Banks' costs and income in the payment system in 2001

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According to national accounts data, the financial sector showed a strong increase in productivity in the 1990s. This article explains that this was largely due to changes in the payment system. A larger number of payment transactions are now produced at lower cost than previously, while direct pricing of payment services enables customers to select services that meet their needs at the lowest possible cost. Both factors have had a positive impact on the efficiency of the payment system.

Introduction

Section 1 of the Norges Bank Act requires Norges Bank to "*promote an efficient payment system domestically as well as vis-à-vis other countries*." An efficient payment system ensures that payment transactions are executed quickly, safely and at a reasonable price. As part of the work to promote an efficient payment system, Norges Bank conducted - in 1988 and 1994, and most recently for 2001- surveys of banks' costs in connection with producing payment services. The purpose of the surveys has been to identify cost structure, cost developments over time and the relationship between payment system prices and costs.

Prices should reflect the value of the product or service and the cost of producing it. Prices that reflect the relative costs of producing various payment services provide an incentive to users to select services that meet their needs at the lowest possible cost. This promotes correct use of resources and increases the efficiency of the payment system.

Competition is an important means of achieving efficient resource use. One of the key assumptions for competition is readily available and correct information to market participants on the price, quantity and quality of products and/or services. Cost surveys, along with annual statistics of prices and transaction volumes in the payment system, which Norges Bank publishes in its Annual Report on Payment Systems, provides information that would otherwise be difficult to obtain.

This article presents results of Norges Bank's cost survey for 2001. The results together with statistics of prices and transactions in the payment system shed light on banks' costs and income in this area in 2001. Developments have been on the right track since 1994. In constant prices, banks' total costs have fallen since 1994, while transaction volumes have doubled. The share of costs covered by direct pricing has risen from 39 to 70 per cent, while customers now pay on average less per transaction than they did in 1994.

Seven banks participated in the survey, and we wish to express our appreciation for the valuable information which they provided. Without their assistance, inputs and detailed knowledge, this survey would not have been possible.[1)]

Background

Norges Bank conducted surveys of banks' costs related to the payment system in 1988 and 1994. The contribution margin method was employed in both surveys which covered the three largest banks and Postgiro/Postbanken. The articles describing the survey results (see Fidjestøl, Flatraaker and Vogt (1989a,b) and Robinson and Flatraaker (1995a,b)) also focused on unit costs incurred in providing the various services and bank's cost coverage by means of direct pricing. Norges Bank encouraged banks to increase their cost coverage by means of direct pricing so as to reduce hidden pricing via float[2)] and the interest margin. Another important reason for recommending service pricing was that prices that reflect production costs would induce customers to opt for services that meet their needs at the lowest possible cost, thereby promoting an efficient payment system.

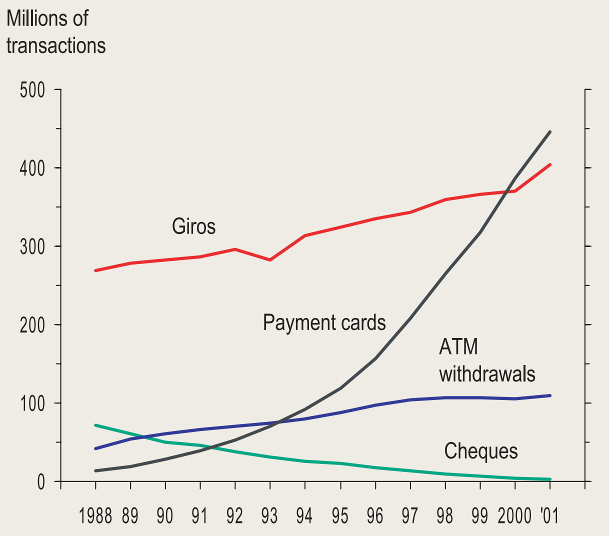
While there have only been minor changes in person-years and number of bank branches since 1994, major structural changes have taken place in the period. The most significant change in connection with the payment system was the merger of DnB with Postbanken which resulted in the relocation of all Postgiro production to the Banks' Payment and Central Clearing House (BBS). The banks sold Novit and Fellesdata to EDB Business Partner which merged the two organisations. Banks' range of products has also changed, and the introduction of banking services via the Internet is the most important of these changes. This has also led to the establishment of niche banks which focus in particular on payment services or savings. Increased use of electronic payment services and mergers between producers of payment services may have provided the basis for better exploitation of economies of scale in production.

Chart 1 shows that the use of various payment services has changed substantially since the first survey. In 1988, on-the-spot payments were usually made by cheque or in cash, whereas in 2001, payment cards were the norm. Bills are mainly paid by giro and the number of giro payments has increased slightly for the period as a whole. Today, about half of all cashless transactions are executed by means of cards.

1) Special thanks go to financial controller Børre Grovan at Andebu Sparebank. His work on his Master of Management degree at the Norwegian School of Management gave us valuable insight into how ABC analysis can be applied by banks (see Grovan and Richardsen (2000) and Folkestadås and Grovan (1999)).

2) Float income for banks is generated when funds are transferred from one account to another, for example via the giro system, and do not carry interest for either the payer or payee for a period. The Financial Contracts Act, which went into force on 1 July 2000, eliminates float income in the Norwegian payment system.

Chart 1: Use of payment instruments 1988-2001



Source: Norges Bank

Services covered by the survey

The survey charts banks' costs for providing payment services and it covers all main categories of payment services used by retail and business customers. It includes electronic and paper-based services as well as cash deposits and withdrawals. The survey does not cover foreign payments, purchase/sale of travel currency or interbank payments. The following services are included in the survey:

- *Electronic payment instruments:*
  - Giros paid by telephone
  - Giros paid via PC/Internet
  - Direct debits
  - Direct remittances and company terminal giros (with or without notification, with customer identification number (CID))
  - EFTPOS – electronic funds transfer at point of sale

- *Paper-based instruments:*
  - Cheques
  - Mail giros
  - Giros paid at the counter (in cash or charged to account)
  - Direct remittances and company terminal giros with a payment order
  - Manual transfer between accounts

- *Cash services:*
  - ATM withdrawals
  - Deposits and withdrawals at branches
  - Night safe

The range of services covered in the 1994 survey was expanded to include night safe services and giro payment by telephone, which was introduced late in 1994, and giro payment via the Internet, which was introduced in 1996. The seven banks participating in the survey have a combined market share of 38 per cent in terms of number of transactions. Market share is highest for direct debit, direct remittance and company terminal giro. Thus, there is little uncertainty regarding our analysis of these services. There is greater uncertainty about the results for services such as giro payments charged to an account at the counter, giros paid by telephone or via PC/Internet, cheques and withdrawals from other banks' ATMs, since the surveyed banks' market share for these services is smaller.

Small businesses often use the same payment services as retail customers. However, banks have developed special payment solutions for businesses that have a large number of incoming and outgoing payments. These services are based on dedicated terminals that are used exclusively for banking services and communicate with banks using a closed network. The Banks' Payment and Central Clearing House has developed a solution called direct remittance, while individual banks or groups of banks have developed solutions that go by the collective term company terminal giro. When estimating costs for these payment solutions we have merged the services provided by the Banks' Payment and Central Clearing House with the banks' own solutions. This contrasts with the earlier surveys which only covered services provided by the Banks' Payment and Central Clearing House.

The survey maps banks' costs in connection with payment services. Payment service costs to the customer comprise the direct prices charged by the bank. In addition, there are time and travel costs when the customer visits a branch, and costs for communication and various devices used when paying via telephone and the Internet. Time and travel costs etc. are all part of society's total costs for payment services, but they are not included in the survey. Payees' costs in connection with invoicing etc. are not included either.

ABC analysis

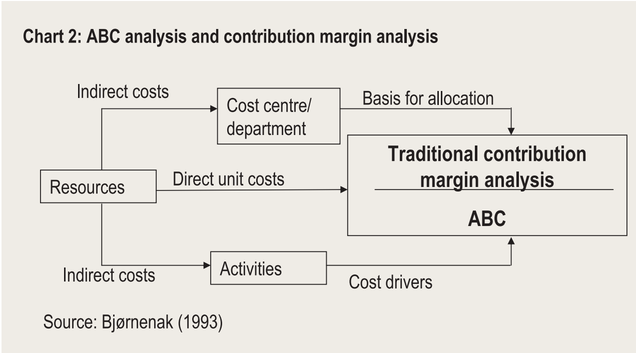
Since banks' official accounts do not provide detailed information about the costs of providing payment services, the surveys are mainly based on banks' in-house data. This year's survey is based on official accounts, but adapts and compares information with in-house calculations and data from sources other than the accounts.

The cost survey for 2001 was based on a method known as activity-based costing analysis (ABC analysis)[3]. The surveys conducted by Norges Bank in 1988 and 1994 were based on a method known as contribution margin analysis. Apart from some figures, the most

[3] This method will be described in more detail in a Working Paper from Norges Bank that will be published early in 2003.

important results are nevertheless comparable.

ABC analysis was developed some 10 to 15 years ago (see Cooper and Kaplan (1999), Bjørnenak (1993) and Sti (1993)). This method is particularly suited in cases where support functions' share of total costs is high and has risen over time and/or where there is wide variation in products, customers and production processes. Banks' production of payment services is characterised both by costly support functions and wide variation in how the services are produced, and hence also variations in costs between services.



Direct costs are costs related directly to each individual service provided by the bank and vary with the volume delivered, i.e. the number of transactions. In the 2001 survey, the banks' direct costs include deliveries from the Banks' Payment and Central Clearing House and EDB Fellesdata, purchase of notes and coins, purchase of card services and interbank charges. Development costs related to individual services are also defined as direct costs. The share of direct costs varies widely from service to service.

Indirect costs include all personnel costs, costs of operating the banks' computer systems, costs of premises, machines, fixtures and office supplies, marketing and so forth. In the 1994 survey, all branch costs were treated as direct (or variable) costs. In 2001, all personnel costs, including those arising at branches, are treated as indirect costs. As a result, indirect costs account for a higher share of total costs related to manual services than was the case in the 1994 survey. The indirect cost share in 2001 is about 60 per cent compared with 18 per cent in 1994.

Indirect costs are allocated among the individual services by means of an allocation key. In the contribution margin analysis, the company's departments are often employed as the allocation key for indirect costs. In ABC analysis, the allocation key is based on the company's *activities*. A company's or bank's activities are actions and processes that are necessary to provide a product or service (for example recording vouchers, receiving cash, opening an account and revising customer agreements). The indirect costs are allocated from activities to payment services via *cost drivers*. Three types of cost drivers are defined in our cost survey: transactions, accounts (agreements related to the product or service) and products (i.e. whether or not the bank provides the service). Costs incurred by each activity are allocated among the services based on the number of times the activity is performed. The difference between contribution margin analysis and ABC analysis is shown in Chart 2.

Accounts for 2001 provided the basis for the compiled data. Invoices and transaction data from the Banks' Payment and Central Clearing House, EDB Fellesdata and Norges Bank were an important part of the basis for calculation. Depreciation of buildings and installations was replaced by opportunity costs based on market price. Development costs for new services and further development of old services were estimated and distributed in relation to expected "economic lifetime". The costs of tied-up capital (loss of interest) on cash holdings were calculated on the basis of Norges Bank's interest rate statistics and banks' cash holdings. Time studies were used to estimate how much time banks spent on various activities, and indirect costs were distributed in relation to the results of these studies.

Since information about surplus capacity for the various services is unavailable, historical transaction figures are assumed to reflect full capacity utilisation. This increases the calculated unit costs for services with surplus capacity. Development costs are partly estimates based on depreciation, partly actual figures. Therefore, actual figures diviate somewhat from our figures. We have defined 25 activities related to payment services and in addition one activity related to all other operations in banks. This may have led to an excessive focus on activities related to payment services, so that indirect costs may be overestimated.

Results from the survey

Productivity

Financial services are among the sectors of the Norwegian economy that have made the strongest contribution to the rise in productivity in the past decade. Revised national accounts figures show that productivity for mainland Norway (non-oil sector) rose by 2.4 per cent annually in the 1990s. Financial services represent one of the sectors showing strongest productivity growth, with an annual average of 6.3 per cent in the same period. Payment services - an important part of financial services - have contributed to the increase in productivity (see Lindquist (2002)). The rise in payment system productivity is attributable both to more rational production methods and increased use of the most cost-effective services. Due to their pricing policy for payment services, banks have brought about a shift in demand from paper-based to electronic services (see Humphrey, Kim and Vale (2001)).

Table 1 contains key figures that shed light on productivity developments. Since 1994, the number of pay-

Table 1: Key figures

	1988	1994	2001
No. of bank branches	2 200[a]	1 600	1 390
No. of bank staff (FTEs)	33 000[a]	23 200	23 400
No. of payment transactions (millions)	381[b]	481	968[c]
Total costs (NOK billions, 2001 NOK)	5.4[b]	6.3	5.9
Average unit cost per transaction (2001 NOK)			
- including cash withdrawals at the counter[d]	n. a.	13.00	5.80
- excluding cash withdrawals at the counter[d]	14.10	10.70	5.30

[a] Approximate figure
[b] Excl. withdrawals at the counter
[c] All transactions, incl. estimates for services not included in national statistics, viz. deposits, night safe and transfers
[d] Excl. night safe

Source: Norges Bank

ment transactions has doubled to 968 million. The total number of employees in the banking industry has risen by 1 per cent, while the number of branches has been reduced by 13 per cent. The number of post offices was halved from 1994 to 2001.

Total costs connected with producing payment services fell from NOK 6.3 billion in 1994 to NOK 5.9 billion in 2001 (in 2001 NOK), a fall of 6 per cent. The reason for this is a shift from manual services to electronic payment instruments such as payment cards and electronic giros. The average cost of producing payment transactions[4)] was halved in the period. At the same time, prices charged to customers have increasingly reflected the actual costs of producing the services. As from 1 July 2000, banks were no longer allowed to earn float income.

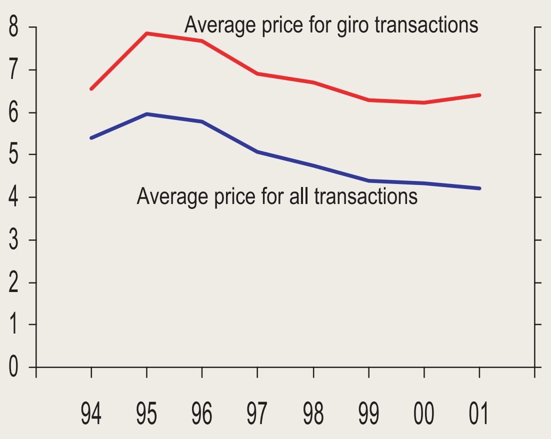
The gain achieved by increased productivity accrues both to customers and the banks. Chart 3 shows that the customers paid less for the average transaction (weighted by actual use) in 2001 than in 1994 (in terms of 2001 NOK) both when the basis is all services and when we base the calculation on giro services only. Since 1994, more transactions have been produced by banks for less (measured in NOK). This frees up resources for other purposes, which can benefit society.

Total costs and income

Chart 4 breaks down banks' total costs related to the various payment services. Giro services generate 52 per cent of total costs, i.e. almost NOK 3 billion spread over a little more than 400 million transactions. Giro services at the counter (in cash and charged to account) are very expensive with costs of NOK 725 million (12 per cent of total costs) spread over 50 million transactions. Traditional, paper-based services are relatively more expensive to produce than modern, electronic services. Paper-based services including cheques account for 27 per cent of the costs, but only 14 per cent of the transactions. Electronic giro services account for 29 per cent of costs and 28 per cent of the transactions. EFTPOS card transactions and ATM withdrawals account for 34 per cent of the costs and 54 per cent of the transactions, while cash withdrawals at the counter account for 10 per cent of costs and 4 per cent of transactions.

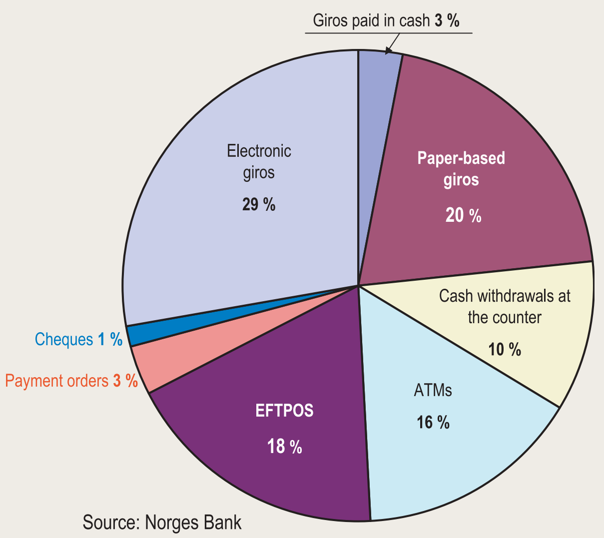
Banks' income from direct prices (fees) has risen even though the average price per transaction has not

Chart 3: Average prices per transaction and average prices per giro transaction in Norway. Prices in 2001 NOK.



Source: Norges Bank

Chart 4: Costs by payment service

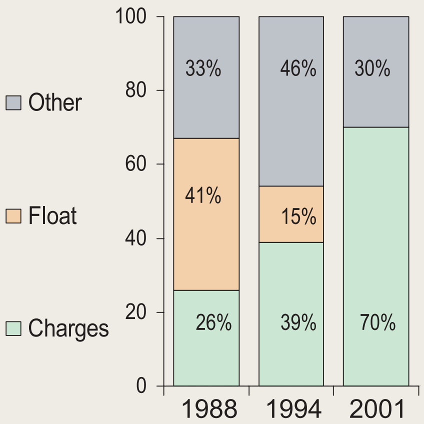


Source: Norges Bank

4) The average cost is calculated by weighting unit costs for the individual services by national transaction figures. The figures in Table 1 are adjusted by the general consumer price index and express costs in 2001 NOK.

increased since 1994. Chart 5 shows how the banks absorbed the costs of payment services in 1988, 1994 and 2001. Prices charged directly to customers covered 70 per cent of the banks' costs[5] related to payment services in 2001. There was a marked increase from 1988 to 1994. Cost coverage via float is not taken into account in 2001 because of the statutory amendments[6]. The residual item "other" refers to costs that are not covered by prices.

Chart 5: Banks' coverage of payment service costs. Per cent



	1988	1994	2001
Costs (NOK billion)	3.8	5.3	5.9
Transactions (million)	381	481	968

Source: Norges Bank

The present survey focuses on the costs of supplying the various payment services. The results show that the income generated by prices fails to cover all of banks' costs connected with payment services. Banks frequently base their pricing decisions on customer profitability analyses. This combined with the fact that banks are dependent on providing payment services in order to be a satisfactory alternative for customers will influence the pricing of payment services.

Unit costs

Unit costs for various services vary widely. The night safe is the most expensive per unit, followed by terminal giro sent as a money order. Most paper-based services cost more than electronic equivalents. The exception is the mail giro, which costs less than the PC/Internet giro. EFTPOS transactions are produced at the lowest unit cost. Table 2 shows unit costs, transaction figures, total costs and prices for the services.

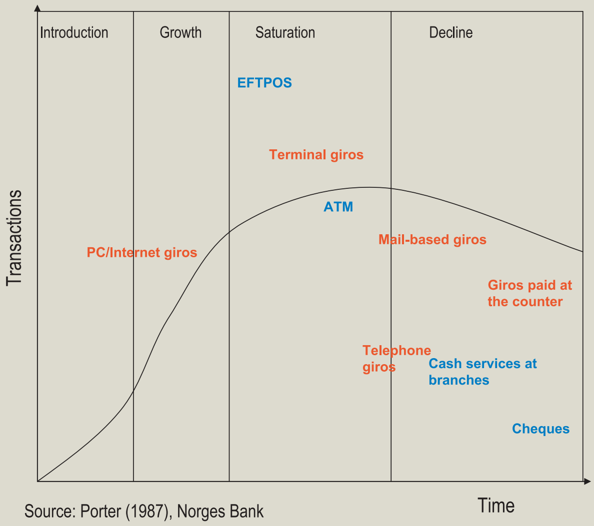
Giro

Paper-based giro services require far more resources than electronic services. Table 2 shows that the cost per

Payment services and life cycle

The costs of producing payment services vary to some extent with how long the services have been in use. The life cycle is illustrated in Chart 6, which is based on Porter (1987). Services in the introduction phase are marked by intensive marketing and high depreciation costs associated with developing such services. There is often surplus capacity and production has yet to find its final form. Competitors are few and risk is high. The PC/Internet giro is currently passing from this phase to the next one, i.e. the growth phase. In the growth phase there are more users, and fewer alternative solutions from which to choose. This is exemplified by the debate about electronic invoicing, which was introduced with two sets of standards in 2001. The growth phase is characterised by considerable marketing and the first signs of mass production. At times, capacity may be insufficient to accommodate the growth generated. Most payment service providers establish their operations in this phase, as was the case for PC/Internet giros and EFTPOS. Prices fall compared with the introduction phase. The most popular payment services were in the saturation phase in 2001. In this phase, services are used by "everyone", and use/technology is familiar. The quality of the service is stable and satisfactory and some services may have surplus capacity. Marketing is less intensive. Providers compete on price, and there is greater focus on costs. Services may remain in this phase for some time. The final phase is decline when the number of transactions falls, customers know the product well and demand good service, advertising costs are low and there is little risk of new competitors. Prices may rise towards the end of this phase due to diseconomies of small scale operation. Cheques may be a good example of this. Ultimately, fewer providers will offer the service.

Chart 6: Location of payment services in the life cycle



Source: Porter (1987), Norges Bank

[5] The income figure refers to accounting data from all banks and branches in Norway, taken from "Accounting Statistics for Banks and Other Financial Intermediaries" delivered by the banks to Norges Bank. Based on list prices per transaction (excl. discounts), annual card fees, income from OCR and transaction figures from Norges Bank (2001), income totals NOK 5 million. The difference between estimated and actual income is attributable to customer discounts. The income figure does not include VISA Norge's earnings on merchant commission.

[6] Financial Contracts Act (2000)

Table 2: Costs, prices and transactions

	Transactions[1] (million)	Total costs[2] (NOK million)	Costs[3] (NOK)	Price[4] (NOK)
Mail giro	74	543	7.50	5.14
Giro, account debits	38	564	15.00	18.59
Giro, cash payments	12	161	13.00	27.37
Company terminal giro sent as money order	7	182	24.50	30.14
Phone giro	29	167	6.00	2.45
Internet	66	527	8.00	1.89
Direct debit	33	162	5.00	1.42
Company terminal giro - electronic	144	657	4.50	2.78
Cheques	3	65	22.50	21.06
Payment terminal (EFTPOS)	412	996	2.50	2.24
Own bank's ATMs	66	562	8.50	2.14
Other banks' ATMs	39	283	7.50	4.41
Withdrawals/deposits[a]	37	558	15.00	0.00
Transfers[b]	4	116	28.00	0.00
Night safe[c]	6	318	55.50	-
Total	968	5 867		
Average weighted by no. of transactions (except [a],[b] and [c])			5.30	
Average weighted by no. of transactions (all services except [c])			5.80	

[1] Transactions taken from *Annual Report on Payment Systems*

[2] Transactions multiplied by unit costs

[3] Unit costs for the seven banks in the survey rounded to the nearest 50 øre

[4] Unit prices for all banks excl. discounts (Source: *Annual Report on Payment Systems*)

Source: Norges Bank

transaction ranges from NOK 7.50 to NOK 24.50. This is due to the manual operations required and the costly machinery needed to process the forms. Electronic giros pass more rapidly through the system, they share to some degree infrastructure (telephone lines etc.) with non-bank users, and as a rule require no manual processing. This is reflected in unit costs, which vary from NOK 4.50 to NOK 8. Electronic giro services are considered to be more efficient than paper-based services, not only due to the cost structure, but also because of short processing time and the low incidence of errors[7)].

Giro services at the counter are still among the most expensive to produce[8)], even though costs have fallen since 1994. There are probably several reasons for the reduction in unit costs. Banks have undergone internal restructuring resulting in fewer cashiers at branches. At the same time, technological changes in cash transaction systems have improved processing speed. With a steady customer flow, bank staff is likely to make more efficient use of their time than when they must wait for customers. Moreover, costs incurred by the customer while waiting in a queue are not charged to the bank. Viewed in isolation, giro services performed at branches generate income for banks, but when non-priced services at the counter are taken into account, overall at-counter business is not profitable. Interviews with banks suggest that it is necessary to maintain at-counter services in order to provide the service level expected by the customer. Overall, individual customers who use expensive services may be profitable for banks, even though costs related to the use of individual services are high.

Giro payments via PC/Internet are banks' most expensive electronic service. There are several possible reasons for this. One is that the service is relatively new and introduction costs related to technical solutions, marketing, contracts, training and customer support are high. Moreover, the computer systems have substantial surplus capacity. There is reason to believe that unit costs will decline when transaction numbers rise and development and introduction costs are reduced. Since the PC/Internet giro solution is closely related (technologically and cost-wise) to the telephone giro, there are similarities in the cost structure of these services. Banks no longer focus on the telephone giro and transaction numbers are expected to fall. Telephone giro unit costs may therefore rise in the future.

Large companies pay giros via a terminal and this is the most frequently used giro service. This survey covers both direct remittances and company terminal giros. The 1994 survey was confined to direct remittance services, which have become slightly cheaper to produce in the intervening period. Company terminal giro services which banks produce are more expensive since they cater to a greater degree to the customer's information needs. Since the average figures include both direct remittance and company terminal giro services, costs are higher in 2001 than in previous surveys.

Branch services and cheques

Branch services include deposits, cash withdrawals at the counter and manual transfers between accounts as well as night safe and cheques. While the Annual Report on Payment Systems provides transaction statistics of cash withdrawals at the counter and cheque transactions, no national transaction statistics are available for the other services. We have therefore estimated national transaction figures for these services on the basis of their market share at seven surveyed banks. Therefore, there is greater uncertainty about the total figures than about the figures for the other services. Table 2 shows that it costs NOK 1 057 million to provide branch services that comprise about 50 million transactions. The night safe service has the highest unit costs in the survey, and showed very wide variation in cost structure and cost level from bank to bank. The night safe service allows companies to make cash deposits outside banks' business hours, and therefore has no close substitutes. Costs are high due to security requirements, manual processing and limited possibilities for centralisation.

Cheques are used infrequently. Costs per transaction rose from NOK 14 in 1994 to NOK 22.50 in 2001, but prices have concurrently risen, enabling banks to virtually cover the costs for providing this service. Cheques are usually processed manually by branch cashiers. One bank in the survey allows customers to mail cheques in the same way as mail-based giros. This is a flexible means of processing cheques, and appears to offer the possibility of cost and efficiency gains.

7) Payment cards, direct debit and terminal giro services in particular are marked by a low incidence of error. There are more errors than are usual for electronic services in connection new electronic services such as PC/Internet since customers are still learning to use them.

8) Giros processed by counter staff can be paid in two ways: either by charging to an account or by paying in cash. Giros paid in cash are usually paid by persons who do not have a customer relationship with the bank in question. Banks therefore choose to set a higher price for giros paid in cash.

Payment cards

Payment cards may be used at ATMs and to make payments and withdraw cash at EFTPOS terminals. Hence, the costs for issuing cards are spread over ATMs and EFTPOS.

EFTPOS is the most popular payment service in Norway, accounting for 412 million[9)] transactions in 2001. EFTPOS is a reasonably priced service with a unit cost of NOK 2.50 per transaction, down from the 1994 figure of NOK 4.50. Costs associated with establishing card agreements etc. are included in the survey and are spread over each individual transaction. Banks charge the card holder an annual fee which is meant to cover these costs. Banks' development of EFTPOS in the mid-1990s initially involved substantial costs for deployment of terminals at new merchants, at the same time as costs for training and marketing were high vis-à-vis merchants and card holders. The reduction in costs since 1994 is probably due to lower unit costs in the production of this service, triggered by steadily increasing transaction numbers (economies of scale). Banks will introduce payment cards with an EMV chip[10)] by 2005, which requires replacement of bank cards and terminals. This will entail additional costs which may raise unit costs for EFTPOS transactions slightly for a time.

Payment cards are increasingly used for cash withdrawals in shops. Cash withdrawals in conjunction with goods purchases in shops almost equal the total number of withdrawals at the counter and from ATMs in 2001. The number of days that cash circulates between shop and customer prior to returning to the banks is probably higher now than in 1994. Fewer ATM and at-counter withdrawals combined with longer circulation time reduce banks' cash handling costs.

Payment cards are also used to withdraw cash at ATMs. Withdrawals from their own ATMs cost banks NOK 1 more than withdrawals from other banks' ATMs. In the case of withdrawals from their own ATMs, banks have costs connected with cash replenishment, maintenance and security etc. When cash is withdrawn from another bank's ATM, costs are covered by an interbank charge that was NOK 4.50 in 2001.

Cost structure and unit prices

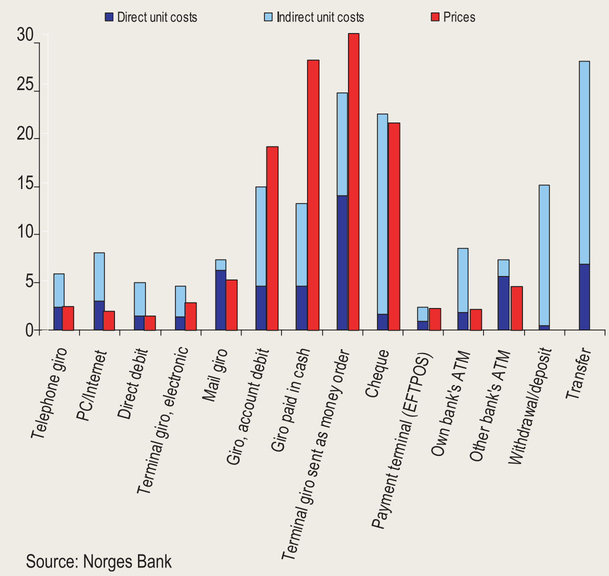
Our analysis draws a distinction between direct and indirect costs. Chart 7 shows unit costs broken down by direct costs (arising from external providers and/or other banks through interbank charges) and indirect costs (arising from bank's own operations). The chart also shows unit prices charged for the various services. This information has been taken from the Annual Report on Payment Systems.

Direct costs account for a large portion of total costs for automated services, while indirect costs account for a large share of total costs for manual services. This is because the analysis treats personnel costs as indirect costs. Indirect costs account for a relatively large share of total costs for PC/Internet services and several other automated services since these services require a considerable amount of manual work in connection with contracts, marketing and customer support etc. Cheques are manually processed, and therefore indirect costs account for a large share of total costs. Direct unit costs predominate in other banks' ATMs, due to interbank charges, while indirect costs predominate in own ATMs. Direct costs account for a high share of total night safe costs, since some banks purchase such services from Norsk Kontantservice AS and/or Securitas et al. When night safe services are handled in-house, the share of indirect costs is high.

Direct costs vary in the short term. Ordinary commercial principles state that variable unit costs must be covered by prices in order to secure operations in the short term. Chart 7 therefore compares unit costs with unit prices. Unit prices taken from the Annual Report on Payment Systems do not incorporate discounts, and therefore a number of services probably generate below-list-price income per transaction for the banks.

Most services' direct costs are covered by list prices. Income on the services PC/Internet, mail giros, direct debits and other banks' ATMs as well as free-of-charge services does not cover direct costs. This is not a problem in the short term, but in the case of ATMs[11)] and mail-based giros the same applied in 1994 and 1998.

Chart 7: Direct and indirect costs and prices



Source: Norges Bank

[9)] The survey covers transactions performed by Norwegian bank customers using bank cards and VISA, totalling 412 million transactions. Oil company cards and other international credit cards are not included in the survey.

[10)] EMV chips are based on a standard established by Europay, Mastercard and VISA, the largest card companies in the world. Combined with use of PIN codes, these cards are expected to achieve a higher security threshold against misuse than magnetic-stripe cards. Replacement of terminals has started. Introduction of the EMV chip will also require upgrading of ATMs.

[11)] ATM services probably generated net income for banks in 2001 since part of their income from annual card fees is additional to earnings generated by prices. Moreover, part of the deficit is due to the fact that withdrawals from the bank's own ATMs are free of charge during business hours. This service is cheaper for banks to provide than withdrawals at the counter, because net costs for one free-of-charge ATM withdrawal are lower than net costs for one at-counter withdrawal.

Direct costs are not fully reflected in prices, and this suggests that banks should consider taking steps to remedy the problem by lowering costs or increasing charges (or wait for a rapid increase in transaction numbers, which is not realistic for all services). The problem is more pronounced for the PC/Internet giro. The difference between price and direct costs is larger, and indirect costs are high. Price covers only a quarter of the unit cost. The service is relatively new in the market, and indirect costs are expected to fall since many such costs refer to marketing and other establishment costs. Better utilisation of economies of scale and repayment of development costs (treated as direct costs) will reduce direct costs. In the long term, the current price cost ratio for this service will probably not continue. As of 2001, this service generates losses for banks.

Unit prices on banks' own ATMs cover the direct but not the indirect costs, whereas the prices charged for using other banks' ATMs cover a higher share of the unit costs, but not the direct costs. The direct costs are higher in the case of withdrawals from other banks' ATMs due to the interbank charge. This price structure derives from the fact that banks do not charge for cash withdrawals from their own cashiers/ATMs during business hours, whereas they do charge for withdrawals outside business hours and in other banks. Thus, the share of costs covered by direct prices is highest for withdrawals from other banks' ATMs.

Direct prices charged for a number of services generate net earnings for banks. This is true of all giro services at the counter because unit costs are lower than list prices. Since the number of giro services at the counter is steadily falling, unit costs may rise in the years ahead due to diseconomies of small-scale operation. Unit costs are higher than list prices for EFTPOS transactions and ATM withdrawals, but earnings from annual card fees make up the deficit. Banks' therefore have a net income from card services totalling NOK 95 million. This figure is based on total reported earnings of NOK 1 936 million and the costs listed in Table 2, which shows that EFTPOS cost NOK 996 million to produce and ATM services cost NOK 845 million. Income generated by annual card fees makes up the shortfall. According to the Annual Report on Payment Systems, income from annual fees averaged NOK 205 per card in 2001. Earnings on cards are one of the most important reasons why cost coverage has risen since 1994. In 1994, the unit cost for EFTPOS was NOK 4.50, while the price was NOK 1.88, showing that the price cost ratio has moved in the right direction.

The survey provides no clear indication of whether large or small banks produce services at the lowest unit costs. Economies of scale appear to be spread over all banks as a result of the institutional structure involving the Banks' Payment and Central Clearing House and the EDB group. The marked efficiency improvement since 1994 is essentially due to a massive increase in the use of electronic services, especially cards. This is the result of a deliberate focus by the banks, the banking associations, the Banks' Payment and Central Clearing House and Norges Bank. The coordination of card systems in Norway has also allowed small banks to participate in this development. Moreover, interbank charges appear to smooth out many potential differences between large and small banks' costs for individual services.

Prices charged for services still do not cover all costs in connection with providing the majority of payment services. For recently introduced services, this may be due to the fact that the services are priced below unit cost in order to rapidly increase the service's popularity, with a view to exploiting economies of scale in the future. The price for EFTPOS was set low in order to achieve popularity, and due to a subsequent reduction in costs, full cost coverage has nearly been achieved for this service. Banks appear to be pursuing the same strategy with regard to pricing giro payments via the Internet/PC. The picture is unclear in relation to older services, although list prices still do not cover the costs of providing some of the largest services, such as company terminal giro and mail giro.

Summary

According to revised national accounts figures, financial services are among the sectors that have made the most substantial contribution to the general productivity growth seen in the 1990s. Part of this productivity increase derives from the payment system. The increase is due both to banks' increased use of automated solutions and the public's increased use of low-priced electronic payment solutions. To a large extent Norwegian banks have used pricing to shift customer use of payment services in the desired direction.

Banks' production of payment services has increased substantially since 1994. Electronic payment services are marked by falling unit costs and volume increases have led to lower unit costs. Where new services are concerned, a strategy of low initial prices appears to pay for itself after a few years. This is the case for EFTPOS, and the same may well prove to be the case for Internet-based banking services.

Income from direct pricing of services has risen since 1994. Banks continue to lose money on mediating many services. Even so, due to low unit costs banks' payment service income covers as much as 70 per cent of costs in 2001. More significant is the fact that relative price differences reflect the relative cost differences for various services better than was the case in 1994. In 2001, bank customers have a more realistic perception of the cost of producing the individual services than they did in 1994.

Customers make more payments via their accounts than ever before. This entails larger outlays for fees for most customers. However, since the use of various services has changed, average prices have fallen. Changed use combined with the banks' pricing policy and cost structure has resulted in a more efficient payment system in 2001 compared with earlier.

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Data obtained from seven banks formed the basis for the ABC analysis referred to in this article. The banks were: Andebu Sparebank, Bolig- og Næringsbanken ASA, Den norske Bank ASA, Harstad Sparebank, Larvikbankenes Brunlanes, Nordea Bank Norge ASA and Romsdals Fellesbank ASA.