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Research Report

Costs in the Norwegian Payment System 2007 - a Brief Overview of the Surveys and Results

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No. 9 | 2008

Staff Memo

Costs in the Norwegian payment system 2007 - a brief overview of the surveys and results

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Costs in the Norwegian payment system 2007 – a brief overview of the surveys and results

1. Main results

The analysis covers social costs associated with payment cards, giros and cash. The bulk of retail payments in Norway are settled by means of these instruments. The social costs of using and producing these payment services are estimated to be NOK 10.97 billion in 2007, equivalent to 0.48 % of GDP¹. The costs estimated cover activities by banks, subcontractors, the central bank, households and merchants (point of sale).

Our household survey indicates that cash payments account for as little as 14 % of the value of payments and 24 % of the number of transactions at point of sale in Norway. However, as demonstrated in Gresvik and Haare (2008), other sources of information and other methods give other estimates. The value of cash payments at point of sale could be as high as 38 % of the total value.

Our results indicate that the efficiency of the Norwegian payment system has improved since 2001².

We find that unit cost incurred by banks for the most popular payment instruments have decreased, and that the cost recovery for payments in the banking industry has increased since 2001.

2. Scope and information basis of the surveys

The cost analysis covers production cost and user costs of giro services, payment cards and cash. Results are reported for 26 different instruments within these three classes.

Our analysis includes the costs to households, merchants, banks and subcontractors for these payment instruments. Costs for payments made by public authorities and other businesses than point-of-sale businesses are only partially included.

Cheques, e-money, cross-border- and interbank payments are not part of the survey. These instruments represent a negligible share of the volume of payments in Norway³.

The cost analysis is based on three independent surveys; one covering the banking industry, one covering households and one covering merchants (points of sale).

The bank survey covers about 55 % of the Norwegian banking market in 2007. Twelve banks responded.

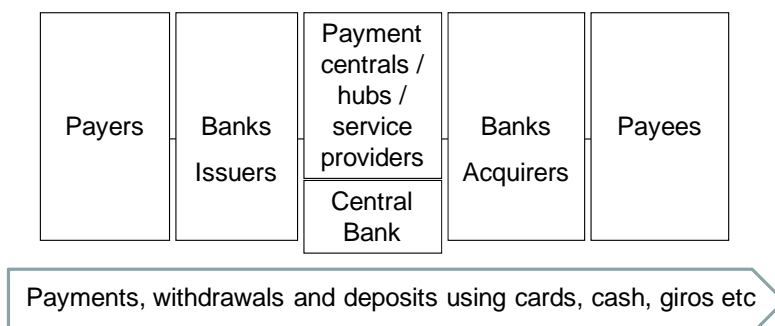
¹ See “5. The results” for details

² Some indicators are shown in table 5 and 6. It should be noted that this conclusion does not consider all aspects of efficiency. Factors such as user friendliness (speed, reliability, simple user interface) and degree of competition (to foster innovation and a downward pressure on costs) also impact on efficiency.

³ An overview of scope etc and an assessment of the cost studies from some countries can be found in Koivuniemi/Kemppainen (2007).

Graph 1: The payment chain

A payment usually originates when a buyer wants to settle a trade, and pay the seller. If payment cards or giros are used, the services of different service providers are required to settle the transaction. If cash is used, settlement takes place immediately. Cash settlement depends on the distribution of cash, which is handled by (the same) set of service providers.



The household survey conducted in September 2007 does not cover costs, but payment habits (use of cards and cash). A representative sample of Norwegians responded to the survey.

The merchant survey (point-of-sale – survey) was conducted by Norges Bank in the autumn 2007/winter 2008. Unfortunately, the response rate was low, and not all of the information in the survey can be considered as reliable. The results are somewhat skewed, and grocery chains and big stores are overrepresented. However, part of the survey was of sufficient quality to be published.

In addition to the surveys, we made use of (i) public information from Norges Bank's Report on Payment Systems, (ii) information on deposits in Norges Bank and private depots, (iii) information from banks' financial statements and (iv) data from Statistics Norway on demography, wages and inflation.

The surveys and the additional information enabled us to produce an analysis of the social costs of the Norwegian payment system.

3. Methodology

Social costs in our analysis were calculated using a methodology developed by Bergman et al (2007).

The banks participating in the survey delivered data on costs in accordance with the Activity Based Costing (ABC) – method, see Bjørnenak (1993) or Cooper and Kaplan (1999). The ABC- method is particularly well suited where support functions' share of total costs is high and rising over time, and/or where there is wide variation in products, services, customers and production processes. Banks' production of payment services is characterised both by support functions that generate a large proportion of the total costs and wide variation in how the services are produced, and hence also wide variations in the level of costs allocated to each service. The ABC- method is useful to measure the use of resources (labour and machinery) for producing different services.

Our questionnaire for the household survey was inspired by Dutch and Belgian studies⁴ and a Norges Bank survey on payment habits from 1993. The questionnaire covered different aspects of payment habits and a question on what payments the respondents had carried out

⁴ Nationale Bank België (2005) and Working Group on Costs of POS Payment Products (2004)

the preceding day. The household survey was conducted by phone⁵. Respondents were contacted every day throughout one week and asked about their payments the preceding day.

The merchant survey was carried out by Norges Bank. A broad range of merchants (grocery chain stores, hotels, transport businesses, furniture stores, hairdressers etc) were contacted. The questionnaire focused on merchant's costs, routines and number of transactions etc. The survey provided information on merchants total costs related to payments and cash handling.

4. Some assumptions and their impact on results

The analysis is based on surveys that calculate the full cost for agents of producing and using payment services. According to classic economic theory, to make calculations on pricing of a good (service), marginal cost should be calculated. An efficient price is where the marginal price is set equal to marginal cost. Unfortunately, the marginal cost is hard to calculate. The results in this analysis should not be used for estimating a "correct" level of prices or fees. The analysis can, however, be used for examining whether prices are set accordingly to the relative cost differences between different payment instruments.

Use of cash is calculated on the basis of results from the household survey. We chose to use these results for several reasons: i) both the number and value of cash transactions is shown - these are cost drivers⁶, and we have no other surveys / sources that show both, ii) we found support for our survey results in other surveys, iii) the household survey is part of the analysis, designed to answer specific questions – and is thus the best basis for this analysis. However, the results shows that the use of cash is low in Norway, so some caution should be taken when interpreting our results.

Banks' income from fees is distributed across different giro and cards services according to information from statistics, from the merchant survey and from our own assumptions. Changes in our assumptions can redistribute fees across different instruments, and this would affect the calculated cost level of households and businesses.

Wage statistics have been used to estimate the value of spare time (which is spent partly on making payments), and to estimate cost of time at merchants and other businesses.

Assumptions will be elaborated further in a forthcoming Staff Memo on the cost analysis.

⁵ The survey was conducted by the market research company Norstat on behalf of Norges Bank.

⁶ See Cooper and Kaplan (1999)

5. The results⁷

Social costs of payments 2007

The social costs⁸ of retail payments in Norway are estimated to be NOK 10.97 billion or 0.48 per cent of GDP⁹. Cash and card payments only (point of sale payments) are estimated to be NOK 8.7 billion or 0.38 per cent of GDP¹⁰.

The social costs of each class of payment instruments surveyed are:

- Cash	NOK 3.31 billion
- Cards	NOK 5.36
- <u>Giros</u>	<u>NOK 2.31</u>
<u>Sum</u>	<u>NOK 10.97 billion</u>

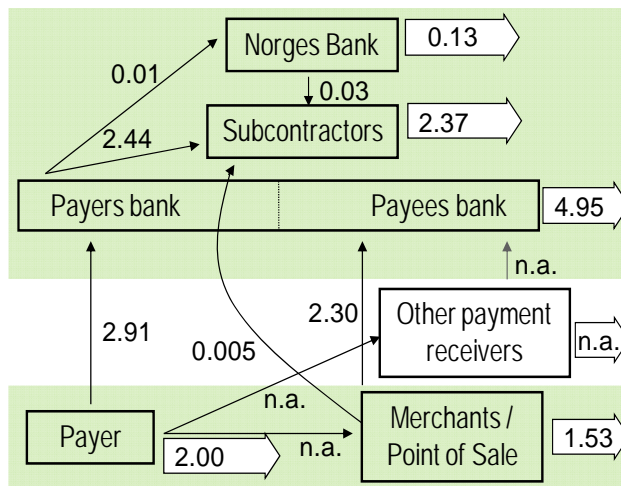
These costs are the sum of each participant's own production cost¹¹:

- Banks	NOK 4.95 billion
- Norges Bank (The Central Bank)	NOK 0.13 “
- Households	NOK 2.00 “
- Merchants and others	NOK 1.53 “
- <u>Subcontractors</u>	<u>NOK 2.37 “</u>
<u>Sum</u>	<u>NOK 10.97 billion</u>

In addition to own production costs, households, merchants and others pay banks, subcontractors and Norges Bank payment fees of NOK 5.21 billion. The banks' subcontractors and Norges Bank charge the banks NOK 2.47 billion for production.

Graph 2: Social costs

The social costs of NOK 10.97 billion can be decomposed in "own production costs" (bold arrows). Fees paid, NOK 7.68 billion, (straight arrows) can be found as part of the private cost calculation. The graph also shows the different roles in the payment chain, and which parts of the payment chain are covered by our cost survey (green areas).



The calculation of social costs can be shown per instrument and per group of agents. In Tables 1, 2 and 3 below, own production cost of agents and fees paid/fees received are shown. In addition, the tables show private costs and net private costs. Private costs are the costs each

⁷ Rounding errors may occur.

⁸ Social costs are total costs to society reflecting the real use of resources in the production of the industry's output. Bergman et al (2007)

⁹ Or 0.64 per cent of mainland GDP

¹⁰ Or 0.51 per cent of mainland GDP

¹¹ Private production costs minus fees. See Bergman et al. (2007) for further details

participant incurs when using or producing the payment service. Net private costs are the private costs minus the income the participant generates from providing payment services. A negative value shows a surplus to the participant, while a positive value shows that the participant carry a cost. Social costs are indicated by bold figures 1, 2 and 3.

Table 1

Cash (payments, deposits and withdrawals)

NOK Million	Private cost	Fees paid	Own production cost	Fees received	Net Private costs
Subcontractors	485.7	0.0	485.7	506.0	-20.2
Norges Bank	154.9	27.3	127.6	6.2	148.7
Banks	2194.6	479.6	1715.0	592.7	1602.0
Households	1255.8	592.7	663.2	0.0	1255.8
Merchants and other businesses	322.1	5.2	316.9	0.0	322.1
	4413.2	1104.8	3308.4	1104.8	3308.4

Table 2

Cards

NOK Million	Private cost	Fees paid	Own production cost	Fees received	Net Private costs
Subcontractors	1548.8	0.0	1548.8	1613.3	-64.5
Norges Bank	0.0	0.0	0.0	0.0	0.0
Banks	3385.7	1613.3	1772.4	2084.6	1301.0
Households	2002.3	1185.3	817.0	0.0	2002.3
Merchants and other businesses	2117.1	899.3	1217.8	0.0	2117.1
	9053.9	3697.9	5355.9	3697.9	5355.9

Table 3

Giros

NOK Million	Private cost	Fees paid	Own production cost	Fees received	Net Private costs
Subcontractors	334.8	0.0	334.8	348.7	-13.9
Norges Bank	0.0	0.0	0.0	0.0	0.0
Banks	1806.7	348.7	1458.0	2531.1	-724.4
Households	1645.0	1129.3	515.8	0.0	1645.0
Merchants and other businesses	1401.8	1401.8	0.0	0.0	1401.8
	5188.4	2879.9	2308.5	2879.9	2308.5

The surveys provided detailed information on different payment instruments. Combined with public information on the number of transactions and values paid using different instruments, unit cost per transaction was calculated.

Note that there are two kinds of transactions in the payment system: *payments* and *withdrawals/deposits*. Payments are transactions where a means of payment (deposits or cash) are used to settle a claim. This can be settled immediately, for example when paying for a good or service at the merchant, or by delayed settlement, for example when paying a bill for a service or a good. Deposits and withdrawals are transactions where the means of payment is transformed; from cash to deposits or from deposits to cash. Such transactions are different from payment transactions, and thus involve a different cost structure. Payments using cash is only possible when holding cash, so the social cost of cash payments can be considered to be

the sum of the cost of paying, depositing and withdrawing cash. Still, it is useful to show the cost of each element.

In table 4 the social costs, the number of transactions and the transaction values are shown, together with the social unit cost per transaction and the social cost per krone paid. Cost per krone is interesting as the cost of cash use is dependent on the size of the transaction (cash is bulky, and more cash requires more handling, which has costs to the agent).

Table 4					
Social cost for some instruments					
	Social cost	No. of transactions	Value (NOK)	Social cost per transaction	Social cost per krone
	NOK million	million	NOK billion	NOK	øre per NOK ¹²
Cash, total	3308.4	417.0	181.2	7.93	1.83
ATM	1 296.8	98.5	119.1	13.17	1.09
Other deposits and withdrawals	1 497.2	33.5		44.69	
Cash payments	514.3	285.0	62.1	1.80	0.83
Cards, total	5 355.9	902.4	359.1	5.93	1.49
Bank-Axcept card scheme	3 326.8	805.3	298.1	4.13	1.12
International card schemes	2 029.1	97.1	61.0	20.90	3.33
Giro, total	2 308.5	510.7	10 428.8	4.52	0.02
Electronic giro	1 481.6	462.3	10 212.2	3.20	0.01
Of this:					
Internet banking	1 032.4	318.8	6 496.3	3.24	0.02
Paper-based giro	826.9	48.4	216.6	17.08	0.38
Direct debits	130.1	49.6	219.7	2.62	0.06
Credit transfers	2 113.9	453.5	10 149.4	4.66	0.02
Other transfers	64.5	33.8		1.91	
Sum social costs	10 972.9	1 830.1	10 969.1	6.00	0.10
Sum POS (cash and cards)	8 664.3	1 319.4	540.3	6.57	1.60

Note: Table 7 contains information on Point-of-Sale values and transactions. The difference between the bottom rows in Table 4 and Table 7 is "ATMs", "Other deposits and withdrawals" and "Petrol Companies Cards".

As seen in Table 4, the per-transaction cost of cash payments is relatively low compared with card payments. However, when withdrawals/deposits are included, cash is more expensive per transaction. The per-transaction cost of giro transactions is low, as they generally go straight through the payment chain without manual processing, and there is less need for an extensive point of sale infrastructure compared with cards and cash.

Private unit costs in the banks

This analysis has a special focus on banks. This is partly because Norges Bank conducted bank surveys in 1988, 1994 and 2001 and partly because banks are the main suppliers of payment services. From this analysis, we observe that the supply side carry a large share of social payment costs.

Private costs in banks have increased slightly since 1988, while the number of transactions has increased very rapidly. The private unit cost for most important payment services has thus

¹² 1 NOK = 100 øre

fallen in banks. The nominal costs estimated in the 2007 and the 2001 surveys are shown in Table 5.

Table 5¹³		
Banks private unit costs (NOK)		
	2001	2007
Telephone giro	6.00	2.50
Internet banking	8.00	2.00
Direct debits	5.00	2.50
Company terminal giro	4.50	4.50
Mail giro	7.50	7.00
Giro delivered at the counter - accounts	15.00	30.50
Giro delivered at the counter – cash	13.00	-
Company terminal giro as money order	24.50	29.50
Cheque	22.50	-
Card payments (issuer) (Bank-Axcept)	2.50	1.50
Card payments (acquirer) (Bank-Axcept)		1.00
Card payments (total) (all cards)		4.00
Own bank's ATM	8.50	7.00
Other bank's ATM	7.50	8.50
Deposits/withdrawals	15.00	43.50
Transfers	28.00	1.00
Night safe	55.50	43.50

Note that the 2001- survey and 2007- survey are not identical in scope. Cards are treated in more detail and cash handling is included in the 2007-survey¹⁴. Both these elements increase the scope, and thus the overall costs in 2007 compared to 2001. Unit costs for the most popular services (Internet banking and card payments) have decreased since 2001. On the other hand, costs for most manual services have increased considerably.

Bank efficiency

When comparing some indicative results from earlier surveys to the 2007-analysis we find evidence of improved efficiency. In Table 6, 2007-numbers are shown for 2001 (e), where a narrower range of payment and cash instruments were surveyed and thus involved lower costs than the full-range survey from 2007 (f).

Table 6					
Bank efficiency indicators					
	1988	1994	2001	2007 e	2007 f
Private cost (billion of NOK)	5.4 b	6.3	6.9	5.4	7.4
Private cost as percentage of GDP	0.83 %	0.72 %	0.45 %	0.24 %	0.33 %
Private unit cost (NOK)	14.10	10.70	5.30	4.00	4.50
Number of transactions in banks (millions)	381 b	481	968 c	1512	1545
Number of branches	2200 a	1600	1429	1260 d	1260
Number of fulltime employees (thousands)	33 a	23	23	20 d	20

a) Rounded b) Withdrawals at the counter are excluded c) All transactions, estimates for services not found in national statistics are included d) Source: FNH (The Norwegian Financial Services Association) e) Same setup as the 2001-survey f) Costs for cash and all costs for cards are included, ordinary 2007-setup.

¹³ Values are rounded to the nearest 50-øre

¹⁴ In the 2007-survey, costs related to issuing and acquiring domestic debet cards and international debet and credit cards are registered. The row "Card payments (total)" shows the sum of these elements. In 2001, only costs for issuing some cards were taken into consideration.

Banks' total cost and income

The private cost for payment services produced in (and for) banks was NOK 7.4 billion in 2007. The corresponding income was NOK 5.2 billion. This gives a cost recovery of 71 %. Income is based on prices per payment transaction and fixed, periodical fees from payers and payees. Float was nil, as the Act relating to Financial Agreements from 2000 ensured that banks no longer derive income from float. Cost recovery increases to 87% if cash services are excluded from the calculation.

Since banks do not recover all their costs in relation to payments, the missing 29 % or 13 % is subsidised from other banking activities (interest margin etc)

The household survey

In the household survey respondents were asked about their use of payment services (not about their costs). Information from the household survey and from Norges Banks payment statistics enabled us to calculate the value and number of cash transactions at point of sale in 2007.

The use of cash in Norway can be estimated in a number of alternative ways, as shown in Gresvik and Haare (2008). Here, we base our calculations on information from the household survey and Norge's Banks Annual Report on Payment Systems. Divergence between the survey and the card data in the report was minimal.

In the survey, the value of cash payments was NOK 62.1 billion in 2007, or 14% of the total value paid at point of sale (merchants). The total number of cash transactions was 285 million, or 24 % of the total number of transactions. The total number of transactions at point of sale was 1 209 million in 2007 (see Table 7).

Table 7

Payments at point of sale 2007

	Transactions		Value	
	million		NOK	
<i>Base: Residents</i>	transactions	per cent	billion	per cent
Bank-Axept debit card	805.3	67 %	298.1	69 %
Petrol companies cards	21.6	2 %	10.8	2 %
Visa, Mastercard, Amex,				
Diners Club	97.1	8 %	61.0	14 %
Card usage, total	924.0	76 %	370.0	86 %
Cash usage	285.0	24 %	62.1	14 %
Point of sale, total	1209.0	100 %	432.1	100 %

When calculating households' share of social costs, we assumed that the time spent on each payment at point of sale was identical for merchants and customers (thus re-using the time study from the merchant survey, see Table 8 below). The estimate for time spent on ATM withdrawals was based on assumptions from the Swedish survey (110 seconds per transaction). Furthermore, we assumed that giro payments made by households take on average 60 seconds.

Time spent on transactions was multiplied by average wages to generate households' "own production cost". Households' private costs were made up of own production cost, banks' fees and central bank seigniorage (The value of seigniorage is not shown in this short text, as seigniorage income for Norges Bank is the same as other agents' seigniorage cost, and thus has no value in the social cost calculation).

Table 8

Time spent on a transaction in 2007 (seconds)

ATM withdrawal (estimate)	Giro payment (estimate)	Cash payment	Bank Asept PIN code based	International payment cards signature based
110	60	15.7	16.7	57.3

Stock of cash in relation to cash usage

The analysis makes use of calculations on the stock of cash which is in use for payment purposes from Gresvik and Haare (2008). Total cash stock was NOK 51.5 billion in 2007 (quarterly average). The stock of cash used for registered payment purposes was NOK 21 billion NOK, 41% of the total cash stock. The unexplained part is used for unregistered activities such as hoarding, person-to-person payments, even including criminal activities. The share of the cash stock which cannot be accounted for has increased slightly in recent years. We will use this calculation to estimate the seigniorage component in the social cost analysis in our forthcoming Staff Memo.

The merchant survey

The merchant survey focused on merchants' costs from receiving payments from customers. Merchants' costs generated from own activities, such as operating tellers, moving and storing cash, and offering card services were taken into account. Also, cash and card handling services bought from subcontractors were examined. Furthermore, the number of transactions and the values paid were reported, and a separate time study on payments was conducted.

Unfortunately, the response rate for the merchant survey was low. The sample available in the survey is somewhat skewed as grocery chain stores and big merchants/stores are overrepresented. However, we still have confidence in some of the results, especially since we find support for our observations in similar surveys in other countries¹⁵.

The main result from the survey is that 25 % of the value and number of transactions is paid in cash to merchants. Time spent on receiving payments is taken from the separate time study conducted at a few stores. Costs to merchants were calculated as the sum of banks' fees, seigniorage, merchants' own activities and fees paid to subcontractors. The number of transactions and the values at point of sale were based on the household survey.

6. Acknowledgements

When constructing the bank survey, Sparebankforeningen (The Norwegian Savings Banks Association) and FNH (The Norwegian Financial Services Organisation) provided support, both by encouraging their members to participate and by providing inputs on the choice of methodology. The two organisations originally intended to conduct a survey on the cost of cash. Their questions were for the most part implemented in our bank survey.

¹⁵ Sweden, the Netherlands and Belgium

Twelve banks participated in the survey. These were: Andebu Sparebank, DnB NOR Bank, Fokus Bank, Sparebank1 Halden, Handelsbanken, Larvikbanken Brunlanes Sparebank, Sparebank1 SMN, Sparebanken Pluss, Skandiabanken, Sparebanken Vest, Sparebank1 Vestfold og Sparebanken Øst. Elavon Merchant Services participated, although the information they provided is not reported for reasons of anonymity.

When conducting the merchant survey we received extensive support from and had cooperation with both HSH (The Federation of Norwegian Commercial and Service Enterprises) and from NHO Reiseliv (The Norwegian Hospitality Association).

7. Publishing the results

Details of the results from the cost survey will be published in two Staff Memos:

- Payment habits at point of sale (Staff Memo 6/2008, published 23 October 2008)
- Costs in the Norwegian payment system (to be published in May 2009)

The main results will also be published in spring 2009 edition of the web publications “Penger og Kreditt” (in Norwegian) and “Economic Bulletin” 2009.

* * *

References

- Bergman, M., G. Guibourg and B. Segendorf (2007), “The Costs of Paying – Private and Social Costs of Cash and Card Payments”. *Working Paper Series* No. 212, December 2007, Sveriges Riksbank
- Bergman, M., G. Guibourg and B. Segendorf (2008), “Kort- och kontantbetalningar – ett samhällsekonomiskt perspektiv” (Cards and cash in a social cost perspective), *Penning och valutapolitik* No. 2 2008, Sveriges Riksbank
- Bjørnenak, T. (1993): “ABC – hva er D? Grunnleggende prinsipper i aktivitetsbasert kalkulasjon”, (ABC – what is D? Basic principles in activity-based calculation), *Praktisk økonomi og ledelse* no. 2/93.
- Brits, H. and Carlo Winder (2005), “Payments are no free lunch”, *DNB Occasional Studies*, Vol. 3 No. 2. 2005, De Nederlandsche Bank.
- Cooper, R. and R. S. Kaplan, (1999): “The design of cost management systems – text and cases”, Prentice-Hall, Inc, ISBN 0-13-570417-0.
- Fidjestøl, A., D. Flatraaker, and C. J. Vogt (1989a): “Inntekter, kostnader og prissetting i betalingsformidlingen” (Income, costs and pricing in the payment system), *Penger og Kreditt* no. 4/89, Norges Bank.
- Fidjestøl, A., D. Flatraaker, and C. J. Vogt (1989b): “Kostnader i betalingsformidlingen” (Costs in the payment system), *Penger og Kreditt* no. 3/89, Norges Bank.
- Folkestadås, E. and B. Grovan, (1999): “En ABC analyse av utvalgte produkter i dagligbankavdelingen i Andebu Sparebank” (An ABC analysis of selected products at Andebu Sparebank), *Project assignment at the Norwegian School of Management*.
- Gresvik Olaf and Harald Haare (2008), “Payment habits at point of sale. Different methods of calculating use of cards and cash in Norway”, *Staff Memo* No 6/2008, Norges Bank.
- Gresvik, Olaf and Grete Øwre (2003), “Costs and income in the Norwegian payment system 2001. An application of the activity-based costing framework” *Working Paper* no 8/2003, Norges Bank
- Grovan, B. and Richardsen, L. (2000): “En analyse av kundelønnsomhet i Andebu Sparebank” (An analysis of customer profitability at Andebu Sparebank), *Project assignment at the Norwegian School of Management*.
- Humphrey, D., K. Moshe, and B. Vale (2001): “Realizing the gains from electronic payments: costs, pricing and payment choice”, *Journal of Money, Credit and Banking*, 33, pp. 216-234.
- Koivuniemi, E. and Kari Kemppainen (2007), “On Costs of Payment Methods: A survey of Recent Studies”, *Working paper* No. 6/2007, Suomen Pankki.
- Nationale Bank van België (2005) “Kosten, voor- en nadelen van

de verschillende betaalmiddelen” (Costs, advantages and drawbacks of the various means of payment), *Studie*, December 2005

Norges Bank (2008), “*Annual Report on Payment Systems*”, Oslo 2008

Robinson, P. E. and D. Flatraaker, (1995a): “Income, costs and pricing in the payment system”, *Economic Bulletin* no. 3/95, Norges Bank.

Robinson, P. E. and D. Flatraaker, (1995b): “Costs in the payment system”, *Economic Bulletin* no. 2/95, Norges Bank.

Working Group on Costs of POS Payment Products (2004): “The costs of payments – Survey on the costs involved in POS payments products”, *Report by the National Forum on the Payments System*. De Nederlandsche Bank, March 2004

Presentation of Cost Analysis

Held at Research Conference on Payment Systems at Norges Bank November 14th 2008

Costs in the Norwegian Payment System 2007

Olaf Gresvik and Harald Haare

Norges Bank
14.11.2008

1

Why a cost survey?

- Cost efficiency is vital to the payment system (also: fast, reliable and safe)
- What do we want to measure?
 - All costs from payment services & cash handling (production, usage and social)
 - Unit costs
 - Costs relative to unit prices and total income
- How to measure the use of cash? Important!
- Development over time (bank surveys)

2

Scope

- Agents
 - Banks, Households, Merchants, Subcontractors, Central Bank
- Instruments
 - cash, cards and giros
- Costs
 - Social costs, private costs (per agent)
 - Production costs and usage costs
- Income
 - Total income and unit fees

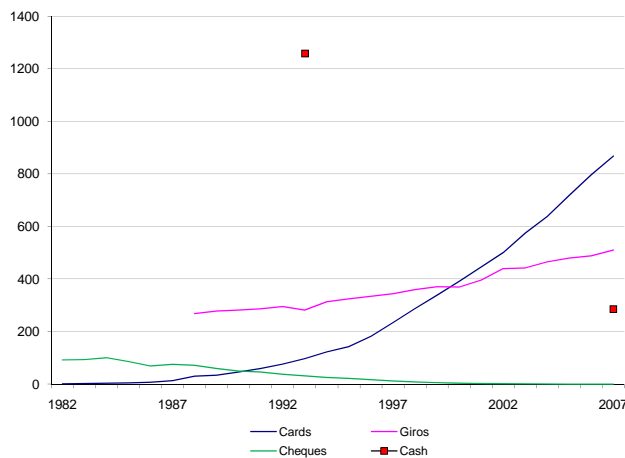
3

Data sources

- Three surveys:
 - Banks, Households, Merchants
- Public information:
 - Payment statistics
 - Demographics
 - Financial accounts
 - National Accounts
- Other surveys
 - Norway: 1988, 1994, 2001
 - Belgium, Netherlands, Sweden etc

4

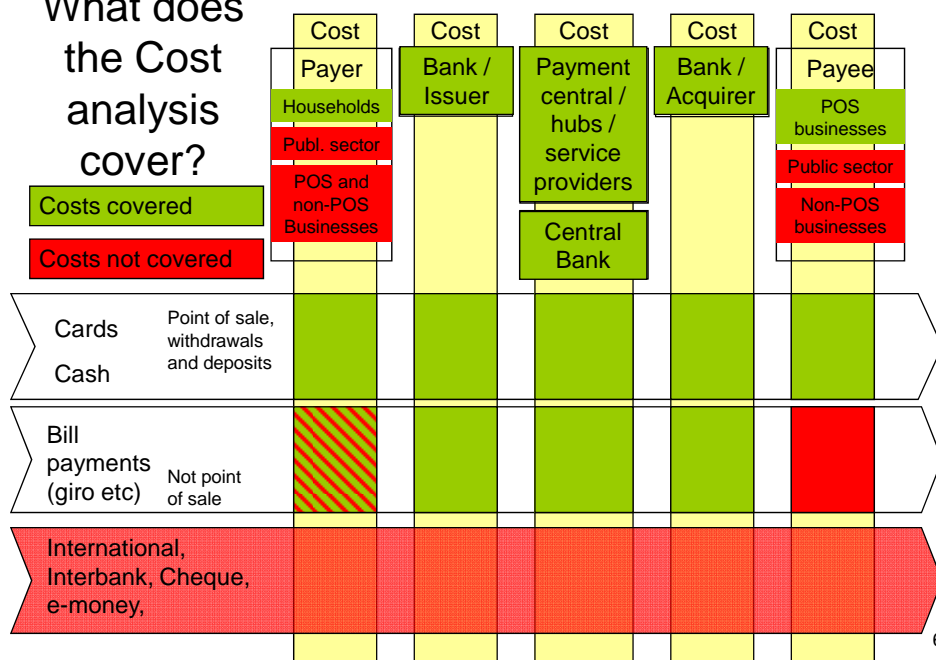
Cash, cards, cheques and giro million transactions 1982 - 2007



Note: Estimation of cash transactions is elaborated further in Gresvik and Haare (2008), "Payment habits at point of sale", *Staff Memo* 6/2008, Norges Bank

5

What does the Cost analysis cover?



6

Which method?

	Cost Payer	Cost Bank / issuer	Cost Payment central / hubs / service providers	Cost Bank / acquirer	Cost Payee
Households	Households				POS businesses
Publ. sector	Publ. sector				Publ. sector
POS and non-POS Businesses	POS and non-POS Businesses		Central Bank		Non-POS businesses
Cards					
Cash					
Bill payments (giro etc)					

Activity Based Costing (full cost)

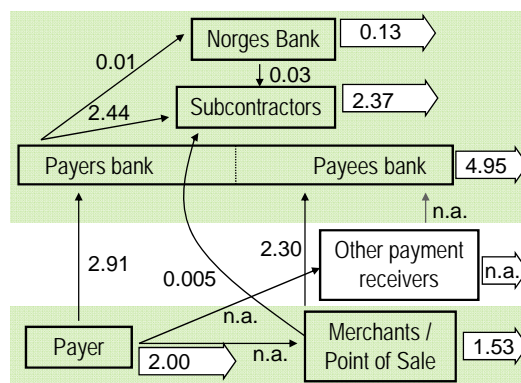
Payment habits (phone survey: yesterday's payments)

Full-cost questionnaire and time studies

Also: information from financial statements and from statistical information on salaries etc

Social costs, private costs and fees

- Method:
 - Bergman, Guibourg and Segendorf (2007)
 - Social cost
 - Private cost
 - Net private cost
 - Own production cost
- Social Costs = 0.48% of GDP
- Seigniorage:
 - eliminated in social cost calculation



Bold arrows: Own production cost:
10.97 billion NOK (= **social cost**)

Regular arrows: fees and other costs:
7.68 billion NOK

Social costs: agents

	NOK billions	
Banks	4.95	(45.1%)
Norges Bank (The Central Bank)	0.13	(1.2%)
Households (Payers)	2.00	(18.2%)
Merchants and others (Payees)	1.53	(14.0%)
Subcontractors	2.37	(21.6%)
<u>Sum</u>	<u>10.97</u>	<u>(100.0%)</u>

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Social costs: Instruments

	Social costs	No. of transactions	Value (NOK)	Social cost per transaction
	NOK millions	millions	NOK billions	NOK
Cash, total	3 308.4	417.0	181.2	7.93
Cash payments	514.3	285.0	62.1	1.80
Cards, total	5 355.9	902.4	359.1	5.93
Giro, total	2 308.5	510.7	10 428.8	4.52
<u>Sum society</u>	<u>10 972.9</u>	<u>1 830.1</u>	<u>10 969.1</u>	<u>6.00</u>

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Private unit cost: banks

(NOK)	2001	2007
Internet banking	8.00	2.00
Direct debits	5.00	2.50
Mail giro	7.50	7.00
Cheque	22.50	-
Card payments (issuer)	2.50	1.50
Card payments (acquirer)		1.00
Card payments (total)		4.00
Own bank's ATM	8.50	7.00
Other bank's ATM	7.50	8.50

11

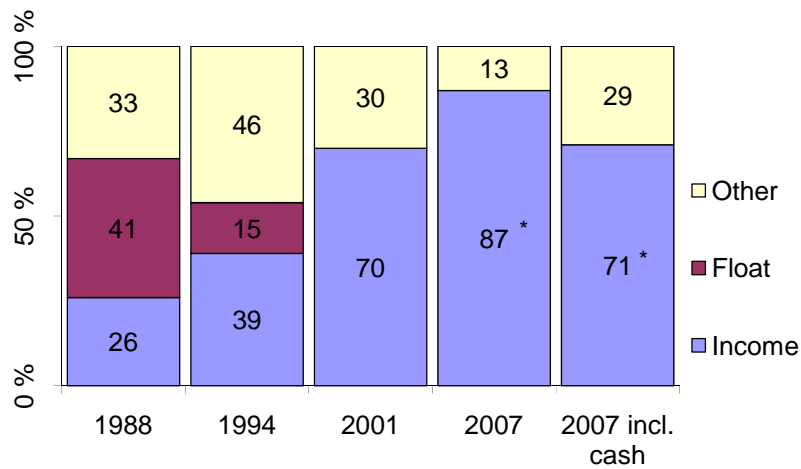
Efficiency indicators: banks

	1988	1994	2001	2007 e	2007 f
Private cost (billion NOK)	5.4 b	6.3	6.9	5.4	7.4
Private cost as share of GDP	0.83	0.72	0.45	0.24	0.33
Private unit cost (NOK)	14.10	10.70	5.30	4.00	4.50
No. of transactions in banks (millions)	381 b	481	968 c	1512	1545

b) Withdrawals at the counter are excluded c) All transactions, estimates for services not found in national statistics are included e) Same setup as the 2001-survey f) Costs for cash and all costs for cards are included, ordinary 2007-setup.

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Cost recovery: banks



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Closing

- Social costs: NOK 10.97 billion, 0.48 % of GDP
 - Banks and subcontractors carry most of the cost
- Banks' cost coverage increases, but not a profit
 - Banks efficiency has improved
- Unit costs reduced for the most important services
- Cash use low, but cash handling costs are considerable
- Analysis is sensitive to choice of method
- Staff Memo on costs: May 2009
 - Details on methods and results

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