

INITIAL EXPERIENCE WITH INSTANT PAYMENTS

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INTRODUCTION

Since November 2014, it has been possible for citizens and firms in Denmark to make instant payments. Payments made through online banking, mobile banking, MobilePay or Swipp can be available to the payee in a matter of seconds, 24/7/365. Instant payments are credit transfers up to kr. 500,000. Instant payments were facilitated in a joint effort by the Danish financial sector and Danmarks Nationalbank as part of the final phase of the large-scale modernisation of the Danish payments infrastructure¹. The infrastructure was significantly improved and most types of electronic payments can now be made instantaneously. Thus, the Danish payments infrastructure fully matches that in comparable countries.

Instant payments with a total value of just over kr. 22 billion, an average of 130,000 payments per day, were made from the launch until the end of January 2015. Fewer instant payments are made on weekends and public holidays, while there is an increase in the number of payments at the turn of the month. Most payments are made from midday until the early hours of the evening. Mobile payment solutions such as MobilePay and Swipp, all of which are made as instant payments, account for a significant portion of the transactions. In view of the large number of mobile payments, 80 per cent of instant payments are for less than kr. 1,000.

This article describes the initial experience with the use of instant payments. Firstly, the use of in-

stant payments by citizens and firms is described, followed by a brief review of the Straksclearing system for instant payments, including how finality of instant payments is ensured. Finally, instant payments and other credit transfers are described.

USE OF INSTANT PAYMENTS

Citizens and firms can make instant payments through online banking, mobile banking or the MobilePay and Swipp mobile payment solutions. Other payment solutions, such as Dankort debit card payments, are not effected as instant payments, but will be available to the payee on the following banking day.

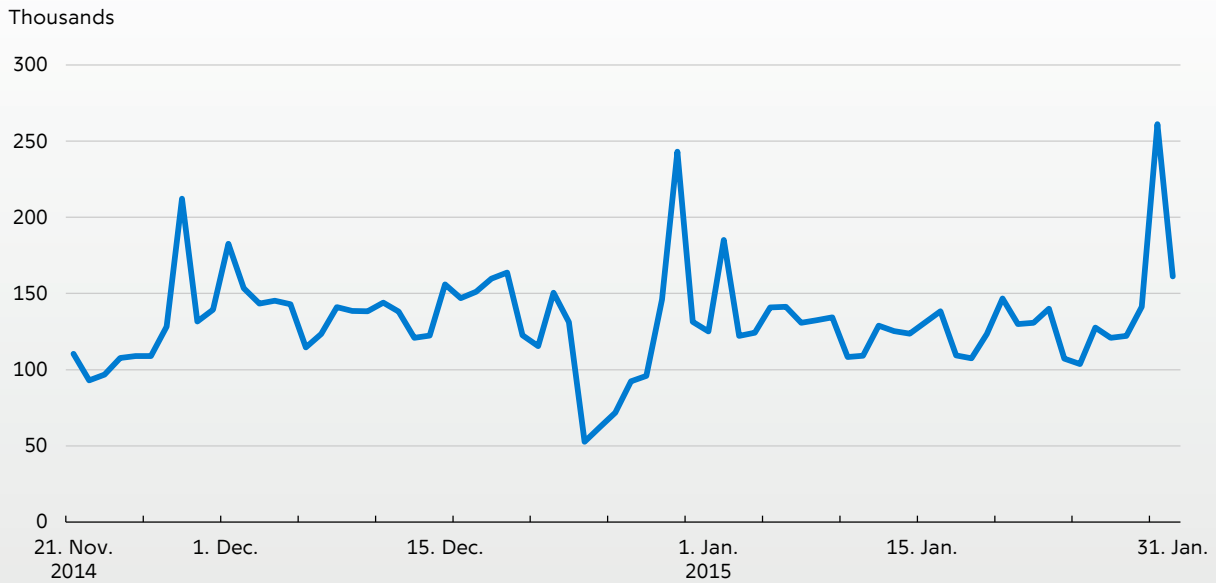
Already on the day of the launch, 21 November 2014, more than 100,000 instant payments were made, and the number has grown since then, cf. Chart 1. Until end-January 2015, an average of about 130,000 instant payments were made per day. The highest number of instant payments is made at the turn of the month, which is payday for many citizens. Public holidays and weekends have fewer instant payments than weekdays.

Instant payments can be made 24/7. The lowest number of payments is made at night. Chart 2 shows the time profile of instant payments over a 24-hour period. At night, an average of just over 800 payments are made per hour. From 6 o'clock in the morning, the number rises until noon when close to 10,000 payments are made per hour. The volume is stable until 9 pm, after which time the number declines.

¹ The modernisation of the payments infrastructure is described in detail in Danmarks Nationalbank (2012).

Development in the number of instant payments

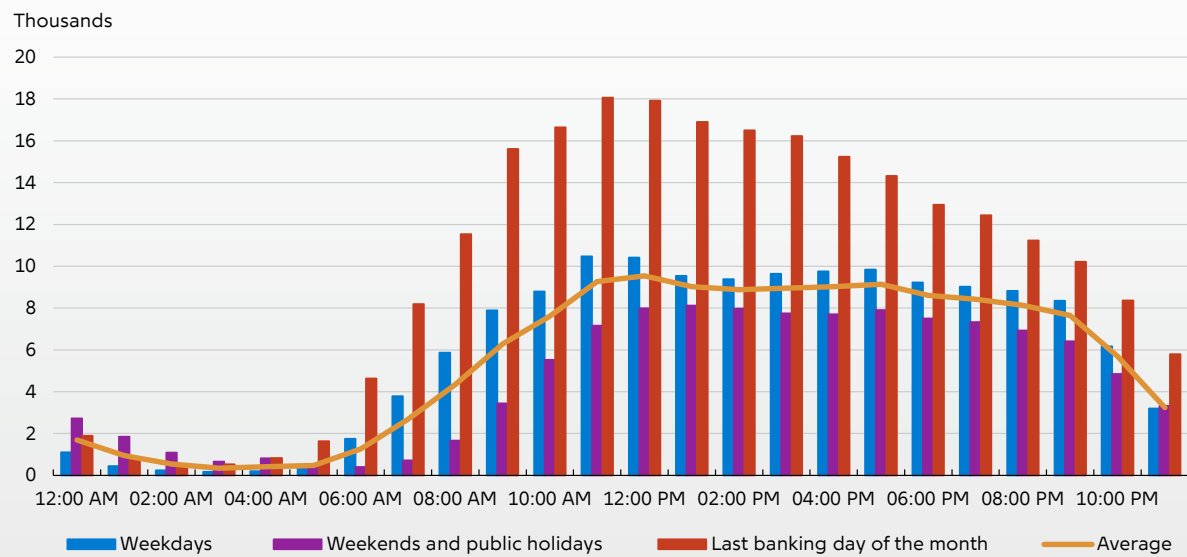
Chart 1



Source: Nets and Danish Bankers Association.

Time profile for instant payments

Chart 2



Note: The chart shows the average number of instant payments for each hour in a 24-hour period. Data for the period 21 November 2014 until 31 January 2015.

Source: Nets and Danish Bankers Association.

There are only minor differences in the time profile between weekdays and weekends and public holidays, cf. Chart 2. On weekends and public holidays, the number of payments is generally lower,

especially in the morning, while there are more payments in the early hours of the morning after midnight. The last banking day of the month has more payments at all hours of the day and night

Value of credit transfers, broken down by days and amounts

Table 1

	All days	Weekdays	Weekends and public holidays
Number	130,137	142,158	108,018
Value in kr.	310,217,662	419,556,295	109,034,576
Average in kr.	2,384	2,951	1,009
Number of transfers in the range:			
Under kr. 50	22,900	25,825	17,517
50-99.99	18,115	18,582	17,257
100-499.99	51,294	53,361	47,491
500-999.99	14,240	15,568	11,797
1,000-2,499.99	11,689	13,457	8,434
2,500-9,999.99	7,312	9,206	3,825
10,000-19,999.99	1,974	2,588	845
20,000-99,999.99	2,031	2,730	745
100,000-199,999.99	325	463	69
200,000-500,000	258	378	36

Note: Daily average for number, total value, amount size and number in various amount ranges. Data for the period 21 November 2014 until 31 January 2015. Figures are rounded to the nearest integer.

Source: Nets and Danish Bankers Association.

than an ordinary day. Especially early in the day, the number of payments is significantly higher than the average.

The average value of an instant payment is kr. 2,384, and more than 80 per cent of all instant payments are for less than kr. 1,000, cf. Table 1. By comparison, about 30 per cent of the credit transfers that are not made as instant payments are below kr. 1,000.

A major reason for the large number of low-value payments in the Straksclearing is that MobilePay and Swipp, with an upper limit of kr. 2,000² and kr. 10,000, respectively, are effected as instant payments. Figures have not been published for the proportion of instant payments accounted for by mobile payments, but they are estimated to account for the majority of these payments. The large proportion of mobile payments contributes to the low average value of instant payments, since mobile payments are typically used for low-value payments.

An average day sees 582 instant payments of kr. 100,000-500,000. Payments in this range may reflect that instant payments are used also to purchase large consumer goods such as cars. In this case, the advantage of instant payments is that the amount is credited to the payee's account instantly.

As already mentioned, there are fewer instant payments on weekends and public holidays than on weekdays. At the same time, the average value is smaller, cf. Table 1, with significantly fewer payments exceeding kr. 2,500. The number of payments exceeding kr. 100,000, in particular, is smaller on weekends and public holidays. One explanation could be that citizens and firms typically do not make large instant payments when banks and other businesses are closed. Small-value instant payments, a large proportion of which are mobile payments, are not affected by weekends and public holidays to the same extent.

² Until 20 February 2015, the maximum limit for MobilePay was kr. 1,500.

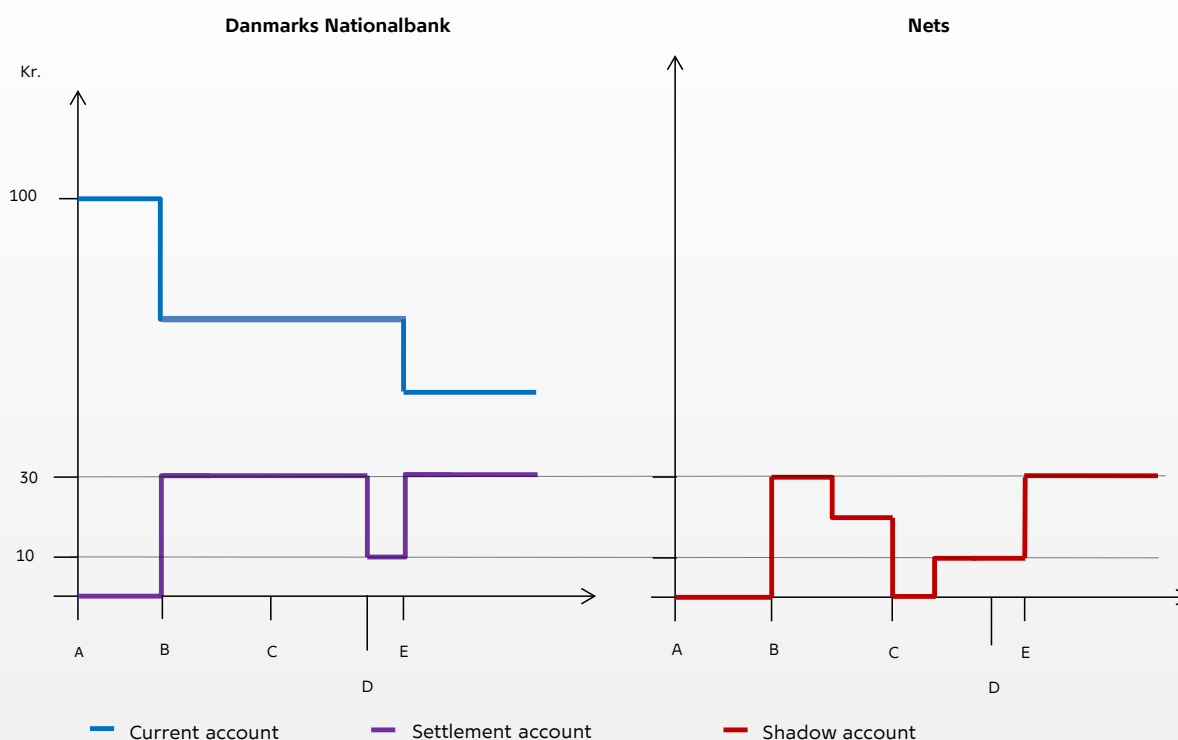
THE SYSTEM UNDERLYING INSTANT PAYMENTS

An account holder's deposit with a bank represents a receivable. When an account holder makes a transfer to an account holder at another bank, the receivable must be redeemed and replaced by a similar receivable for the payee at its bank. Therefore, the payer's bank must

transfer liquidity to the payee's bank. For instant payments, this is effected in the Straksclearing system, which is owned by the Danish Bankers Association and operated by Nets. In order for a bank to offer its customers the instant payment option, it must participate in the Straksclearing. Moreover, the bank must participate in Denmark's Nationalbank's payment system, Kronos, and hold a primary account (current account)

Example of a bank's account movements at Danmarks Nationalbank and Nets

Box 1



The shadow account with Nets shows the amount available to the bank at any time in the Straksclearing. Process on the timeline:

- A: The bank has a deposit of kr. 100 in its current account and a balance of kr. 0 in its settlement account. The bank's customers cannot make instant payments.
- B: The bank transfers kr. 30 from its current account to its settlement account. Danmarks Nationalbank then notifies Nets, which increases the bank's shadow account to kr. 30. The bank's customers can subsequently make instant payments for this amount.
- Between B and C: Nets completes an instant payment of kr. 10 on behalf of one of the bank's customers. Nets then reduces the shadow account by kr. 10, to kr. 20.
- C: A customer makes an instant payment of kr. 20, and Nets reduces the bank's shadow account to kr. 0. Nets rejects all outgoing instant payments from the bank until liquidity is transferred to the shadow account. Shortly after the bank receives liquidity through a kr. 10 transfer to its customers. Consequently, its customers can make instant payments of up to kr. 10.
- D: The net position is settled in the settlement account at Danmarks Nationalbank. Nets notifies Danmarks Nationalbank that the bank has paid kr. 20. The settlement account at Danmarks Nationalbank is reduced by kr. 20, so that the balance corresponds with the shadow account with Nets.
- E: The bank reserves new liquidity, and has decided in advance how much it wishes to use for instant payments. In the example, the bank wishes to reserve kr. 30 for the Straksclearing. Therefore, kr. 20 is transferred from the current account to the settlement account, and the balance in the settlement account is back to kr. 30. Danmarks Nationalbank notifies Nets, which increases the bank's shadow account.

and a sub-account (settlement account) for the Straksclearing³.

Instant payments are settled, with finality, in a matter of seconds. This means that they are unconditionally and irrevocably settled. In the Straksclearing, this is ensured by the banks' pre-funding of transfers by transferring funds to their settlement account at Danmarks Nationalbank. Nets will then be notified of the amounts reserved, which are guaranteed by Danmarks Nationalbank, and will register them to the banks' shadow accounts in the Straksclearing. Nets executes customers' instant payments by increasing and reducing the respective banks' shadow accounts. If a bank customer makes an instant payment that exceeds the balance in the shadow account, Nets will reject the transfer.

When a bank customer makes an instant payment, Nets checks that the bank has sufficient liquidity in its shadow account before transmitting the transfer to the payee's bank where the amount is credited to the payee's account. Moreover, as already mentioned, Nets increases and reduces the shadow accounts of the two banks to ensure that they continuously reflect the liquidity available to each bank. Thus, the transfers are validated and settled with finality. This all happens within seconds.

At fixed times during the day, the participants' net positions are settled in their settlement accounts at Danmarks Nationalbank. This means that the settlement accounts of banks that are net payers of liquidity are reduced, and they need to transfer further liquidity to their settlement accounts – and thus to their shadow accounts with Nets. For banks that have been net recipients, liquidity is released in their settlement accounts and automatically transferred to their current accounts.

Banks are able to check the balance in their shadow accounts in Nets' system 24/7. If a bank needs liquidity in its shadow account, it may transfer further liquidity from the current account to the settlement account during Kronos' opening hours, thereby increasing the balance in the

shadow account⁴. If a bank becomes insolvent or subject to reconstruction, all instant payments to and from the bank are immediately stopped.

Box 1 exemplifies the movements in a bank's current account and settlement account at Danmarks Nationalbank and shadow account with Nets.

INSTANT PAYMENTS AND OTHER CREDIT TRANSFERS

A large number of credit transfers are still completed in the Intradagclearing⁵, cf. Chart 3. The Intradagclearing is a net settlement system for credit transfers. Transfers in the Intradagclearing include planned payments such as wages and salaries that may advantageously be netted and settled in an overall procedure. When many transfers are settled together, banks need only exchange the net amount, which makes their liquidity management easier. The upper limit on instant payments is kr. 500,000; this limit has been set, inter alia, to reduce banks' liquidity requirements. Therefore, despite the advantages of the Straksclearing, a net settlement system such as the Intradagclearing will still be needed.

On average, 2,519 credit transfers exceeding kr. 500,000 are completed per day in the Intradagclearing. Credit transfers account for about 0.4 per cent of the total volume of transfers, but more than half of the overall value, cf. Chart 3.

The Intradagclearing completes about five times as many transfers as the Straksclearing.

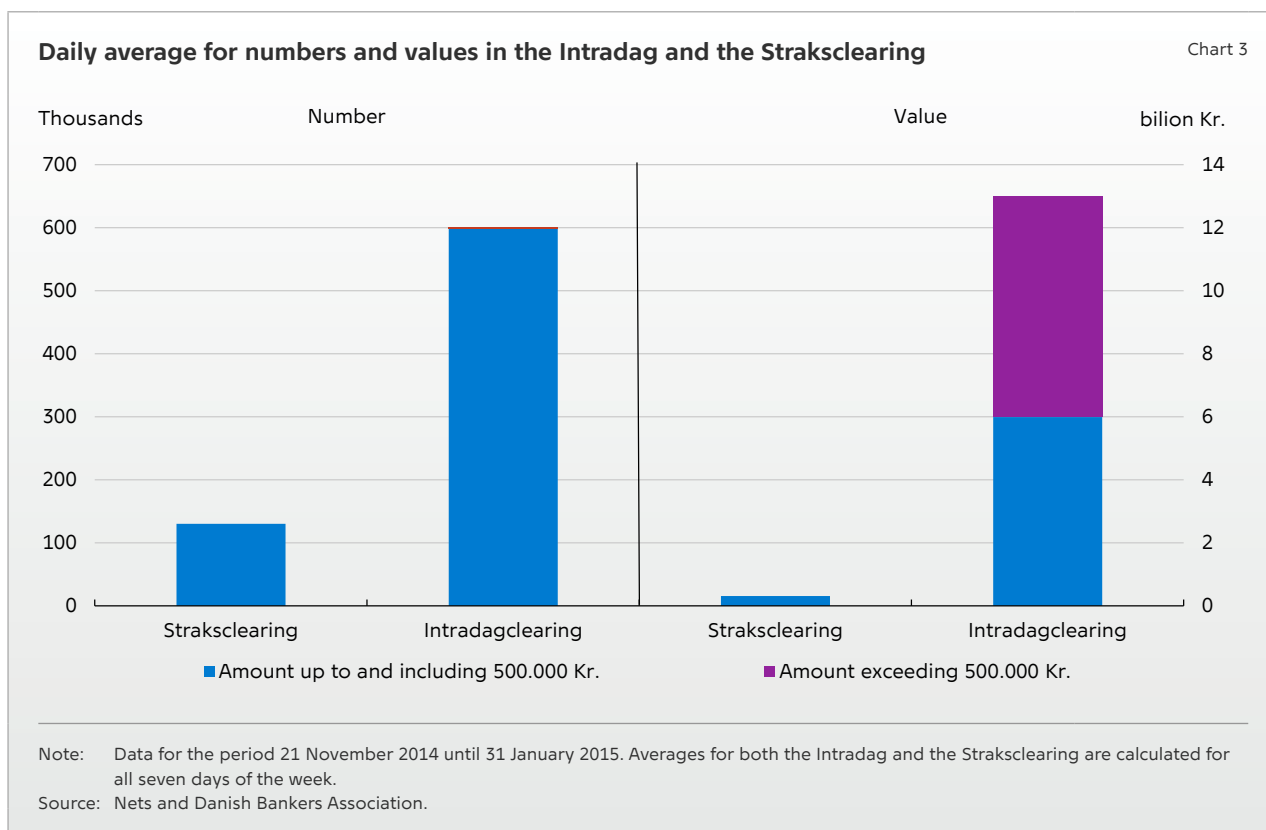
In some banks, customers have to choose in their online banking facility whether they want a credit transfer to be completed as an instant payment, sometimes subject to a fee, or a standard payment.

For firms, the option of instant payment represents an improvement in connection with sale e.g. of large consumer goods. The firm can instantly verify that the payment has been received, and there is no risk of the amount being subsequently reversed – unlike Dankort payments where only the first kr. 4,000 of the payment is guaranteed.

3 Alternatively, banks may enter into an agreement with a participant holding both a current account and a settlement account at Danmarks Nationalbank that allows the bank's customers to make instant payments through this participant. Therefore, a distinction is made between direct and indirect participants.

4 For more information about the process of instant payments and liquidity management in the Straksclearing, see Andresen (2014).

5 For more information about the Intradagclearing, see Korsby (2012) and Jensen (2013).



As described in the section on use of instant payments, mobile payment solutions account for a large proportion of the instant payments made. The number of these payments is expected to grow as a means of payment at point-of-sale and in e-commerce.

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