost of paying – private and social cost of cash and card payments, *Sveriges Riksbank Working Paper Series*, No. 212, September.

Brits, Hans and C. Winder (2005), Payments are no free lunch, De Nederlandsche Bank, *DNB Occasional Studies*, Vol. 3, No. 2.

Gresvik, Olaf and Harald Haare (2008), Payment habits at point of sale, Norges Bank, *Staff Memo*, No. 6.

Jacobsen, Johan Gustav Kaas and Søren Truels Nielsen (2011), Betalingsvaner i Danmark (Payment habits in Denmark – in Danish only), *Danmarks Nationalbank Working Papers*, No. 74, September.

Jonker, Nicole (2005), Payment instruments as perceived by consumers, *De Nederlandsche Bank Working Papers*, No. 53.

Mooslecher, Peter, Helmut Stix and Karin Wagner (2006), How are payments made in Austria?, Oestereichische Nationalbank, *Monetary Policy and the Economy*, 2nd quarter.

Nyberg, Lars (2010), Time to change cash to cards? Sveriges Riksbank, speech given on 20 January.