P A R T III

PAYMENT SYSTEMS IN INDIVIDUAL COUNTRIES

1. B E L G I U M

I. INTRODUCTION

The make-up of the payment system has changed to some extent over the last five years with respect to both the instruments utilised and the way in which they are handled. The principal feature has been the increased use of data-processing and information technology as made manifest by the emergence and development of ATM networks and POS terminals, the exchange of magnetic media between banks and some of their corporate customers, the introduction of banking telematics services for corporate customers and the growing automation of interbank clearing mechanisms. A high percentage of the population now holds bank accounts, and this figure is unlikely to show any significant increase in the future. However, the way in which people bank will change radically in the years to come.

There are a number of factors underlying the actual and impending changes within the payment system, in particular the spectacular growth in the volume of payment media to be handled (essentially cheques and credit transfers), the concomitant increase in the cost to the financial system of operating the payment system, technological advances, the existence of a degree of co-operation between financial institutions, and the receptiveness of customers to innovations in the payment field.

On a general note, the income velocity of circulation of money (GNP/M_1) increased from 3.7 to 4.2 approximately between 1978 and 1983, indicating the adoption of a more active approach to cash management on the part of firms and individuals under the influence of a variety of factors (inflation, the rise in interest rates, the economic situation, new services, etc.). There has been a shift in the composition of the money stock in favour of deposit money, the proportion accounted for by cash having declined between 1978 and 1983 from 41.8 per cent. to 38.8 per cent. approximately. The two predominant media used for cashless payment are the cheque and the credit transfer; to these should be added two instruments made available by the Postal Cheque Office, viz. the inpayment transfer and the postal draft. Electronic debiting (at POS terminals) is still only a relatively small-scale phenomenon. In contrast, the use of ATMs, especially for cash withdrawal, is at present of greater significance. It is difficult to gauge the impact of these developments in the field of electronic banking on the volume of traditional payment instruments.

II. INSTITUTIONAL FRAMEWORK

Currency is issued by the National Bank of Belgium on its own behalf (notes of B.fr. 100 and above) and on behalf of the Treasury (50-franc notes and coin).

Deposit money is issued by various types of financial intermediary. In effect, the Belgian financial system is characterised by a process of despecialisation that began around a decade ago. The authorised issuers of deposit money are the commercial banks (numbering eighty-five at end-1983), the private savings banks (thirty at end-1983), the public credit institutions (five at end-1983) and the Postal Cheque Office, which is sui

generis in that it only accepts sight deposits and its resources are exclusively at the state's disposal.

The commercial banks are still the leaders in the sight deposit market, but their lead is less pronounced than it was, owing to the movement towards despecialisation mentioned above. The Postal Cheque Office, moreover, has also lost ground as a result of this development.

Between end-1978 and end-1983 the number of branch offices rose from an estimated 7,378 to an estimated 10,183 or from 0.75 to 1.03 branches per 1,000 inhabitants.* At 31st December 1983 there were 1,836 post offices, compared with 1,846 at 31st December 1978.

There are three interbank institutions operating in the payment field: Mister Cash (22 members) and Bancontact (24 members), each of which operates a network of ATMs/POS terminals used with debit cards, and the CEC (Clearing Centre for the Belgian Financial System), a mechanism for the exchange and computerised processing - with truncation - of certain clearing items, which is managed by the National Bank of Belgium.

Monetary policy is decided by the National Bank of Belgium in consultation with the Ministry of Finance.

Supervision of the financial intermediaries - with the exception of the Postal Cheque Office and four of the public credit institutions - is carried out by the Banking Commission. The public bodies are under state control, but are bound by monetary policy measures.

Further participants in the payment system, either via the financial system or independently of it, are the companies which issue their own payment media (travellers' cheques, luncheon vouchers, credit cards, etc.). Moreover, on 1st July 1983 the largest Belgian retail group - GB-Inno-BM - launched its own autonomous network of card-operated electronic payment terminals (Maxi Card), the first non-bank venture in this field.

III. THE PAYMENT SYSTEM

1. Payment media available to customers

(a) Cash

(i) General data

While it is impossible to determine the number and total value of transactions settled by notes and coin, other data on cash are nonetheless available. The share of the total money supply (M_1) accounted for by cash declined between 1978 and 1983 from 41.8 per cent. to 38.8 per cent. The

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* All these figures are based on somewhat arbitrary estimates for the number of branch offices of savings banks.

proportion of cash in circulation accounted for by the various bank-notes issued by the central bank has shown a pronounced change as regards each of the two highest denominations of bank-notes (B.fr. 1,000 and 5,000), whereas the shift in the shares accounted for by the lower denominations (B.fr. 100 and 500) has been less pronounced. Thus B.fr. 5,000 notes accounted for 63.84 per cent. of the cash in circulation at 31st December 1983 (48.85 per cent. at end-1978), while at the same date B.fr. 1,000 notes amounted to only 30.59 per cent. (44.57 per cent. at end-1978). This is attributable to the depreciation of the currency, if not to the increased use of cash in order to preserve the anonymity of transactions. The proportion of cash in circulation accounted for by National Bank notes and Treasury notes and coin has remained constant at approximately 96 per cent. and 4 per cent. respectively. The average real cash holding per head of population (at 1978 prices) declined between 1978 and 1983 from B.fr. 35,120 to 27,775 approximately.

(ii) Cash dispensers

Cash dispensers made their first real appearance in 1979. There are three non-compatible networks: two interbank ATM networks that provide simple functions over and above that of dispensing notes (Mister Cash, Bancontact) and a network of cash dispensers operated exclusively by the Postal Cheque Office (Postomat). Each of these networks issues magnetic stripe debit cards that are used for access to the terminals. Only the Mister Cash and Bancontact terminals are linked on-line to their respective computer centres. Between end-1979 and end-1983 the number of terminals installed by the three networks rose from 274 to 560. Withdrawals and deposits combined totalled 21.853 million in 1983, compared with 2.357 million in 1979, or 40,695 as against 17,204 operations per terminal. The split between withdrawals and deposits is approximately 98.23 per cent. to 1.77 per cent. The value of cash withdrawals rose from some B.fr. 9 billion (or 2.5 per cent. of the average amount of currency in circulation) in 1979 to B.fr. 75.8 billion (or 19.7 per cent. of the average total circulation) in 1983. Total deposits amounted to approximately B.fr. 4.7 billion in 1983, compared with approximately B.fr. 950 million in 1979. The average value of withdrawals and deposits has declined slightly over time, amounting to B.fr. 3,533 and 12,202 respectively in 1983. The use of terminals is divided more or less equally between bank and post office opening hours, weekday use outside opening hours and use at weekends.

Automated teller machines are mainly wall-mounted outside bank branches and post offices. Some are located at public transport stations.

(b) Deposit money

Deposit money comprises sight deposits held with the registered financial intermediaries, which offer their customers a variety of cashless payment instruments. The growth in the number of sight deposits (from 5.7 million at end-1978 to 7.902 million at end-1983, or from 58 to 80.2 accounts per 100 inhabitants) has been accompanied by increased frequency of use (from 4.5 in 1978 to 6.6 in 1983).* There has accordingly been a sharp

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* These figures represent the ratio of the total volume of debits made to the average balance held on such accounts.

rise in the volume of cashless payment media, which itself has increased the operating costs of the financial sector and, especially, of institutions heavily involved in the management of the payment system. Consequently the financial sector has endeavoured to find ways of counteracting the adverse impact of this development on its profitability. These efforts, initiated in the early 1970s, have pursued two objectives:

- to automate the handling of traditional cashless instruments with the aid of data processing and the standardisation of instruments and procedures;

- to create new instruments, either adapted existing payment media or completely novel ones.

Over the past five years, the automated handling of traditional media has concerned direct debits, the procedure for which has been standardised and the handling automated at the interbank level, and the exchange of magnetic media between financial institutions and corporate customers, for which, moreover, common standards have been laid down. The new payment instruments introduced since 1978 utilise electronics - for instance, payment cards and terminals and, on the other hand, banking telematics services, which so far have been restricted to the corporate sector.

The most commonly used cashless payment media are the credit transfer, the cheque and the postal draft* (peculiar to the Postal Cheque Office). However, there are gaps in the quantitative data available, as they are sometimes based on cleared items, which excludes payment media exchanged between customers of a single financial institution. The number of credit transfers and similar instruments cleared rose from 102.2 million in 1978 to 163.2 million in 1983, while the corresponding figure for cheques and the like increased over the same period from 89.2 million to 117.5 million. For commercial banks alone the number of cheques issued by customers increased between 1978 and 1983 from 100.2 million to 116.9 million; however, this represents a moderate increase in the average number of cheques per sight account from 32.76 in 1978 to 33.50 in 1983, and a decline from the maximum recorded in 1980 (35.91). The number of postal drafts issued declined from 63.6 million in 1978 to 49.8 million in 1983. The volume of postal credit transfers has also decreased.

The average nominal values of non-postal cheques, postal drafts and direct debits are apparently markedly lower than those of credit transfers and postal cheques. In 1983 the estimated figures were as follows: direct debits cleared B.fr. 5,366; all postal drafts B.fr. 13,155; non-postal cheques cleared B.fr. 29,678; all postal credit transfers B.fr. 212,173; non-postal credit transfers cleared B.fr. 418,773; and all postal cheques B.fr. 630,002.

(c) Payment cards

(i) Payments at a retail outlet

Two major types of card which are, in principle, independent of

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* A postal draft is a payment order issued against a postal sight deposit, delivered by mail to the payee and redeemable at any post office.

any terminal are used by customers for purchases of goods and services: the credit card and the cheque guarantee card.

Credit cards

The generic term credit card covers a range of actual systems:

- the credit card proper with a credit facility (of the VISA and Eurocard type);
- the "travel and entertainment" type of card with no credit facility (as issued by American Express and Diners Club);
- the in-house card issued by commercial companies for use exclusively with them.

Credit cards have achieved a far smaller degree of penetration than in the United States, whence they originated; there are three reasons for this:

- the public aimed at by the credit and travel and entertainment card companies is relatively small on account of the strict solvency requirements and of the charges involved;
- the use of in-house cards is by definition restricted, and they are, moreover, issued by only a few companies;
- Belgium has no real tradition of using payment cards or consumer credit for routine purchases.

Nonetheless, between 1978 and 1983 there was a roughly fourfold increase in the number of credit cards in circulation (excluding in-house cards), to 244,000 at end-1983. The total value of transactions effected in Belgium increased from B.fr. 2.7 billion to B.fr. 11.9 billion over the same period. The proportion of this total accounted for by non-residents' transactions amounted to 38.6 per cent. in 1983. In conclusion it may be stated that, despite marked growth, credit cards still constitute only a minor element in the payment system.

Cheque guarantee cards

Strictly speaking, these are not payment instruments, as their sole purpose is to guarantee the payee of a cheque (which must have the appropriate cheque card number indicated on the back) that it will be honoured up to a maximum amount (set at B.fr. 7,000 since 1983), whether or not the drawer's account is covered with sufficient funds. The cheque guarantee card carries an overdraft facility of B.fr. 25,000.

The conditions for cheque card issue, which were strict at the time of its introduction, have been progressively relaxed, so that this instrument has become a powerful inducement to creditors to accept cheques in payment. As a result, the cheque card has expanded more than proportionally to the increase in the number of sight accounts. At 31st December 1983 the commercial banks had issued 1.787 million cards (equivalent to 50.1 cards per 100 accounts), which compares with 1.520 million cards at 31st

December 1978 (49.7 cards per 100 accounts). Between end-1978 and end-1983 the total number of eurocheque cards issued by the financial sector as a whole increased from 1.7 million to 2.5 million.

(ii) Payments at a POS terminal

Interbank networks

The two interbank card/terminal networks (Mister Cash and Bancontact) issue magnetic stripe cards that can be used in POS terminals at an increasing number of points of sale and also with ATMs. The first POS terminals made their appearance around mid-1979, and at 31st December 1983 a total of 879 had been installed. The overwhelming majority are located at filling stations (81.3 per cent. at end-1983, accounting for 97.1 per cent. of operations in 1983), which were the first points of sale to be affected by the development. The remainder are divided between public transport stations and, essentially on an experimental basis, small, medium-size and large retail outlets. So far, the POS terminals and cards of the two networks are non-compatible, although there is some prospect of their being made compatible, thanks, in particular, to pressure from the big retailers.

Both the ATMs and POS terminals of these networks operate on-line for purposes of verifying the balance on the sight account corresponding to the card inserted and the latter's validity according to the latest information. The customer debit and retailer credit are recorded immediately the transaction is accepted, and entered in the respective accounts on the following working day; the normal rules concerning value dates apply. Limits are set with regard to the maximum amount that can be debited in a certain period (one day and/or one week); the methods of calculation vary, and may include reference to withdrawals from ATMs.

The retail sector - in particular the large retailers - undoubtedly constitutes a prime target for the installation of POS terminals in view of the amount spent there and the advantages for the parties concerned as a result of the reduction in the number of cheques (for small amounts) and in the use of cash. However, two factors are holding back this development:

- the non-compatibility of the Mister Cash and Bancontact networks;
- the problem of sharing costs between networks and retailers.

Since December 1983 each of the two networks has installed a small number of lightweight on-line terminals ("teledataphones") in small retail outlets, which means that for this category of point of sale there may now be a prospect of participating in the development of electronic payment without necessarily being placed at a disadvantage compared with medium-size and large outlets through delays in installation.

Compared with the total mass of payments made, payments via POS terminals are still only of marginal significance, the total value of transactions settled by electronic means in 1983 amounting to only about B.fr. 6.8 billion.

The increase in the number of terminals between end-1979 and end-1983 (from 36 to 879) was accompanied by a rise in the number of operations (from a few thousand in 1979 to nearly 7 million in 1983). The average number of operations per terminal also rose, from 2,500 to 7,900 operations approximately per year.

In 1983 the average debit at a POS terminal came to around B.fr. 988; however, there was a certain amount of dispersion according to the type of point of sale concerned.

The emergence of competition from outside the banking sector

In July 1983, faced with the apparent inability of the two interbank networks to achieve compatibility, the largest Belgian retail group, GB-Inno-BM, launched its own payment card/terminal network (Maxi Card). At present, the venture is limited to the group's Maxi hypermarkets and, initially, only the ten hypermarkets in the Brussels area have been equipped with the special terminals. The Maxi terminals cannot be used with existing bank cards, but compatibility is theoretically feasible. The system operates off-line and uses magnetic stripe cards.

The holder may use the Maxi Card, depending on the transaction, as either a debit or a credit card: for each operation the holder must enter on a keyboard whether he desires "immediate debit" or "debit on account" (for deferred payment). In the first instance, the amount entered is debited virtually immediately by direct debit. In the second instance, the amount of the transaction is not debited at once but falls due at the end of the month, plus interest for the period in question. At this point the holder has a further choice between settling the amount due or extending the credit facility on condition that a minimum part of the amount due is paid.

(iii) Payments at automated teller machines

As implied above (Section III, (a) (ii)), the ATMs currently in operation do not have a genuine payment facility. Their principal function, in fact, is that of dispensing notes. The terminals of the interbank networks may also be used to pay in notes and for balance inquiries, and also, in one instance, to transfer funds from a sight account to a savings account and to order cheque books and credit transfer forms.

Finally, one public-sector financial institution has introduced, independently, on-line terminals which issue sight-account statements. None of the ATMs offers any facility whatsoever for transferring funds between two current accounts.

(d) Banking telematics

Banking telematics offers two products based on identical principles but distinguished by the target customer group: individuals (home banking) and firms. Up to the present there has not been any experience of home banking in Belgium. In contrast, banking telematics is already a reality in the corporate sector. Some large financial institutions have set up systems of telecommunication links for their corporate customers. These links may be computer-to-computer or terminal-to-computer and operated either on-line or off-line. The services offered range from the provision

of information (exchange rates, account balance, etc.) to the exchange of messages and the transmission of payment and collection orders.

(e) Other payment media

Besides cash, cashless instruments and payment cards there are other payment media in circulation: travellers' cheques, luncheon vouchers, the Postal Cheque Office's inpayment transfers, bills of exchange and other instruments of very much more limited use.

Moreover, barter, clearing operations outside the banking system and the use of foreign bank-notes constitute means of settling transactions which should not be disregarded but are impossible to quantify.

Finally, by means of endorsement, certain items (invoices, bills of exchange, cheques) may circulate as instruments of payment for several successive distinct transactions, but for a limited period.

Data are only available for two types of payment media:

- Luncheon vouchers: the use of this payment medium is restricted, in theory, to the catering sector and the food halls of large retail outlets. Luncheon vouchers are supplied by some companies to their staff. Between 1978 and 1983 the value of vouchers issued rose from B.fr. 550 million to B.fr. 2.5 billion, while their number increased from 6.1 million to 20.9 million approximately.

- Inpayment transfers: the purpose of this hybrid instrument issued by the Postal Cheque Office is to permit individuals who do not have a sight account to pay to the credit of a bank or postal current account by paying cash at a post office. While the number of such transfers declined from 100.4 million to 93.5 million between 1978 and 1983, the amount of funds involved showed a marked increase over the same period, rising from B.fr. 3,883 to B.fr. 5,365 billion.

2. Exchange circuits within the financial system

(a) Intrabank networks

There are various types of intrabank circuit. One type, which is becoming more and more widespread, is that which links the decentralised establishments of a financial institution to their head office via telecommunications (generally on-line). This permits a rapid flow of information and improved service, and makes it possible to do away with cumbersome, slow and expensive administrative procedures (for example, through on-the-spot data capture with truncation of cheques and credit transfers made out by customers). A second type, similar in concept to the first, comprises a number of electronic terminals (dispensing cash - Postomat - or statements of account) used exclusively by one financial institution. On the face of it, this is a costly and/or only a partial solution, given that there is no "sharing" of the network. Finally, there is a third type common to all institutions offering payment services; where payments involve customers of a single financial intermediary, they give rise only to internal book-keeping entries without necessitating any interbank clearing.

(b) Interbank networks

(i) Clearing houses

As one payment may involve two different financial institutions, it is important that there should be a functional interbank exchange and settlement mechanism for such operations. The situation in Belgium in 1983 is characterised by a hybrid clearing system in which manual clearing houses co-exist with an electronic exchange mechanism in which there is no physical circulation of the items to be cleared (truncation). The clearing procedure is essentially multilateral.

The CEC (Clearing Centre for the Belgian Financial System), which has been in existence since 1974, is responsible for processing and exchanging the data relating to a growing number of payment operations for clearing. Currently the activity of the CEC, with sixty-four active and fifty-five passive member institutions* at 31st December 1983, covers cheques and the like up to a maximum of B.fr. 100,000, credit transfers and the like, and direct debits. Transactions effected at the ATMs and POS terminals of the two interbank networks pass through the CEC prior to clearing.

Except in the event of a dispute, there is no physical circulation of the payment instruments themselves; the institution which has them in its possession retains them in application of the principle of truncation. The majority of data exchanges between the CEC and its members involve the use of magnetic media (tapes, diskettes), while the rest rely on paper media and, in the case of certain regional banks, telecommunications.

On each working day the members of the CEC send it their data relating to the cheques, credit transfers and direct debits handed in by their respective customers. After verification, the CEC, using the services of the National Bank of Belgium's computer centre, processes the data in separate stages (one type of operation - cheques, transfers, direct debits - at a time) in a specified chronological order.

Processing at the CEC produces two types of output:

- on the one hand, each institution receives a statement of the operations submitted by other members for which it is the counterparty;
- on the other hand, the total balance of operations for each institution is calculated after each stage of processing and transmitted to the clearing house for the purpose of establishing the final clearing balances.

In the twenty-three provincial clearing houses located at the branches and agencies of the National Bank of Belgium, documents are exchanged physically in a manual mode of operation. At each clearing house each member's debtor or creditor balance is calculated and then transmitted to Brussels by telex for the final clearing session which takes place every day in the late afternoon. At the Brussels clearing house operations that

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* An active member both submits and receives data - though not necessarily for all three applications (cheques, credit transfers, direct debits) - while a passive member only receives data.

are not routed through the CEC (exchange and security operations, cheques for more than B.fr. 100,000, etc.) are exchanged manually. Subsequently, on the basis of the balances arrived at in the provinces, at the CEC and at the "traditional" Brussels clearing house, the final balance is calculated for each financial intermediary. Thus at the end of the day each institution has a creditor balance, a zero balance or a debtor balance. These interbank balances are settled either in the call-money market or by means of entries in the books of the National Bank of Belgium.

The volume of interbank clearing is apparent from the following figures:

- the total number of items cleared at all Belgian clearing houses increased from 197.6 million to 334.9 million between 1978 and 1983;

- the amount of funds cleared totalled B.fr. 103,550 billion in 1983, compared with B.fr. 55,726 billion in 1978.

The proportion of interbank clearing accounted for by the CEC proper increased between 1978 and 1983 from 45.24 per cent. to 78.34 per cent. in terms of volume and from 1.68 per cent. to 3.07 per cent. in terms of funds. The difference between the proportions expressed in terms of volume and value is essentially a reflection of the differences in the nature of the operations cleared via the CEC and those cleared outside it. Moreover, the primary objective of the CEC was not the complete automation of interbank clearing (over and above simple exchanges), but to counteract the continuous escalation of the cost to the financial sector of managing the payment system, which was caused by the expansion of the volume of payment instruments used. The increase in the number and value of operations processed by the CEC is due to several factors, including the rise in the number of members, the higher ceiling on the nominal value of cheques that are eligible for processing at the CEC, the extension of coverage (direct debits from 1980 on) and the general increase in the volume of payment media.

In 1985 the CEC will take on a new dimension, for it is then that it is to start continuous processing and to be linked by telecommunication means with the financial intermediaries. Both the processing and the exchange of data will no longer be subject to time restrictions, as the financial institutions will be able to transfer data to or obtain data from the CEC and have their latest account balance from the CEC at any time. There are likely to be further extensions of various kinds made to the machinery of the CEC in future (for example, full automation of the whole clearing procedure).

(ii) Terminal networks

As indicated above, there are two interbank card/terminal networks (ATM and POS) in Belgium: Mister Cash and Bancontact. Since each card, irrespective of the financial institution issuing it, grants access to all terminals of the corresponding network, interbank debits and credits inevitably arise within the network. The practice adopted by each network is to send the CEC a daily statement of all the previous day's operations initiating a movement of funds, and not to effect any prior pre-clearing operations in the network itself.

A measure of the sheer scale of debit card-initiated operations is the growth in their share in the total volume processed by the CEC, from 0.30 per cent. in 1978 to 10.48 per cent. in 1983.

Some further data illustrate the importance of the networks of terminals (including Postomat):

- number of cards in circulation:

  623,000 at end-1978, 1.6 million at end-1983, equivalent to 10.2 and 20.3 per 100 sight accounts;

- number of ATM terminals:

  274 at end-1978, 560 at end-1983, equivalent to 2.78 and 5.68 per 100,000 residents;

- number of POS terminals:

  36 at end-1979, 879 at end-1983, equivalent to 0.37 and 8.92 per 100,000 residents.

The two interbank networks have concluded reciprocal compatibility agreements at an international level with France: Mister Cash with the MOA network of the Crédit Industriel et Commercial group, and Bancontact with the "Carte Bleue" network.*

IV. GENERAL REMARKS

1. Issues under discussion

Several fundamental issues are being considered in various quarters:

- competition or co-operation between card/terminal networks;
- the rôle of non-financial institutions in the payment system;
- the consequences for the monetary authorities of developments in the payment system.

(a) Competition or co-operation

As evidenced by the well-nigh simultaneous emergence of three competing non-compatible card/terminal networks during 1978-79, Belgium's position in this field is mid-way between all-out competition and co-operation embracing the financial sector as a whole. Indeed, two of its three networks are interbank in nature, each of them grouping more than twenty participants of every size and type.

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* Postomat has established the same sort of links with similar networks in France and the Grand Duchy of Luxembourg.

There is already a long history of efforts towards achieving compatibility between the two networks, mainly with respect to POS terminals, as urged by the major retailers, which are reluctant to have to open their shops to several non-compatible systems. On the other hand, it appears that ATM compatibility will not become a reality in Belgium until decisions are taken at an international level within the framework of the eurocheque system. There are, in fact, a variety of inhibiting factors at the strictly national level, whereas the advent of compatibility between national networks in the eurocheque framework could lead, ipso facto, to compatibility between the Belgian networks involved.

These developments bring to light some fundamental questions, such as free competition, the integrity of the payment system, its public-service function, its operational efficiency and the role of the financial system in its management.

(b) Competition from outside the banking sector

The incursion by GB-Inno-BM into the debit card field, hitherto the preserve of the financial system, demonstrated the reality of competition from non-banks. Although it is too soon to draw conclusions from this venture by a non-financial enterprise, it does not appear to constitute a real threat to the financial sector. The way is barred by major obstacles: strict legislation on access to the business of banking, the position of strength of the current operators of the payment system, an environment radically different from that in the United States, and the cost of an isolated venture unsupported by integrated financial activity.

As a corollary of this non-bank competition, however, the question of cost-sharing arises on account of the high costs and savings connected with electronic payment. The distribution of costs might vary according to whether the POS terminals are operated by an interbank network or by a retail outlet as a result of a shift in the balance of power.

(c) Consequences for the monetary authorities

Besides problems of a micro-economic nature, the monetary authorities could be faced with a macro-economic concern: will reduced importance of cash in the money supply undermine the foundations of the central bank's power in the field of monetary policy? There are two main arguments to suggest that this will not be the case:

- the availability of "discretionary" monetary policy tools will enable the monetary authorities to keep their regulatory powers in this field intact;

- for a variety of reasons there is unlikely to be a complete and rapid disappearance of cash.

2. Remarks on current and probable developments

Although the payment system has not yet taken on a fundamentally new appearance, the outlines of its future evolution are already implicit in current developments, whether they be in the field of payment terminals or in that of banking telematics for companies and home banking.

This evolution will involve the extension of electronics and telematics to the entire payment system (and, more generally, to all banking services), which will have a number of consequences for all the parties concerned. However, these changes will probably not differ essentially from those affecting, or about to affect, the whole range of human activity thanks to technological innovation, particularly with regard to the processing and distribution of information in a broad sense. Likewise, similar risks and dangers will ensue, namely as regards security, vulnerability, speed, confidentiality, problems of proof, and dehumanisation.

However, the rate at which these changes will occur remains completely uncertain, as it will depend on a large number of factors. The superiority of instruments such as payment terminals and home banking suggests that ATMs might not be of lasting significance, even though they may temporarily curb the spread of the new instruments somewhat and should become the main dispensers of cash. Some specific features of Belgium's payment system may create an environment particularly conducive to the spread of electronics:

- very little use is made of credit cards;
- cash seems to predominate for low-amount transactions;
- there is already a significant degree of public acceptance for the existing instruments of electronic banking.

Over and above the changes in the nature of the payment systems used, which will entail the progressive, but not complete, substitution of paper-based instruments by "electronic money", one major consequence that can be foreseen is the change in the make-up of the financial sector. In effect, the opportunities afforded by the new technologies and the release of resources they will permit open the way to despecialisation of the financial system, involving not only the various types of banking institution but also certain non-bank sectors which perform some banking functions. The consequence will be to make the jobs of institutions' staffs more demanding, as they will increasingly be required to "advise" rather than merely execute orders.

Finally, these changes are likely to improve the efficiency of the payment system - something which is not, however, their primary goal - and this will make for better resource allocation at the macro-economic level.

V. CONCLUSIONS

It is not possible to determine either the total value or the number of payments effected in the course of a year. It is equally impossible to make a meaningful estimate of the "market share" of the various payment media used. However, it is possible to outline the salient points of the payment system as it currently stands in Belgium and of its development over the past five years. As for future developments, these will be trends that are already discernible today writ large.

A high percentage of the population in Belgium now holds bank accounts, even if, compared with other industrialised countries, the use of cash is still at a relatively high level. Nonetheless, managing the payment system has become an ever greater burden on the financial system in the absence of charges for the services concerned, apart from the charge implied by the fact that sight accounts are virtually non-interest-bearing. Thus, since the beginning of the 1970s the financial institutions have acted in order to reverse this trend. Working on a broadly co-operative basis, except for the hardware used for banking telematics, (establishment of the CEC, emergence of terminal networks), the institutions have responded by turning to new technologies.

Nevertheless, the picture currently presented by the payment system remains largely dominated by traditional payment instruments, although modifications have been made in their form and the way in which they are processed. The absence of any legislation with regard to electronic funds transfers may be significant in this respect. Efforts by the financial sector towards charging for traditional payment services - in particular cheques - in order to discourage people from using them and/or to recover part of the cost have so far failed owing to a lack of consensus among the various branches of the financial sector. These paper-based media will continue to play a rôle in the future on account of the fact that they continue to hold out definite advantages for particular transactions or specific economic agents. In any case, any real substitution of electronic payment for other media will hinge on the widespread deployment of specialised hardware and on observing the principle of the universality of means of payment. But, more fundamentally, the degree of success achieved by new payment media will also depend on customer acceptance.

Taken together, these developments will not call into question the rôle of the monetary authorities, rather the nature of that rôle and the context in which it is exercised.

2. C A N A D A

I. INTRODUCTION

The most significant development influencing the Canadian payment system during the period 1979 to 1983 was the establishment of the Canadian Payments Association (CPA) in December 1980. The CPA's objectives, as set out in the Canadian Payments Association Act, are to establish and to operate a national clearing and settlement system and to plan the evolution of the national payment system.

The Association's first objective was achieved on 1st February 1983, when it assumed responsibility for the operation of the existing paper-based clearing system. Since then, four non-bank deposit-taking institutions have begun to represent themselves directly in the clearing and settlement process rather than employ a bank as their clearing agent.

Even before the transfer of responsibility for the clearing system, work had already begun on the Association's second objective. During 1984, a system that will automate the record-keeping, balancing, confirmation and settlement procedures within the clearing system was implemented by the CPA. Furthermore, the Association's Board of Directors has established a standing committee with responsibility for identifying specific systems development projects that could be undertaken by the CPA and for acting as the principal channel through which representatives of consumers, retailers and other interested groups can make their views on payment matters known to the Association.

Besides the establishment of the CPA, there have been three other major influences upon the Canadian payment system during the period 1979 to 1983: first, the exploitation by deposit-taking institutions of computerised systems for enhancing service to their customers; second, efforts by those institutions to contain their non-interest operating expenses; and third, an increasingly positive attitude on the part of the public towards computer technology in general and electronic payment mechanisms in particular. These influences have led to the introduction of innovative services such as demand deposits and savings accounts that feature the daily calculation of interest, so-called "any-branch" banking, and corporate cash-management services. There has been a proliferation in the number of automated teller machines (ATMs) installed and these devices have now achieved widespread acceptance and rapidly growing use. There is mounting activity in the planning and testing of various types of electronic payment mechanism - for example, debit cards, point-of-sale systems and home banking. A not unexpected consequence of all these developments has been a significant net decrease in the number of branches of deposit-taking institutions.

A potentially significant trend, and one that only emerged late in the period under review, is the establishment of shared ATM networks. Until recently, the only ATM networks in Canada were the proprietary networks of the larger deposit-taking institutions, but the country's first shared ATM network became operational in November 1983, and there are half a dozen others in the planning stage. From the point of view of smaller deposit-taking institutions, the advantages of the sharing of ATMs are that it may yield economies of scale, overcome the barrier of high capital cost for a smaller institution, and provide more effective competition against larger competitors.

II. THE INSTITUTIONAL FRAMEWORK

The financial system in Canada includes a number of different types of intermediary - deposit-taking institutions, insurance companies, investment dealers and sales finance companies among them. Non-deposit-taking financial intermediaries are, however, users of payment services provided by deposit-taking institutions rather than providers of payment services themselves. Accordingly, it is deposit-taking institutions - those financial intermediaries that typically accept deposits transferable by order to a third party - that are the most important intermediaries in the context of the payment system.

1. Deposit-taking institutions

Canadian deposit-taking institutions comprise chartered banks, co-operative financial institutions, trust and mortgage loan companies, Quebec savings banks and governmental savings institutions. Each type of institution is described separately below, and the institutional information presented in this sub-section is supplemented by the data on assets and on domestic branches that appear in Appendix I and Appendix II respectively.

(a) Chartered banks

Chartered banks are analogous to commercial banks in the United States and other countries. Although chartered banks were originally established early in the 19th century primarily to serve the commercial, governmental and industrial sectors of the Canadian economy, during the past twenty-five years they have also competed aggressively with other financial intermediaries in the market for personal financial services.

As at 31st December 1983 there were 71 chartered banks. The five largest banks operate on a nationwide basis, while the remaining banks concentrate on serving the financial needs either of a particular region of the country or of a particular sector of the economy.

All chartered banks are incorporated and operate under the provisions of the Bank Act. This federal Act regulates certain internal aspects of the banks' operations, such as the auditing of accounts, corporate powers and the issuing of stock, as well as the banks' relationships with the public, the Federal Government and the Bank of Canada - for example, the reserves against deposits that a chartered bank is required to hold either at the Bank of Canada or, with the approval of the Bank, at another chartered bank. The Bank Act has been revised at approximately ten-year intervals since 1871; the most recent revision was enacted by Parliament late in 1980 and came into effect on 1st December of that year.

Chartered banks accept various types of deposit from the public, including accounts payable on demand, personal savings deposits (both chequable and non-chequable), non-personal notice deposits and fixed-term deposits. In addition to holding a portfolio of securities, banks make loans under a variety of conditions for agricultural, commercial, consumer and industrial purposes. Banks also deal in foreign exchange, provide safe-keeping facilities and perform various other services. In the case of

the larger banks, these operations are, for the most part, carried out through their extensive networks of branches. The head offices of the banks typically confine their activities to general administration, policy functions, the management of investment portfolios and similar matters. As at 31st December 1983 there were 7,091 chartered-bank branches in Canada as well as nearly 300 branches in more than forty foreign countries.

(b) Co-operative financial institutions

(i) Local credit unions and caisses populaires

Local credit unions and caisses populaires (local credit unions serving primarily French-speaking Canadians) are deposit-taking institutions that provide savings, loan and other financial services to their member-owners. These institutions are based upon the principles established by the original Rochdale co-operative pioneers and operate in response to their members' needs. They range in size from small, community-based institutions to large multi-branch operations.

As at 31st December 1983 there were 3,311 local credit unions and caisses populaires in Canada, with some 9.6 million members and total assets of approximately Can.$ 36.8 billion.

Membership in a local credit union or caisse populaire is based on a common bond of association, such as residence in a community or parish, employment in an industry or profession, or affiliation with an ethnic group. Membership is available through the purchase of a share (usually a minimum Can.$ 5 savings share), with democratic control being retained by allocating only one vote to each member, regardless of the number of shares held.

Local credit unions and caisses populaires are incorporated and operate under provincial legislation as autonomous organisations. The legislation typically prescribes the types of investment permitted, sources of funds, required liquidity reserves and so forth. In some provinces an annual audit of the operations of a local credit union or caisse populaire must be performed by outside auditors. Moreover, regular inspections are carried out by provincial government departments or their representatives to ensure that local credit unions and caisses populaires are complying with the provisions of the applicable legislation.

Local credit unions and caisses populaires were originally established to encourage saving and to provide loans to members who could not obtain credit elsewhere or who could obtain it only at prohibitive interest rates. Today, however, many have adopted a full service approach and offer a variety of savings vehicles, chequing privileges, personal and mortgage loans, small business loans, commercial credit, travellers' cheques, safe-keeping facilities and automated teller machines.

(ii) Centrals

Centrals, which are also referred to as leagues or "fédérations" have been established by the local credit unions and caisses populaires as second-tier organisations of the credit union movement to increase the stability of local credit unions and caisses populaires as well as to enhance each region's ability to deal with economic fluctuations.

Centrals are incorporated or registered under provincial legislation - typically a credit union Act - and are owned by their member local credit unions or caisses populaires. (A small number of local credit unions and caisses populaires are not, however, members of a central.) Each central is also an entity independent of other centrals, whether located in the same or another province, though it may have operational links with them. The primary functions of centrals are: (i) to provide member local credit unions and caisses populaires with services they could not otherwise provide for themselves; (ii) to assist member local credit unions and caisses populaires in increasing the efficiency of their operations; and (iii) to enhance the effectiveness and usefulness of local credit unions and caisses populaires to their own members. The latter function involves, among other things, the investment of surplus funds of local credit unions and caisses populaires and the lending of funds to these institutions when they cannot meet the local demand for loans. Local credit unions and caisses populaires are permitted to invest and deposit their statutory liquidity reserves and other surplus funds with their central, and many do so. To accommodate these funds, centrals maintain a wide range of demand and fixed-term deposit accounts.

As at 31st December 1983 there were twenty-three centrals in Canada.

(iii) Federations of centrals

With the establishment of centrals, a need arose for third-tier organisations that could provide the centrals and other co-operative organisations with co-ordinated financial and support services similar to those offered by the centrals themselves to their member local credit unions and caisses populaires.

The Canadian Co-operative Credit Society Limited (CCCS) was incorporated in 1953 under the federal Co-operative Credit Associations Act, which is administered by the Department of Insurance within the Department of Finance. The primary objects and powers of the CCCS are: (i) to make deposits with, to issue loans to, and to accept deposits from its members; (ii) to make deposits with, to invest in, and to borrow from other organisations; and (iii) to provide its members with a range of support services. The activities of the CCCS in promoting the development of the credit union movement include: co-ordination of new services at the national level; liaison with and representations to the Federal Government and its agencies concerning matters that affect centrals and other co-operative organisations; provision of co-ordinated support services in the areas of public relations, marketing, education and research; participation in the Canadian Payments Association; and participation in international co-operative organisations.

Membership in the CCCS is open to centrals and to other co-operative organisations that can meet the criteria established by the Department of Insurance. At the present time the CCCS has forty-six member-shareholders, of which eight are centrals representing local credit unions and caisses populaires in as many provinces and the remainder are other types of co-operative organisation.

La Confédération des caisses populaires et d'économie Desjardins du Québec is incorporated under a law of that province. It provides financial and support services, similar to those provided by the CCCS, to its eleven member fédérations as well as to a number of other member co-operative organisations.

(c) Trust and mortgage loan companies

Trust companies perform financial intermediary as well as fiduciary functions. Under the financial intermediary function, trust companies can accept funds in exchange for their own instruments, such as trust deposits and guaranteed investment certificates. This aspect of their business is often referred to as the guaranteed funds portion and differs little from the savings business of other deposit-taking institutions. Trust companies also accept deposits that are transferable by order to a third party. Trust companies are the only corporations in Canada with the power to conduct fiduciary business. In this capacity they act as executors, trustees and administrators under wills or by appointment, as transfer agents for stock and bond issues, as trustees for bond issues, and in a variety of other agency and trustee functions.

Mortgage loan companies may also accept deposits from the public and may issue both short-term and long-term debentures.

Trust and mortgage loan companies were established and grew rapidly under provincial legislation in the late 19th and early 20th centuries. Some companies were incorporated by special Acts of Parliament, but it was not until 1914 that the Federal Government began to regulate trust and mortgage loan companies registered under its Acts. The federal Superintendent of Insurance regulates federally incorporated trust and mortgage loan companies and also, by arrangement with the provinces concerned, trust companies and mortgage loan companies incorporated in a number of provinces. Trust and mortgage loan companies, whether federally or provincially incorporated, must be licensed by each province in which they operate.

Although there are some differences between the applicable federal and provincial Acts, the broad lines of the legislation are common. In their business as financial intermediaries trust and mortgage loan companies have the power to borrow or, in the instance of trust companies, to accept funds in guaranteed accounts, subject to maximum permitted ratios of these funds to shareholder equity. The funds may be invested in specified assets, which include: first mortgages secured by real property; government securities and the bonds and stocks of corporations that have established earnings records; loans on the security of such bonds and stocks; and unsecured personal loans. Trust and mortgage loan companies are not required to hold specified cash reserves, but there are broadly defined liquid asset requirements in most of the applicable acts.

As at 31st December 1983 there were seventy-two trust companies and forty-seven mortgage loan companies in Canada.

(d) Quebec savings banks and governmental savings institutions

There is, in fact, only one Quebec savings bank - La Banque d'Epargne de la Cité et du District de Montréal. La Banque d'Epargne was

founded in 1846 and has operated since 1871 under a federal charter, the Quebec Savings Bank Act, the provisions of which are broadly similar to those of the federal Bank Act. The most recent revisions to the Quebec Savings Bank Act were enacted by Parliament late in 1980 and came into effect, like the new Bank Act and the Canadian Payments Association Act, on 1st December of that year. The revisions broadened the business lending powers of the bank and permitted it to open branches throughout Canada, rather than just in Quebec as had previously been the case.

The Alberta Treasury Branches were established in 1938 under the provincial Treasury Branches Act to provide savings and loan services. The Act establishes the "Province of Alberta Treasury Branches" as a division of the provincial Treasury Department. However, the Treasury Branches are kept separate from the other operations of this Department. For example, the Treasury Branches Deposit Fund, which is defined in the Act to encompass all the assets and liabilities of the Treasury Branches, is maintained separately from the provincial General Revenue Fund. The provincial government can establish and operate Treasury Branches anywhere in Alberta.

The principal relevant provisions of the Treasury Branches Act are as follows:

(i) There are no restrictions governing the terms and conditions that may be attached to any offer for deposits. The Alberta government guarantees the repayment of all moneys deposited with the Treasury Branches, together with interest payable on such deposits.

(ii) Any moneys of the Treasury Branches Deposit Fund may be invested in any securities and improved real property.

(iii) Subject to the Regulations, the Treasury Branches may make any loan to any person, firm or corporation, on any terms. In addition, they may take any security for a loan and may realise any security.

The Treasury Branches now provide a wide range of financial services to their customers. These services include: current and savings accounts; loans; safe-keeping facilities; travellers' cheques; money orders and drafts, foreign remittances and money transfers; and the sale and purchase of securities.

The Province of Ontario Savings Office was established under the provincial Agricultural Development Finance Act of 1921. The legislation empowers the Treasurer of Ontario to borrow money by means of deposits in any amounts and from any persons. The Treasurer may open offices for this purpose anywhere in Ontario. The provincial Cabinet may fix the conditions as to interest and repayments that will govern deposits.

The Savings Office does not lend money to the public. All funds in excess of day-to-day requirements are deposited in the provincial Consolidated Revenue Fund. For book-keeping purposes the Treasurer of Ontario pays interest on these funds to the Savings Office. The interest paid by the Treasurer is sufficient to meet the interest to be paid on public deposits and all other expenses, including premises and salaries. Any "net profit" on operations is credited to the Treasurer at the end of the year.

The principal service offered to the public by the Savings Office is a savings account - in effect, an interest-bearing demand deposit with free chequing privileges. The Savings Office does, however, offer other services, including safe-keeping facilities, travellers' cheques and money orders.

2. Bank of Canada

The Bank of Canada, Canada's central bank, began operations on 11th March 1935 under the provisions of the federal Bank of Canada Act of 1934, which charged the Bank with the responsibility for regulating "credit and currency in the best interests of the economic life of the nation" and which conferred upon it specific powers for discharging this responsibility. The Act also vested in the Bank the sole right to issue paper money for circulation.

The rôle played by the Bank of Canada in the payment system is central, but operationally relatively limited. The Bank does not accept deposits from individuals or non-financial business corporations or compete with deposit-taking institutions in the commercial lending field. The Bank does, however, interact with the payment system in two important ways: first, through its agencies across the country, it facilitates and effects the final settlement of balances for the national clearing and settlement system and, second, it acts as the Federal Government's fiscal agent, i.e. government receipts and disbursements are cleared through it.

The Bank of Canada's operational rôle in the payment system is not expected to expand significantly as a result of the introduction of electronic payment mechanisms. The Bank of Canada, nevertheless, has an obvious interest in the efficiency and equity of the operations of the national payment system and it plays an important rôle in the Canadian Payments Association. This rôle has been conferred upon it by the Association's Act, which requires the Bank to appoint one of its officers to be a Director and the Chairman of the Association's Board of Directors.

The establishment of the Canadian Payments Association has also led to a new and direct relationship between the Bank of Canada, in its rôle as the provider of the final means of settlement between participants in the national clearing and settlement system, and a number of important non-bank deposit-taking institutions. Non-bank deposit-taking institutions that participate directly in the clearing and settlement process have opened settlement accounts at the Bank through which their daily clearing gains and losses vis-à-vis the other participants are settled. Each such institution has been granted, on essentially the same basis as a chartered bank, a line of credit under which an unforeseen overdraft on its settlement account may be met by a temporary advance from the Bank of Canada. This direct access to central-bank credit, though not frequently used, provides a useful additional source of liquidity to banks and non-bank deposit-taking institutions alike.

The head office of the Bank of Canada is in Ottawa. The Bank has agencies in Halifax, Saint John, Montreal, Ottawa, Toronto, Winnipeg, Regina, Calgary and Vancouver.

3. The Canadian Payments Association

The Canadian Payments Association Act came into effect on 1st December 1980. As at 31st December 1983 125 institutions were members of the Canadian Payments Association (CPA). They included, in addition to the Bank of Canada, seventy-one chartered banks, twenty-five credit union centrals and fédérations, twenty-four trust and mortgage loan companies, and four other deposit-taking institutions: La Banque d'Epargne de la Cité et du District de Montréal, Province of Alberta Treasury Branches, and two local credit unions that are not members of a central. Taken together, the CPA's member institutions account for more than 95 per cent. of the transferable deposit liabilities of all Canadian deposit-taking institutions.

The management and operation of the Association are the responsibility of a board of directors, the members of which are, with the exception of the Director, appointed by the Bank of Canada, elected by the CPA's different classes of member institution.

The first task of the Board of Directors was to draft the by-laws of the Association, which are subject to the approval of the Federal Cabinet. Although the CPA operates within the framework provided by its Act, this framework is purposely broad, and, accordingly, the by-laws deal with such matters as internal administration, the assessment of dues, and clearing and settlement. Drafting of the by-laws was no small task, and the Board divided them into three tranches - a general by-law, a group of financial by-laws and a clearing by-law. Of these, the clearing by-law is of the greatest interest, and its provisions are described in a subsequent section of this chapter.

The first objective of the Association was to bring non-bank deposit-taking institutions into partnership with the chartered banks in the management of the clearing and settlement system. On 1st February 1983, following approval of the Association's clearing by-law by the Federal Cabinet, the CPA assumed responsibility for the operation of the system. Previously, the chartered banks had exchanged among themselves all the cheques and other payment items passing through the system and had settled the resulting balances through their accounts at the Bank of Canada. Any other institution that accepted transferable deposits was effectively required to use the services of one of the chartered banks as its agent in clearing its customers' cheques through the system.

In order to be eligible to represent itself directly in the clearing and settlement process rather than employ an agent, a CPA member institution must account for one-half of one per cent. of the total volume of cheques, money orders and other payment items exchanged in the Canadian clearing system. Taken together, the eligible member institutions, including the Bank of Canada, account for more than 96 per cent. of this total, which amounts to 1.5 billion items a year. (An eligible member institution that actually does participate directly in the clearing and settlement process, and not all of them as yet do so, is referred to as a Direct Clearer.)

During 1983, the following four eligible non-bank deposit-taking institutions, in addition to the Bank of Canada, became Direct Clearers, joining ten chartered banks: La Banque d'Epargne de la Cité et du District

de Montréal, Canada Trustco Mortgage Company, La Caisse centrale Desjardins du Québec, and the Canadian Co-operative Credit Society Limited. The latter two Direct Clearers have been appointed by their member credit union centrals and fédérations, which are also members of the Association and, in some instances, eligible to be Direct Clearers in their own right, as Group Clearers and, accordingly, represent their member centrals and fédérations in the clearings. It is expected that, during 1985, some of the other eligible non-bank deposit-taking institutions will complete the necessary preparations to participate directly in the clearing and settlement process.

The CPA's first objective of establishing and operating a national clearing and settlement system having been achieved, the Board of Directors has now turned to the Association's second objective of planning the evolution of the national payment system.

The approach to developing the payment system of the future embodied in the Canadian Payments Association is the first of its kind in the world. The uniqueness of this approach lies in the fact that responsibility for the evolution of the payment system has been entrusted, not to a central governmental agency, Crown corporation (a government-owned corporation) or regulated monopoly, but to a private association of interested financial intermediaries - some of them private companies, some co-operative institutions, and some governmental entities.

III. CASH PAYMENTS

1. Legal framework

(a) Coinage

The Ottawa Mint, established as a branch of the Royal Mint under the United Kingdom Coinage Act of 1870, was opened on 2nd January 1908. On 1st December 1931, by an Act of the Canadian Parliament, it became the Royal Canadian Mint and operated as a branch of the Department of Finance. The Mint was established as a Crown corporation in 1969 by the Government Reorganisation Act of that year to allow for a more industrial type of organisation and for greater flexibility in producing coins for Canada and other countries. The Mint reports to Parliament through the Minister of Supply and Services.

(b) Currency

The Bank Act of 1871 laid the foundation for the co-ordinated issue of currency by chartered banks, and this system continued in effect until 1934. Concurrently with the issue of currency by banks, the Federal Government issued 25 cent, $1 and $2 Dominion of Canada notes between 1870 and 1935. Large-denomination Dominion "Bank Legal" notes were also issued for use in the clearings between the banks.

In 1934, with the creation of the Bank of Canada, the sole responsibility for the issue of paper currency was transferred to the new institution, although the withdrawal of chartered bank currency was spread over a

fifteen-year period. Chartered banks paid over to the Bank of Canada the final balances outstanding in their note circulation accounts as at 31st December 1949, and the Bank assumed the liability.

2. Distribution and handling

(a) Coin

Direct Clearers provide the public with all Canadian coin required for the circulation needs of the country. At all their branches, the Direct Clearers always attempt to have an adequate supply of coin to meet the public's needs. However, some branches may find that they are paying out coin, either in cashing cheques or through cash withdrawals by depositors. If, in these circumstances, a Direct Clearer runs low, its central offices replenish their supplies directly from the Mint. The Bank of Canada monitors these requisitions and offers the facility to effect prompt credit to the account of the Receiver General for Canada upon receipt of coin by the Direct Clearer.

The Bank of Canada will currently neither buy back nor take back coin that is still fit for circulation. However, the Bank will assist in the exchange of coin among surplus and deficit Direct Clearers, since this is more efficient than having the deficit Direct Clearers order more coin. Although the Bank will redeem coin that is no longer fit for circulation, most Direct Clearers ship unfit coin directly to the Mint. Once the value of the shipment has been determined by the Mint, it advises the Bank and settlement is effected by crediting the account the Direct Clearer maintains at the Bank. Alternatively, branches of Direct Clearers at the Bank of Canada agency points may, in accordance with the Bank's instructions, request settlement for redeemed coin in Bank of Canada notes or in new coin.

(b) Bank of Canada notes

Direct Clearers are also the main distributors to the public of Bank of Canada notes. Notes that the public finds surplus to its needs will be taken in by deposit-taking institutions and redeposited with the Direct Clearers. Unlike coin, surplus notes, even if fit for reissuing, may be returned by the Direct Clearers to the Bank of Canada, either in exchange for other denominations or for immediate credit to their accounts. The principal reason for this difference between notes and coin is that notes are a liability of the Bank. The Bank must, therefore, redeem its liability and take back notes that are not wanted by either the Direct Clearers or the public, even though they may be fit for reissue.

The Bank of Canada also redeems unissuable notes, i.e. notes that are too soiled or worn or otherwise unfit for further circulation. Each branch of a Direct Clearer, in handling notes, is expected to sort out the unissuable notes and parcel them up in accordance with instructions issued by the Bank. Each branch then ships its parcels of unissuable notes directly to the nearest Bank of Canada agency.

Notes still fit for circulation that are turned in to the Bank of Canada are held and reissued as the need arises. The Bank also arranges for the supply of new notes, buying them from two privately owned printing companies at an agreed price, and issuing the notes in response to orders received from the Direct Clearers.

3. Usage

Although there is a wide variety of payment media available to Canadians, it would appear that notes and coins continue to be the most common and frequently used means of effecting everyday transactions. Unfortunately, there are no data or other information on either the number or the value of cash payments. At the same time, it is not unreasonable to suppose that the use of notes and coins in Canada is similar to that in many other countries, i.e. currency is used in between 80 and 90 per cent. of the total number of transactions, and cash payments account for between 10 and 20 per cent. of the total value of transactions.

Data on currency in the hands of the public and per capita holdings of currency are presented in Appendix III.

IV. PAYMENT SYSTEM AUTOMATION: HISTORY AND RECENT TRENDS

The objectives of this section of the report are, first, to review briefly the history of and recent trends in automation within the Canadian payment system, in order to provide some background for the subsequent descriptions of various payment mechanisms, and second, to report briefly on automated teller machine installations in Canada. The first or historical sub-section concentrates chiefly on the experience of the chartered banks, while the second and third sub-sections cover the whole of the deposit-taking industry.

1. History

The operations of a deposit-taking institution involve, by their very nature, a great number of repetitive tasks. For example, during 1983, about 2 billion cheques and other payment items were posted to over 40 million demand deposit and chequable savings accounts at deposit-taking institutions across the country. Such routine and detailed work is ideally suited to computer processing. The computer can store the record of each account and, as individual deposits and withdrawals are made, can also update the account in far less time and at much less cost than if records were maintained manually. Moreover, interest can be calculated in a fully automated fashion at the end of each month, quarter or half-year, and up-to-date listings that show account activity and status can be produced and sent to branches daily.

In response to a rapid rise in the growth of cheque-processing volumes and attendant cost pressures, the first aspect of the back-office operations of the chartered banks to be automated during the early to mid-1960s was the accounting related to demand deposits held at their large branches. The spread of computerised demand deposit accounts was aided by the development and introduction of the magnetic ink character recognition (MICR) cheque-encoding standard. This standard made it possible for the banks to install high-speed cheque reader/sorters. During the same period, several chartered banks began to put their own financial reporting systems onto computers.

These earliest computer applications used batch processing techniques. Since the late 1960s the chartered banks have extended batch processing to a variety of other branch activities, such as the maintenance of consumer lending portfolios, term deposits and commercial lending. Various head-office administrative systems were also automated at the same time.

Although batch systems use time-tested programming and operational techniques, they do have the disadvantage of being unable to provide information during the business day as transactions are effected. This is a serious drawback in the servicing of retail customers, many of whom want to deposit or withdraw funds during the day and receive an immediate update of their account status. In order to meet this particular need, in the late 1960s, some chartered banks began to introduce on-line demand deposit and savings accounts.

Other deposit-taking institutions were not slow, however, to recognise the economic, operational and other advantages of automation. At the present time the customers of a great many Canadian deposit-taking institutions are familiar with the teller terminals and passbook printers that provide them with an immediate update of all their posted transactions and reflect the day's activity. Indeed, it is estimated that, at the end of 1983, some 95 per cent. of chartered bank branches and approximately 70 per cent. of the branches of all deposit-taking institutions provided on-line services to their customers.

2. Recent trends

The computer systems that were implemented by deposit-taking institutions during the 1960s and the early to mid-19/0s made possible or resulted in only a few new services for customers, viz. so-called "package accounts", credit cards, and cash dispensers and automated teller machines. For the most part, computerisation did little more than automate portions of existing manual systems without changing their basic structures. The major results of automation during this period were the removal of many back-office operations from branches to data centres and the containment of the non-interest operating expenses of deposit-taking institutions. During the past five years, however, deposit-taking institutions have begun to exploit the possibilities inherent in computerised systems for developing the range of services offered to their customers, and this has led to the introduction of a number of innovative services - for example, so-called "any-branch banking", demand deposit and savings accounts that feature daily calculation of interest, personal lines of credit, variable rate personal loans and mortgages, and corporate cash-management services. Moreover, there has been a rapid increase in the number of automated teller machines installed in Canada during this period.

3. Automated teller machines

Automated teller machines (ATMs) are now in widespread use in Canada; there were some 1,900 installed at 31st January 1984, compared with 250 at the end of 1978. Most large and several medium-sized deposit-taking institutions have proprietary ATM networks. There is also, however, one shared ATM network in operation and half a dozen other such networks in the planning stage.

The ATMs in current use are conceptually simple devices that permit a customer who has an access card - either a credit card or a client card issued by the deposit-taking institution concerned - and a personal identification number to withdraw pre-packaged notes either from an account or as a cash advance against a credit card line of credit. (It has been estimated that withdrawals account for 70 per cent. of all ATM transactions.) The customer can also make deposits, pay bills and, because most ATMs are connected to a central computer, verify the status of an account and effect a number of types of transfer between accounts.

To date, most ATMs have been installed either in the banking halls or lobbies or on the outside walls at branches of deposit-taking institutions. However, ATM installations at remote locations, for example in shopping centres and at airports, are becoming increasingly common.

Customer acceptance of ATMs has developed rapidly. One deposit-taking institution has estimated that 15 per cent. of its customers' payments transactions are now handled by its network of ATMs; and three ATMs at a major shopping centre in Toronto together handle 22,000 transactions a month.

The main impact of ATMs on customers is that these devices typically afford 24-hour, seven-days-a-week access to cash as well as the opportunity to make deposits, bill payments and inter-account transfers. Thus, ATMs primarily provide a convenience mechanism and may, in some circumstances, reduce the risk of theft by permitting the deposit of cash that would otherwise be carried by the customer.

From the point of view of deposit-taking institutions, ATMs perform certain internal functions that would otherwise be carried out by human tellers. Indeed, it has been estimated that 25 per cent. of all ATM transactions take place during the business hours of deposit-taking institutions. There is little reason to expect that the use of ATMs will significantly reduce the use of cash; in fact, by making access to cash more convenient, ATMs may actually increase its use and thereby slightly reduce the use of cheques. ATMs do, however, reduce the costs of handling withdrawals, deposits and inter-account transfers.

V. THE PAPER-BASED CLEARING SYSTEM

The Canadian clearing system is, in the opinion of many observers, one of the most efficient paper-based systems in the world. One indicator of the system's effectiveness is the universal practice among Canadian deposit-taking institutions of giving most customers immediate credit for cheques and other payment items deposited with them.

1. Transferable deposits

Until 1957 chartered banks offered individuals only one type of deposit account, the so-called "ordinary or regular savings account", on which they reserved, but typically waived, the right to require fifteen days' notice of withdrawal. Because a growing number of cheques were being

issued on these accounts, the banks introduced personal chequing accounts. These accounts differed from the ordinary savings account in that no interest was paid on them, and encashed cheques were returned to the issuer along with a monthly or quarterly statement.

Competition among deposit-taking institutions for transferable deposits has intensified during the past fifteen years. These deposits are generally less volatile than others and so provide a relatively stable source of funds. For this reason, and to attract customers to their branches, deposit-taking institutions have introduced innovations designed to encourage, directly or indirectly, an expansion of their transferable deposits. The introduction of personalised cheques, monthly instead of bi-monthly or quarterly statements, bank-by-mail plans, demand and chequable savings accounts that feature the daily calculation of interest and the reintroduction of overdraft facilities are some of the methods that have been used to induce customers to open transferable deposit accounts. A number of deposit-taking institutions also offer free chequing.

Data on Canadian transferable deposits are presented in Appendix IV.

2. Legal framework

The clearing and settlement system is operated by the Canadian Payments Association (CPA). The Association's Act provides that it may "... arrange the exchange of payment items at such places in Canada as the Association considers appropriate ...". The Act also provides that the CPA's Board of Directors may "... make by-laws respecting clearing arrangements and related matters ... (by-laws) respecting settlements and related matters ... (and) subject to the by-laws ... such rules respecting clearing arrangements and the settlement of payment items as it considers necessary.". By-laws, but not rules, become effective only when approved by the Federal Cabinet.

The paper-based clearing system has two objectives: first, to transmit negotiable instruments from the place and institution where they are deposited to the place and institution on which they are drawn and, second, to facilitate the settlement of the clearing balances generated by the movement of the funds represented by these instruments. The clearing by-law (By-law No. 3 of the Association), which received Cabinet approval on 16th December 1982, and the rules that have been approved by the CPA's Board of Directors govern how the various deposit-taking institutions that offer transferable deposits co-operate to achieve these objectives.

The contents of the clearing by-law can be divided into three types of subject matter: first, the organisational structure at Regional Settlement Points (RSPs) - for example, the formation and management of Regional Clearing Associations; second, the general procedures for exchanging payment items and settling the claims thereby created, for example, the classes of payment items acceptable for clearing, the different ways in which member institutions can participate in the clearings, and the procedures necessary to effect final settlement daily at the Bank of Canada (these general procedures being complemented by the specific ones contained in the CPA Rules Manual); and third, the definition of the rights and obligations of member institutions, for example, the criteria for direct

participation in the clearings, the conditional nature of the exchange of payment items, and the provisions for default, either on the part of a Direct Clearer or on the part of a deposit-taking institution for which it is acting as clearing agent.

Important as the clearing by-law and rules are, unquestioned mutual trust and confidence among Direct Clearers as well as among CPA member institutions generally are vital to the smooth functioning of the national clearing and settlement system. It is useful, therefore, to outline the different ways in which mutual trust and confidence have been established and will be fostered in the future.

First and foremost is the section of the Association's Act respecting financial stability, which stipulates that every member institution either be a member of the Canada Deposit Insurance Corporation or the Canadian Co-operative Credit Society Limited or have deposits made with it insured or guaranteed under a provincial enactment that ensures inspection of its affairs.

Second, certain amendments were made to the Bank of Canada Act in conjunction with the recent revision of the Bank Act that authorise the Bank of Canada to accept deposits from non-bank members of the CPA and provide the Bank with the same broad powers to make advances to these deposit-taking institutions as to bank members of the Association. Accordingly, all Direct Clearers have operational relationships with the Bank of Canada and direct access to central-bank credit.

Third, Direct Clearers serve as a link between, on the one hand, the day-to-day operations of the national clearing and settlement system and, on the other, the liquidity and solvency of the system, which are longer-term considerations that fall under the jurisdiction of federal and provincial regulatory authorities. Direct Clearers are required by the clearing by-law to report to the relevant regulatory authority all instances in which an Indirect Clearer needs to make sizable and repeated borrowings for the purposes of settlement. This particular provision was adopted after consultation with the federal and provincial regulatory authorities, and it is anticipated that the Association will communicate with these authorities periodically in the future.

Finally, member institutions, through their participation in Association work and meetings, have been able to gain a fuller appreciation of the nature and scope of each others' business activities, practices and philosophies.

It is important to note, however, that the CPA is not a guarantor of its member institutions and that the Association does not have a mandate concerning the liquidity of its members or other prudential matters.

In summary, the clearing by-law and rules have been drafted with a view both to ensuring efficiency and equity within the national clearing and settlement system and to providing a sufficient degree of flexibility to allow for the system's future development.

3. Operations

The clearing process begins when a payment item acceptable for clearing is deposited at a branch of a deposit-taking institution. The items are bundled and totalled, collected by courier and delivered to the institution's nearest demand deposit accounting (DDA) centre if the institution is itself a Direct Clearer or to its agent's if it is not. (The highly automated DDA centres that Direct Clearers maintain across the country and the clearing houses maintained by the CPA are the backbone of the paper-based clearing system.) This work starts at midday on the day of deposit. The items are then checked, amount-encoded using magnetic ink, and sorted into "on-us" items, including those drawn on Indirect Clearers for which the Direct Clearer is the agent, and items drawn on other Direct Clearers, including items drawn on Indirect Clearers for which those Direct Clearers are agents. At this stage, as many items as possible are micro-filmed for tracing and security purposes. Items drawn on other Direct Clearers are bundled together with control listings, picked up by couriers and delivered to the DDA centres of those other Direct Clearers. This exchange of items begins at around 6 p.m. each day, rises to a peak late in the evening and, depending upon the distances to be covered by the incoming courier runs, slows down again around midnight.

A cut-off time for the exchange of payment items is established for each RSP by the Regional Clearing Association, and this time may vary from RSP to RSP and by type of item. After the cut-off time, items exchanged between Direct Clearers are not, with certain exceptions, included in the figures for the next day's settlement at the Bank of Canada.

Payment items received by a DDA centre drawn on branches of the same Direct Clearer in areas served by other centres are, wherever possible, also moved by air courier that evening. However, many Direct Clearers have implemented automated systems whereby the information on "on-us" items deposited in one region can be stripped from the items and transmitted, via high-speed communication lines, to DDA centres in other regions serving the branches on which the items are drawn, thus allowing the physical items to follow later without affecting the float time. After midnight, the DDA centre will fine-sort "on-us" items drawn on branches within its own region, post these items to the customers' accounts and produce updated branch reports.

The settlement process begins shortly before 9.30 a.m. on the following day, when each Direct Clearer provides its clearing clerk with figures relating to its own deliveries to and receipts from the other Direct Clearers during the previous day for inclusion in the settlement. The clerks meet at the clearing house at the RSP and arrive at the balances "due to" and "due from" each Direct Clearer. When the balances are struck and agreed to, they are communicated to the nearest Bank of Canada agency. Each Direct Clearer is required to confirm the "due to" and "due from" balances with the agency by 11 a.m. (Ottawa time). The agency then passes this information to the Bank of Canada's head office in Ottawa by the fastest means available. After the Bank has received this information, it adjusts the balances of the Direct Clearers in its own books, thus effecting the ultimate transfer of funds between Direct Clearers. The final adjustment of each Direct Clearer's account at the Bank is made at 3.30 p.m. (Ottawa time). Final settlement, therefore, takes place on the same day as the

clearing house sessions, but one day after the exchange of payment items between Direct Clearers.

4. Usage

Each weekday evening at fifty DDA centres, Direct Clearers process between 4 and 9 million payment items. During 1983 some 2 billion items were posted to over 40 million demand deposit and chequable savings accounts at deposit-taking institutions across the country. Of these, about 1.5 billion items had been exchanged and settled for between Direct Clearers, the remainder being their "on-us" items.

There are two specialised markets that add significantly to the magnitude of payment flows: the foreign exchange market and the money market. The number of payment items issued as a result of large transactions in these markets and for large corporate transfers is relatively small. Less than one per cent. of the items exchanged between Direct Clearers on an average day have an individual value in excess of Can.$ 50,000. Those that do, however, are quite large, with many of them in excess of Can.$ 1 million, and these items account for about three-quarters of the total value of items cleared on a typical day.

The clearing system also handles a wide range of payment items that are not drawn on accounts maintained at deposit-taking institutions. These include: Federal Government payments, which are settled through the Bank of Canada and which account for about 10 per cent. by volume of all the items handled by the system; postal and other money orders; grain payment tickets; and travellers' cheques. Finally, about 25 per cent. of the items deposited with Direct Clearers are drawn on their own customers' accounts and can, therefore, be processed internally without passing through the clearing and settlement system.

5. Recent developments: the Automated Clearing Settlement System

The record-keeping for the exchange of payment items between Direct Clearers is, at the present time, a manual process, as is the determination of the "due to" and "due from" balances for final settlement.

Currently, six distinct streams of payment items are exchanged between Direct Clearers: encoded items; large items; computer rejects; unqualified items; returned items; and items exchanged on magnetic tape. Items in each stream are bundled and totalled separately. The delivering Direct Clearer prepares a Cheque Clearing Log and records the number of items, stream type and the dollar amount in each bundle. One copy of the form is dispatched with the items for reconciliation by the receiving Direct Clearer and one copy is retained by the delivering Direct Clearer. At any given RSP there can be as many as seven exchanges between any two Direct Clearers during the evening and two further exchanges the following morning, including the final exchange. Furthermore, it is usual for each delivering Direct Clearer to prepare a "recap" Cheque Clearing Log with the last exchange of the evening and another recap in conjunction with the final exchange in the morning.

Following the totalling of the Cheque Clearing Logs, each Direct Clearer prepares a Clearing Exchange Statement. Before sending a clerk to

the clearing house for the determination and confirmation of final settlement, each Direct Clearer confirms with every other Direct Clearer the totals of the amounts delivered and received. (Such confirmation is usually made by telephone.)

The manual effort required for these record-keeping, balancing and confirmation procedures is time-consuming. Although the procedures are relatively fast, they could, if automated, be made even faster as well as better able to accommodate an increase in the number of Direct Clearers or in the classes of payment items acceptable for clearing. Such a possibility had been under consideration by the chartered banks for some time, and initial developmental work for an automated clearing settlement system (ACSS) was done by them. The project was turned over to the Canadian Payments Association in February 1982.

The objectives of the ACSS, which was implemented during 1984, are: (i) to reduce the cost and to increase the efficiency of record-keeping, balancing, confirmation and settlement procedures within the paper-based clearing system; (ii) to provide more timely and accurate information to Direct Clearers about the dollar amounts gained or lost by them during the overnight exchange of payment items; and (iii) to establish a settlement mechanism that is sufficiently flexible to accommodate future developments within the payment system.

The ACSS will automate the record-keeping, balancing, confirmation and settlement procedures within the paper-based clearing system by use of an on-line, interactive computer/communications network. Each Direct Clearer will have access to the network via terminals, and the ACSS will have the capability to log the totals of the various streams of payment items exchanged as well as to provide a net position for settlement purposes. Moreover, most Direct Clearers are planning to locate terminals at their money-market desks in order to monitor the results of the exchange process.

VI. DIRECT DEBIT AND CREDIT PAYMENTS

Both direct debit arrangements (typically referred to as pre-authorised payments) and direct credit arrangements (usually referred to as direct deposit or direct funds transfer systems) are more widely used in Canada at the present time than they were five years ago; however, they are still confined mainly to recurring, fixed-amount payments such as insurance premiums, mortgage payments, utility bills and rent in the case of debits, and salaries, annuities and certain governmental payments in the case of credits.

1. Legal framework

Since a debit or credit voucher, a magnetic tape or a computer print-out listing debits or credits is neither a bill of exchange nor a promissory note within the meaning of the federal Bills of Exchange Act, this Act does not apply to direct debit or credit payments. Accordingly, the legal framework for such payments emanates from a series of relationships and rules that have been developed by the private sector.

This legal framework for pre-authorised debit payments formerly included the Inter-Bank Agreement of 1973. This agreement has effectively lapsed, and a new inter-institutional agreement is being developed by the Canadian Payments Association. No omnibus agreement exists, or is regarded as necessary, for direct credit payments. Also relevant to direct debit and credit payments are certain CPA Rules and Standards, the authorisations given by debtors and payees to creditors and payers respectively and undertakings given by creditors and payers to Direct Clearers.

2. Operations

Direct debit and credit payments may be effected by the clearing of paper vouchers or by exchanging magnetic tapes. Paper vouchers are still used more frequently for debits, while magnetic tapes are generally used for direct credit payments.

VII. CREDIT CARDS

There were, at the end of 1981, more than 23 million credit cards - i.e. bank credit cards, proprietary or two-party retail cards, as well as travel and entertainment cards - in circulation in Canada and some forty different issuers. The two bank credit cards, VISA and MasterCard, with 9.2 and 3.5 million card holders respectively, had a significant presence in the market and were also the most widely accepted cards. Accordingly, this section of the report focuses exclusively on bank credit cards.

Although VISA and MasterCard are now issued by five non-bank deposit-taking institutions in Canada as well as by six chartered banks, they are customarily referred to as "bank credit cards" in Canada and other countries and, accordingly, are so referred to below.

1. Legal framework

The legal framework for bank credit cards comprises specific statutory provisions enacted by a number of provincial legislatures, a written agreement between a card holder and a card-issuing deposit-taking institution, a written agreement between a participating merchant and the merchant's card-issuing deposit-taking institution and the by-laws and operating rules of each bank credit card plan.

2. Operations

The VISA and MasterCard plans operate in essentially the same way. Upon application to a participating deposit-taking institution, a card is issued to any creditworthy individual. Each deposit-taking institution establishes its own standards of creditworthiness and the amount of credit it is prepared to extend to individual cardholders. Although an individual card holder's line of credit is subject to negotiation between himself and the deposit-taking institution, the institutions generally follow set guidelines with respect to the minimum and maximum lines of credit they extend.

The bank credit card plans permit card holders to obtain cash advances at the branches of all deposit-taking institutions belonging to a particular plan and to charge purchases at the outlets of all participating merchants. (Many merchants accept the cards of both plans.) Card holders are billed once a month. They have the option of paying the whole amount at one time or by monthly instalments. It has been estimated that 60 per cent. of card holders pay their bills in full each month, while the remainder make monthly payments. If the entire amount is paid within a grace period of twenty-one days, no interest charge is made, except for cash advances. Interest on cash advances is charged from the moment the advance is posted to the card holder's credit card account. User fees are now charged by most of the card-issuing institutions.

Settlement procedures for credit card transactions are as follows. At the end of each day, the branches of the card-issuing deposit-taking institution send the sales vouchers that have been deposited with them by participating merchants to the institution's nearest card centre by courier. At the centre the vouchers are sorted into "on-us" items and items for other card issuers. The "on-us" items are posted immediately to the card holder's credit card account. By mutual agreement, the vouchers are truncated at this point. Magnetic tapes are prepared with data from the vouchers for other card issuers. These tapes are exchanged daily between card-issuing deposit-taking institutions and are accompanied by a settlement voucher, which is presented at the clearing house the following morning.

Selected Canadian data on the two bank credit card plans appear in Appendix V.

3. Recent developments

An important development in the bank credit card area that should be noted at this point is the growing trend away from proprietary or two-party credit cards in favour of bank credit cards. A number of large, full-line Canadian department stores have begun to accept bank credit cards, although these stores continue to issue their own proprietary cards, and several major issuers of two-party cards have discontinued their cards.

VIII. DEBIT CARDS

Following several years of development work and a successful pilot test during mid-1983, local credit unions in Alberta and Saskatchewan began to distribute a debit card - MasterCard II - to their members, and as at the end of 1983 more than 20,000 cards had been issued.

The credit union debit card plan operates in a manner very similar to that of the two bank credit card plans. The debit card does differ from a bank credit card, however, in that it can be used as a "plastic cheque", as the debit card has been dubbed by some. A card holder uses the debit card to make a purchase at the outlet of a participating merchant in the same way he would use a MasterCard credit card and the sales voucher and transaction information are also processed in the same way. However, upon receipt of the transaction information by the local credit union of which

the card holder is a member, the amount of the purchase is immediately debited to his chequing account and the transaction appears on his next regular chequing account statement. The debit card can also be used as a credit card, if the card holder has a line of credit attached to his chequing account.

Participation in the credit union debit card plan, which is currently administered by the credit union centrals in Alberta and Saskatchewan, is voluntary for local credit unions. It is anticipated that the plan will be introduced in British Columbia during late 1984.

IX. POINT-OF-SALE SYSTEMS

There are neither full-scale nor experimental point-of-sale (POS) systems in place in Canada at the present time. However, through an organisation known as Payment Alternatives Communication Exchange (PACE), an attempt is being made by major retailers, deposit-taking institutions, computer suppliers, communications common carriers and representatives of consumers to develop a national electronic POS system.

Although the general objectives of this privately funded research group include promoting POS standards for compatibility, providing for an exchange of information among its members and encouraging the development of a national electronic POS system, PACE has so far been a passive organisation, with the focus of its research directed towards the needs of its members.

As at the end of 1983 PACE's members were in the midst of defining the scope and mandate of the organisation's future activities. The alternative rôles that PACE could play in the future range from continuing as a forum in which its members would exchange ideas and experience to owning and operating an electronic POS switching system.

Developments in the POS area clearly relate to the evolution of the national payment system as a whole. It is with particular reference to such developments that the Canadian Payments Association has entered into preliminary discussions with a number of interest groups, including the Consumers Association of Canada, the Retail Council of Canada and PACE.

X. HOME BANKING

One chartered bank is involved in two experiments with home banking: a home banking service offered on Project Grassroots and a year-long pilot test, Home Banking Interchange, in partnership with ADP Telephone Computing Services and nineteen US commercial banks.

Project Grassroots is an agricultural information videotex service provided by Infomart to 1,500 subscribers in Manitoba and southern Ontario. Infomart is an innovative Canadian company that has been offering videotex information services for a number of years using Telidon. To use the

service, a subscriber attaches a Telidon receiver to his television set or computer terminal and communicates with a hand-held keyboard that is connected through the receiver by a telephone line to Infomart's computer.

The home banking service, which began in November 1983, permits a subscriber to Project Grassroots who is also a customer of the chartered bank to transfer funds between accounts, to verify account balances, and to call up monthly statements. (About 20 per cent. of Project Grassroots subscribers are customers of the bank.) The bank plans to add the capability of verifying balances in MasterCard accounts and a bill-paying service as well. Subscriber/customers are connected to the bank through a "gateway" linking Infomart's computer and the bank's host computer.

Home Banking Interchange, which began operations in Mid-1984, involves home banking terminals in 1,900 US and 100 Canadian households. The system will provide subscribers with video games, electronic mail, pay-by-phone services, news, weather and sports information, video encyclopedias, electronic shop-at-home services, as well as entertainment and ticket reservations. ADP Telephone Computing Services and its bank partners are the system operators.

APPENDIX I

TOTAL ASSETS OF CANADIAN DEPOSIT-TAKING INSTITUTIONS, 1978-83

(in millions of Canadian dollars, at end of period[1])

	1978	1979	1980	1981[2]	1982	1983
Chartered banks[3]	193,235	235,202	290,323	349,742[4]	369,062	368,627
Local credit unions and caisses populaires	23,976	27,338	30,546	32,061	33,527	37,111
Trust and mortgage[5] loan companies	34,284	40,234	46,294	50,911	55,231	61,588
Quebec savings banks	1,451	1,678	1,774	4,243	4,588	5,255
Governmental savings institutions (Alberta Treasury Branches only)	1,543	1,940	2,355	2,717	2,994	3,422

1 31st December, except in the instance of governmental savings institutions, where end of period is 31st March of the following year.
2 Beginning in November 1981, chartered bank and Quebec savings bank assets include those of their wholly and majority-owned subsidiaries. Chartered bank and trust and mortgage loan company data prior to November 1981 have been adjusted to take account of the assets of chartered bank mortgage loan subsidiaries.
3 Including mortgage loan subsidiaries.
4 Definition of total assets also changed.
5 Excluding chartered bank mortgage loan subsidiaries.

APPENDIX II

DOMESTIC BRANCHES OF CANADIAN DEPOSIT-TAKING INSTITUTIONS, 1978-83

(at 31st December)

	1978	1979	1980	1981	1982	1983
Chartered banks	7,407	7,457	7,426	7,377	7,203	7,091
Local credit unions and caisses populaires	4,686	4,477	4,431	4,464	4,245	4,186
Trust and mortgage loan companies	1,030	1,083	904	1,175	1,189	1,393
Quebec savings banks	110	116	117	116	117	117
Governmental savings institutions	121	126	134	138	149	151
Total	13,354	13,259	13,012	13,270	12,903	12,938
Population per branch	1,771	1,803	1,861	1,847	1,921	1,934

APPENDIX III

CURRENCY OUTSIDE BANKS, 1978-83*

(in millions of Canadian dollars, average of Wednesdays during December)

	1978	1979	1980	1981	1982	1983
Notes	7,877	8,520	9,242	9,525	10,265	11,212
Coin	879	940	1,021	1,070	1,128	1,189
Total	8,755	9,460	10,263	10,596	11,392	12,401
Currency per capita (dollars)	371	396	424	432	465	496

* Owing to the rounding of figures, components may not always add to the totals shown.

APPENDIX IV

TRANSFERABLE DEPOSITS, 1978-83[1]

(in millions of Canadian dollars, at end of period[2])

	1978	1979	1980	1981	1982	1983
Chartered banks:[3]						
Demand deposits (less private-sector float)	14,546	14,683	16,466	16,544	16,628	17,891
Chequable savings deposits	7,658	7,429	8,087	7,150	8,668	11,020
Local credit unions and caisses populaires: Demand and chequable savings deposits	4,011	4,087	4,273	3,922	4,343	4,751
Trust and mortgage loan companies: Demand and chequable savings deposits	1,044	1,021	1,561	1,858	2,465	3,663
Quebec savings banks: Demand and chequable savings deposits	314	305	290	335	338	371
Governmental savings institutions: Demand and chequable savings deposits	726	927	1,058	1,242	1,239	531[4]
Total	28,299	28,452	31,735	31,051	33,681	38,227
Transferable deposits per capita (dollars)	1,199	1,190	1,311	1,267	1,358	1,529
Transferable deposits and currency per capita (dollars)	1,570	1,586	1,736	1,699	1,823	2,025

1 Owing to the rounding of figures, components may not always add to the total shown.
2 31st December, except in the instance of governmental savings institutions, where end of period is 31st March of the following year.
3 Average of Wednesday data.
4 Alberta Treasury Branches only.

APPENDIX V

SELECTED DATA ON BANK CREDIT CARDS, 1978-83[1]

(at 31st December)

	1978	1979[2]	1980	1981	1982	1983
Gross sales (Can.$ million)						
VISA	4,470	5,620	7,250	8,700	.	.
MasterCard	1,450	1,672	2,100	4,000	.	.
Total	5,920	7,292	9,350	12,700	13,900[3]	14,830[3]
Card holders (in thousands)						
VISA	7,100	7,600	8,200	9,000	9,400	.
MasterCard	2,300	2,600	2,900	3,500	.	.
Merchant outlets (in thousands)						
VISA	167	185	200	212	.	.
MasterCard	124	137	142	150	.	.

1 Data are taken from reports in the daily press.
2 The first non-bank deposit-taking institution to issue a bank credit card began to do so during the autumn of 1979.
3 At 31st October.

3. F R A N C E

I. INTRODUCTION

Although not as spectacular as the changes witnessed in the early 1970s - which were characterised by the expansion of the banking system itself and the corresponding growth in deposit money - those that have taken place since 1978 have been substantial. The banking industry has been particularly concerned with the reorganisation of institutions' internal structures, automating the processing of items (notably cheques) and improving customer services, especially by setting up large cash dispenser and ATM networks.

The main factors responsible for this modernisation process are the industry's dynamic business policy and its need to make productivity gains as a result of the rapid growth in the volume of transactions and the rise in costs that had to be absorbed.

From the point of view of payment instruments, the main features of the payment system are as follows:

- except for low-value payments, bank-notes and coin account for a relatively small share of total monetary and quasi-monetary assets;
- the predominance of the cheque in total deposit money (82.5 per cent. in terms of number);
- the not inconsiderable importance of automated and readily automatable forms of instrument.

In the field of interbank collection circuits, two major types of exchange co-exist:

- "traditional" circuits, for which the rules on exchanges are tending to become simplified;
- automated circuits organised to a large extent around the computer clearing centres.

Under the influence of recent developments in the technological field and, in particular, thanks to the opportunities afforded by telecommunication networks, important changes are taking place, affecting both the payment instruments themselves and the routing of the corresponding settlement; these changes are likely to alter the make-up of the French payment system substantially.

II. INSTITUTIONAL FRAMEWORK

Before turning to the rôle played by the Bank of France and the de la Genière Group in the development of the payment system, a broad outline will be given of the structure of the French banking and quasi-banking system.

1. Banking and quasi-banking structures

The French banking and quasi-banking system is characterised by:

- a high degree of concentration;
- the fact that a high percentage of the population holds bank accounts, this being due to the liberal branching policy pursued since 1967, which encouraged the spread of the various networks (a new provision introduced in 1982 reverted to a system of prior authorisation);
- substantial state involvement.

In January 1984 the banking system was provided with a uniform legal framework which makes the banking community a more meaningful concept than was previously the case in France.

The situation described below is the result of the reform of the banking legislation which was promulgated on 24th January 1984 and defines the business of the banking industry and the terms on which it is to be conducted.

(a) Credit institutions

Institutions undertaking banking operations as their customary business - accepting funds from the public, engaging in lending operations, and making available to customers and administering means of payment - are known as credit institutions.

These fall into a number of legal categories, reflecting the diversity of the structures existing prior to the recent Banking Law. A distinction is made between:

- the banks in the strict sense of commercial banks. These institutions have a universal rôle to the extent that they may take deposits in any form and for any term and make loans on any terms to any customers. They comprise, alongside the three large banks which were nationalised in 1945 and handle more than half of the funds channelled in this category of bank, thirty-six banks which were nationalised under the law of 11th February 1982 and 367 other institutions,
- a group of networks comprising the mutual banks, the co-operatives, the ordinary savings banks (as opposed to the National Savings Bank) and the municipal credit banks, which are also authorised to take deposits for any term but whose business is restricted in certain regards by the specific legislation or regulations governing them.

  These networks are grouped together at national level under central bodies which have the task, in particular, of providing a stimulus, organising and performing administrative, technical and financial supervisory functions;
- the finance companies, which may not accept funds from the public for terms of less than two years unless an exception has been granted and whose business is also limited by their statutes. They comprise in

particular the institutions known previously as financial establishments (établissements financiers), whose business includes, among other things, the granting of credit and involvement in securities transactions;

- the specialised financial institutions to which the State has entrusted permanent tasks in the public interest; they may not carry out banking operations other than those relating to those tasks except in a subsidiary rôle.

The credit institutions are represented collectively vis-à-vis the public authorities at two levels:

- at the first level, the institutions that do not belong to a network based on a special legal status are obliged to be members of a professional body exercising functions in the general interest, e.g. the French Bankers' Association in the case of the banks and the Professional Association of Financial Establishments in the case of certain finance companies. In the case of networks these tasks are entrusted to their central bodies;

- at the second level, the central and professional bodies are members of the French Association of Credit Institutions, which represents the profession as a whole.

(b) Organisation and supervision of the banking industry

All credit institutions come under the authority of the National Credit Council, two special committees and the Banking Commission, as described below:

The National Credit Council

This body has the function of advising on and examining the stance of monetary and credit policy and scrutinises the conditions of operation of the banking and financial system.

The Council, which has as its chairman the Minister of the Economy, Finance and the Budget and as its vice-chairman the Governor of the Bank of France, is a forum for wide-ranging consultations and is composed of representatives of the whole range of participants in economic and financial life.

In addition, two committees have been set up, the full members of which are chosen from the National Credit Council.

The Banking Regulations Committee lays down, in particular, the general rules applicable to credit institutions (credit policy), standards to be observed on security, the interest rates and conditions for financial operations and the rules governing the setting-up of networks.

The Committee of Credit Institutions is basically responsible for all decisions, authorisations or exceptions of an individual character.

Although they are autonomous, these two committees maintain close links with the National Credit Council.

The Banking Commission

The Banking Commission, chaired by the Governor of the Bank of France and known previously as the Banking Control Commission, has the task of ensuring that the credit institutions comply with the banking regulations, scrutinising their operations and monitoring their financial structure and their compliance with the rules of sound banking practice.

The Bank of France is responsible for organising and carrying out on-the-spot checks on behalf of the Commission.

(c) The state networks

A number of Treasury networks and financial services networks run by the Postal Administration effect banking operations that are generally comparable to those carried out by banks:

- the National Savings Bank,
- the postal cheque centre,
- the Treasury's branch offices which accept deposits from individuals.

The state networks and bodies such as the Deposit and Consignment Office, which, among its numerous activities, uses funds collected by the savings banks to finance the local authorities, do not come under the Banking Law of January 1984, although the regulations laid down by the Banking Regulations Committee may be extended to cover them.

All in all, the new French banking legislation has contributed towards bringing up to date the legal and institutional framework within which the business of the banking and quasi-banking industry and the activities of the monetary and supervisory authorities are conducted.

In particular, it has:

- had a unifying effect by making the whole of the banking industry - credit institutions - subject to the same steering and supervisory authorities, which was not the case previously;
- retained the specific nature of finance companies, thus preserving the diversity of the banking structure;
- completely brought up to date the institutions responsible for steering the whole banking system;
- explicitly included payment media in the business of the banking industry.

2. The rôle of the Bank of France and the de la Genière Group

(a) The Bank of France

By its statutes the central bank is assigned a general task of overseeing the currency; it has long organised the provincial clearing

offices and has taken over the management of the computer clearing centres and the regional cheque record exchange centres.

Although the Bank of France has only a small number of private and business customers, it is one of the largest collection institutions given its rôle as sole banker to the Treasury and the fact that its customers include public services, such as the French Railways (SNCF) and the banks, which are apt to entrust it with the collection of items payable at centres where they themselves are not represented.

The development of payment media is a constant concern of the Bank. Forecasting studies undertaken for internal purposes with a view to taking advantage of current and foreseeable technological changes resulted in the formulation of concrete proposals at the end of the 1970s which received the attention of the public authorities.

(b) The de la Genière Group

In January 1979 the Ministry of the Economy, Finance and the Budget charged M. de la Genière, at that time the Deputy Governor of the Bank, with chairing and organising a working party responsible for studying the rational and coherent development of payment media.

This group, which includes representatives of all interested parties (banking institutions, mutual and co-operative networks, representatives of the public authorities and public-sector financial agencies) was given the task of:

- determining preferred policy with regard to payment instruments;
- defining the general rules to be applied by banks to interbank exchanges of deposit money;
- acting as a forum for investigating problems relating to internetwork exchange conditions;
- organising pilot schemes for new electronic payment systems and monitoring their development.

The de la Genière Group has worked actively since its inception and has set up several sub-working parties. Its discussions have led to a consensus which is favourable to the taking of major decisions, e.g. on the establishment of the future national network for automated interbank exchanges.

III. PAYMENT SYSTEMS

1. Payment media available to customers

(a) Cash

At the end of 1983 the amount of currency in circulation stood at Fr.fr. 190.6 billion, with bank-notes accounting for Fr.fr. 180.2 billion and coin for Fr.fr. 10.4 billion.

The proportion of total monetary and quasi-monetary assets accounted for by bank-notes and coin has been tending to decline since the beginning of the 1960s, when it stood at 38 per cent., and has continued to fall over the past five years, albeit at a slower rate than previously: it amounted to 12.2 per cent. in 1978 and 9.8 per cent. in 1983.

A secondary form of liquidity holding, cash is still the payment method most used by individuals. Payments made in cash at virtually all retail businesses and most market services are estimated to have numbered about 22 billion in 1983, corresponding to a value of Fr.fr. 724 billion ($86.7 billion).[1] The great majority of transactions settled in cash consisted of small-value, routine transactions.

By contrast, the use of cash by businesses for the payment of wages and salaries and, above all, for payments to suppliers continues to decline.

Cash withdrawals from banks and other institutions are carried out by means of:

- cheques (estimated at about 15 per cent. of the total number of cheques issued),
- cash dispensers and ATMs.

The average value of withdrawals made by cheque is estimated at Fr.fr. 800 and by ATM or cash dispenser at Fr.fr. 400.

A desire to improve customer services and, at the same time, cut the high costs of issuing cash over the counter (a cheque withdrawal entails much greater costs than an automated operation) has prompted the banks to embark on the large-scale installation of cash dispensers in recent years.

At 31st December 1983 there were 5,100 payment machines,[2] divided between a limited number of networks, which, pursuant to a number of agreements, are aiming to make the various types of cash-dispensing hardware more compatible.

Most of these machines are off-line; a new generation of on-line hardware with a wider range of facilities (account inquiries, credit transfers, cheque-book applications, etc.) is currently being developed.

Consequently, the proportion of cash withdrawals effected by means of cash dispensers is growing fast, and in terms of numbers is estimated by some to account for about one-quarter of all withdrawals.

It is current policy to seek to increase the number of cash dispensers (the forecast for 1985 is for some 6,300 machines) and to make their use more widespread, the long-term objective being to enable all card holders to have access to the greatest possible number of machines.

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1 Estimates were made solely on the basis of transactions carried out with the retail trade and market services.

2 Excluding (several hundred) machines located inside bank offices.

Although in some sectors instruments such as payment cards used in point-of-sale terminals may replace payments formerly made chiefly in cash, in general currency will continue to be irreplaceable for hand-to-hand settlements involving small sums.

(b) Deposit money

As far as deposit money is concerned, the situation is still characterised by the predominance of the cheque, the most used instrument, which accounts for 78 per cent. of the total number of official interbank exchanges.*

Although the main components of deposit money have remained virtually unchanged over the past five years, note should nevertheless be taken of the growing share of automated forms of instruments (particularly the credit transfer and the bill of exchange statement) to the detriment of the corresponding traditional paper-based forms (paper-based credit transfers, conventional commercial bills).

(i) Cheques

The total number of cheques issued, which has been growing at a roughly constant 10 per cent. a year since 1978, exceeded 4 billion in 1982. This figure is made up of cheques issued by the banking and quasi-banking institutions, on the one hand, and by the postal cheque centres, on the other hand.

In 1983 3 billion cheques for a value of Fr.fr. 6,507 billion were exchanged officially among banking and quasi-banking institutions.

The cheque is successful essentially because it is versatile, free of charge and easy to use.

Cheques are used both by individuals and by businesses and authorities. Although it is impossible to say exactly how many items are written by each category, it is estimated that individuals are responsible for more than 85 per cent.

Account-holding individuals write about 120 cheques per year, of which more than half (56 per cent.) are for payments of less than Fr.fr. 250 (1983 figures).

This proliferation of cheques for small sums accounts for the continuing decline in the average value of all cheques (in constant francs, not so long ago even in current francs).

There are three main uses for cheques:

- making payments over distances.

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* Interbank transfers, postal cheques and payments by credit card have not been taken into consideration for the calculation of this percentage. See footnote on page 34.

- withdrawing cash over the counter,

- making direct, hand-to-hand payments,

These categories account respectively for 15, 50 and 35 per cent. of the total number of cheques issued.

Processing and routing operations have been facilitated and modernised by the use of magnetic character reading techniques. The processing itself requires reader/sorter machines; these were initially located in banks' specialised centres but, thanks to technological developments and changes in the rules governing collection, have been widely decentralised, essentially at "département" office level.

The development of telecommunication networks has led to the introduction by various institutions and groupings of internal truncation, with the data on cheques drawn on their own offices being transmitted via telematic link to the appropriate administrative centre, the forms themselves being retained at the place of presentation.

The efforts made by the industry have enabled the cost of cheques to be reduced significantly; they are now cheaper than other traditional paper-based instruments but more expensive than automated payment media (credit transfers, direct debits and the like).

(ii) Commercial bills and bill of exchange statements

Measures adopted on various occasions in the past with a view to limiting the use of traditional commercial bills, which are very expensive, account for the continued decline in the position occupied by this instrument, and this trend has persisted since 1978. Used mainly by small and medium-sized businesses, which remain attached to them, in 1983 they generated the interbank exchange of only 103 million operations for a value of Fr.fr. 3,107 billion.

Two automated forms of commercial bill were introduced in 1973, the bill of exchange statement (lettre de change relevé - LCR) and the truncated promissory note (billet à ordre relevé); each of these can be remitted by customers either on magnetic media or in the form of a paper medium, with the bank carrying out the data acquisition.

Following a long and difficult introductory period, these instruments, which did not use to occupy a significant position, are beginning to gain ground, at least as far as the bill of exchange statement is concerned.

At the end of 1983 a new standardised paper form for commercial bills was made obligatory. This should simplify processing by making it possible for automatic reading techniques to be used, but the long-term objective is to promote the bill of exchange statement and further reduce the number of paper-based bills.

(iii) Credit transfers

As well as the 436 million credit transfers for a value of Fr.fr. 20,381 billion routed via the interbank exchange circuits, mention

should be made of the 926 million instruments, amounting to Fr.fr. 4,762 billion, which were issued by the postal cheque centre in 1983 (postal cheques can be used to make payments or to transfer cash between accounts).

Over the past five years the use of credit transfers routed via interbank exchange circuits has been growing at a much more sustained rate (at an average annual rate of 14 per cent.) than that of postal cheques (only just over 3 per cent. per year).

Paper media are used for credit transfers made on a one-off basis, e.g. by businesses paying their suppliers, by the Treasury's branch offices and by local authorities, and for those of a financial nature, which impedes their being automated.

However, credit transfers of a recurring nature are largely automated. This applies particularly to transfers of wages and salaries or pensions, for which businesses frequently send in their orders on a magnetic medium obtained as a by-product of their accounting.

Recently there has been sustained and rapid progress in automating the processing of this type of instrument: in 1983 more than 83 per cent. - by number - of interbank credit transfers were exchanged in computer clearing centres (as against 60 per cent. in 1978).

Measures designed to encourage this trend are under study. Especially as regards payments of a financial nature, future telecommunication-based payment systems should provide an appropriate solution. Advances in micro-processing, telematics and videotex will also assist the development of automated methods. Finally, public bodies can be expected to make efforts to automate the issue of credit transfers ordered by the Treasury's branch offices and local authorities.

In addition, efforts are being made to bring about a more even distribution over time of orders for bulk operations, such as wage and salary transfers.

(iv) Direct debits and universal payment orders

After getting off to a flying start, the relatively recent (1967) direct debit is now tending to level out. In spite of recording an average growth rate of about 16 per cent. in recent years, direct debits account for only just over 6 per cent. of total deposit money media (which is about the same as in 1978). The number of operations generated by direct debits in 1983 was 294 million, for a value of Fr.fr. 348 billion.*

Direct debits are used by organisations (8,000 in total) which have recurring claims to collect (e.g. electricity, gas, telephone and water bills) and for the payment of monthly income tax, for instance.

In spite of the advantages of this instrument for the banks (the processing cost is relatively low because the instrument is fully auto-

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* Excluding banking universal payment orders.

mated), for the businesses which issue it (ease of accounting) and even for individuals (considerable simplification of the actual act of payment), the large issuers have observed that the percentage of customers opting to pay in this manner has ceased to rise. This is chiefly due to a psychological barrier, with individuals fearing to relinquish their control over their accounts by giving a general authority to debit, and preferring other, more flexible instruments.

The universal payment order (titre universel de paiement) may be viewed as a special form of direct debit; it was introduced in 1972 in order to counter precisely these reservations on the part of individuals, to whom it gives the initiative for each single payment and a choice between debiting a postal or bank account using the same order form.

The postal method generates more operations (almost 60 million in 1983) than the banking method, which is used essentially by insurance companies (4.4 million debits during the same period); overall, the rôle played by this instrument is still marginal.

Currently, preferred policy is aimed at widening the area of application of these two instruments, the direct debit and the universal payment order, in view of their advantages for the various parties concerned, by seeking new variants that are likely to win the confidence of individuals.

(c) Payment cards

(i) Payments at a retail outlet

Since 1978 there has been a substantial increase in payments by card; however, as the level of use at that time was very low, transactions of this type still occupy only a relatively unimportant position in the French payment system.

Over the past few years cards have spread very rapidly among the public. The number of individuals holding cards in fact doubled between 1980 and 1983 from 7 to 14 million (approximate figures).

However, these figures include cards that can only be used to withdraw cash; in fact, although the number of individuals actually using payment cards has risen sharply (e.g. by 36 per cent. between 1982 and 1983) it probably did not exceed 3 million in 1983 (the number of payment card holders was probably of the order of 4.2 million, i.e. about 13 per cent. of chequing-account holders).

The number of transactions effected by card has also increased very rapidly but remains low overall in comparison with transactions by means of other payment instruments. Even in the small number of sectors in which it is concentrated, card use remains at a low level; as an example, the highest percentages do not exceed 6 per cent. in the large stores, 4 per cent. at petrol stations, 2 per cent. in the clothing trade and 1 per cent. in the hotel business (in terms of numbers of transactions). The average value of payments by card is estimated at just under Fr.fr. 300.

According to the type of issuing institution, cards fall into three main categories:

- international travel and entertainment cards issued by institutions which, theoretically speaking, have the status of banks but do not manage deposits; involving a limited number of holders (less than 500,000) and retailers at the top end of the market, they are elitist in character (American Express, Diners Club);
- credit cards that act as guarantee and payment cards (and also provide access to a continuously available credit line) and are issued directly by traders, with the assistance of specialised financial institutions, in order to obtain customer loyalty;

- bank payment cards which are both travel and entertainment cards and guaranteed payment media linked directly to chequing accounts.

Details will only be given here of the third type of card, by which the bulk of card payments are made (102 million transactions in 1983).

At present, two major bank card networks, which together have a total of 10 million holders, are represented in France: Eurocard, affiliated to MasterCard, and Carte Bleue, affiliated to VISA. On 31st July 1984 they signed an agreement which will allow the introduction of a card that can eventually be used at all the cash dispensers and POS terminals of the member institutions grouped together within a decentralised structure.

Payment for transactions in the retail trade is still effected in most cases by using the data embossed on the card, which are reproduced directly onto a paper-based medium for transmission to a computerised processing centre.

(ii) Payment at a POS terminal

Developments currently under way seek gradually to replace this procedure by POS terminals, set up either by a bank - such as the Banque Régionale de l'Ain which has installed 160 on-line terminals since 1979 - or by the existing networks (Carte Bleue and Eurocard, which had 4,300 and 4,500 terminals respectively at end-1983).

Alongside these schemes, and with the very aim of obviating an uncontrolled mushrooming of POS schemes - the initiative could also come from traders - the banking industry, under the auspices of the Working Party on Means of Payment, has set up a number of full-scale trials of the various payment scenarios:

- Aix-en-Provence, magnetic-stripe cards (60,000 holders) used in off-line terminals;

- Saint-Etienne, magnetic-stripe cards (110,000 holders) used in terminals linked to the bank or to a processing centre,

- Blois, Caen and Lyons, memory cards (50,000 holders) with data transmission in batches.

The trials, which were launched at intervals between July 1982 and February 1983, involve virtually all the banking institutions together with commercial firms of all levels (independent, large retailers, etc.) in most sectors of business. They form an interesting preview of what the general use of electronic payment at the point of sale could be like.

Work designed to draw conclusions from these trials is under way.

(d) Payments in a telematics context

The first "telepayment" implementations took place in connection with the "Télétel 3V" videotex trial, which was conducted in a number of communes in the Paris region. In 1982 300 households were provided with terminals incorporating a card reader and with memory cards whereby payment could be made from the home for various services (railway seat reservations, mail-order purchases, etc.).

Although the trial has finished, the system - admittedly restricted to a few companies and a limited number of banks - has continued.

Along similar lines, a trial linking telepayment from the home and electronic payment at the point of sale has been set up in the town of Blois.

In addition, banks are introducing home banking services whereby transfers can be made between different accounts opened in the same customer's name at one particular bank.

Similar ventures are also emerging in bank/business relations.

Although these schemes are obviously relevant to the future of means of payment, for the time being they play an absolutely marginal rôle within the system as a whole.

The current line of approach is thus calculated to foster the replacement of the cheque by less costly instruments that are more suited to automated processing in those sectors of use where this is possible. However, this task is bound to be difficult and long-term, since it will inevitably entail an overall reform, given that it calls into question such aspects as the present structure of pricing for banking services.

2. Exchange circuits in the banking system

(a) Intrabank or group networks

Most of the large and medium-sized institutions have set up telecommunication networks, which, in the case of groups or groupings, often have two levels: one local and intrabank, the other national linking the various institutions which go to make up the group or grouping.

Automated exchanges effected among institutions belonging to the same group involve a not inconsiderable number of instruments; up to now these have not been included in the official statistics. As an indication, it is estimated that about 20 per cent. of automated credit transfers and

withdrawals from cash dispensers are exchanged between institutions belonging to the same group.

These telecommunication networks also handle cheque records drawn on their branches at their data-processing centre and, at least as far as the larger institutions or groups are concerned, practise internal cheque truncation.

(b) Interbank exchanges

The general organisation of funds transfers (see diagram at Annex I) is based on two types of circuits: on the one hand, traditional circuits in which paper-based media are exchanged and, on the other, automated circuits using magnetic media, a category which should be expanded to include the SAGITTAIRE* telecommunication-based system (a breakdown of interbank exchanges according to the main circuits appears as Annex II). Almost 81 per cent. of instruments in terms of number and 94 per cent. in terms of value are handled by traditional circuits, as against 19 and 6 per cent. respectively by automated circuits.

(i) Traditional interbank exchanges

These account in total for nearly 3.2 billion operations for a value of Fr.fr. 28,500 billion and involve almost exclusively three types of instruments, the cheque, the credit transfer and the traditional commercial bill, for which the collection rules and procedures still differ, although they are tending to be simplified.

Cheques

As far as cheques are concerned, the "official" exchange procedure has been centred since 1980 on the 104 principal clearing centres and their catchment areas, which generally correspond to the respective "département". Thus, any cheque may be presented to the clearing centre in the capital of the département in which the drawee branch is located.

In parallel, exchanges also take place via mechanisms which enable institutions to exchange "outside-area" cheques:

- either in Paris, for the members of the "Club of Nine",
- or in the provinces under bilateral agreements concluded for a limited number of banking centres.

The banks sometimes make use of an intermediary: under certain conditions and with certain limitations the Bank of France will undertake to carry out collection, for instance, on their behalf.

Finally, exchanges take place between institutions belonging to a single group.

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* The automated system for the integral handling of transactions by telecommunication means and the settlement of "foreign" operations.

Most of the cheques exchanged now pass through the "official" circuits, and this proportion is destined to rise in the coming months with the optional development of the exchange procedure for "outside-area" cheques which, by putting the principal clearing centres on an equal footing from the territorial point of view, will have the effect, for members who wish to take advantage of this, of reducing bilateral exchanges. Following a running-in period, which started on 15th February 1984, this reform will be fully effective in June 1985.

This optional scenario necessitated the introduction of a national collection service to receive items from institutions not represented at all banking centres. The Bank of France provides this service.

Commercial bills and credit transfers

The exchange procedures for commercial bills and credit transfers are complex and different from one another. The circuits employed are many and various and use not only the "official" clearing centres, but also "private" clearing houses and intermediaries.

Following the reform of the official rules on exchanges, which came into effect in June 1984, it is possible to present both types of instrument in the principal clearing centres in the appropriate catchment area according to rules similar to those applying to cheques.

Exchanges carried out pursuant to bilateral or multilateral agreements existing in parallel with the "official" procedure, and the use of intermediaries, are destined to become less and less important.

(ii) Automated interbank exchanges

This type of exchange is "officially" organised on the basis of the computer clearing centres, which at the end of 1983 were operating in five banking centres (Paris, Lyons, Strasbourg, Rennes and Nantes) and processing transactions (721 million, accounting for Fr.fr. 1,867 billion) involving automated instruments. New centres opened in Lille, Marseilles and Bordeaux in 1984.

In addition, other exchanges are effected via the regional centres for the exchange of cheque records, which are situated in three localities (Rennes, Strasbourg and Metz). The participants in these centres comprise, along with the Bank of France, institutions with a regional or local structure; participants exchange data relating to cheques on magnetic media, the cheque forms being retained by the presenting bank.

The interbank settlements arising from payments by card concern "Carte Bleue" transactions and transactions from the trials mentioned earlier; virtually all of these are dealt with at a processing centre, which transmits the relevant accounting data on magnetic media directly to the banks heading the various payment card groupings.

Finally, bilateral exchanges, which are carried out in accordance with the rules governing the computer clearing centres, are marginal in nature.

(iii) SAGITTAIRE

SAGITTAIRE is a national interbank system for settlements in francs which started up on 16th October 1984 to enable operations connected with international transfers to be completed.

The SAGITTAIRE service, which is implemented and managed by the Bank of France, uses a telecommunication network implemented and managed by the Postal Administration, the Bank Message Switching Centre (CCMB), whose characteristics are comparable in all respects to those of S.W.I.F.T.

Payments are carried out by SAGITTAIRE in the form of messages which correspond to S.W.I.F.T. standards and, in addition, observe specific standards aimed at allowing fully automated processing by the managing institution and facilitating automated processing by the recipient members.

Payments are handled in various different times; members receive information in real time, and the accounting entry itself is made on the value date. This date, which appears on debit orders and credit notifications, may be D, D + 1 or D + 2.

Operations are considered to be countermandable.

In order to guarantee continuity of exchanges, S.W.I.F.T. may be used as a back-up network in the event of failure of the CCMB or of its links to the managing institution or the members.

IV. GENERAL REMARKS

The research currently being carried out by the banking industry with respect to payment systems is chiefly concerned to exploit recent or current technological progress with a view to improving the quality of banking services at the smallest cost to the community. Both the future organisation of the interbank exchange circuits and the future of payment instruments themselves are coming under scrutiny.

1. The future organisation of exchange circuits

As part of the forecasting studies carried out by the de la Genière Group, the broad lines of a possible payment system for the end of the decade were agreed in May 1983.

Looking forward to 1990, the key element of the system, which would retain the present procedures for the exchange of instruments on paper-based and magnetic media, would be a nationwide automated funds transfer system.

On the basis of a plan drawn up by the Bank of France, the de la Genière Group approved the introduction of such a system, to be known as the Interbank Teleclearing System (Système Interbancaire de Télécompensation - SIT).

The work on defining the operating rules and on drafting the specifications is currently being carried out by a consortium consisting of the main banking and quasi-banking institutions, which was set up in June 1983.

The Interbank Teleclearing System is designed to fulfil the following main objectives:

- to cut the time needed for the routing and processing of interbank operations;
- to make possible and facilitate "continuous" exchanges, a procedure that can be adapted to the real-time applications which the banks will be developing in a few years;
- to reduce the cost of interbank exchanges.

SIT is intended to permit the interbank exchange of all types of operation in the form of computerised records, i.e. operations currently exchanged at the computer clearing centres, cheque records and payments made by means of bank cards. It is designed and proportioned to route bulk operations (1 to 2 billion operations annually at its "cruising speed").

Its operation will call for an accounting centre, where transactions can be recorded before being entered in the books of the Bank of France.

The specific problem of interbank financial transfers for cash settlements, which require particular precautions even stricter than those planned for SIT operations, is also under study.

2. The future of means of payment

The de la Genière Group's discussions on the future of means of payment chiefly involve seeking courses of action with a view to developing the use of automated instruments; they were started with the aim of reconciling the requirements of the smooth functioning of SIT when it becomes operational and those of the short-term modernisation of the system.

The work is two-pronged and concerns:

- existing automated instruments,
- the trials with electronic payment at the point of sale.

(a) Existing automated instruments

In its discussions on the future of means of payment the de la Genière Group has defined a number of approaches that may stimulate the development of automated instruments, whose market share is still insignificant compared with that of the cheque.

These approaches are all designed to reduce the objections that users have to these instruments at present; their implementation will necessitate complementary technical studies.

However, these "technical" moves cannot bear fruit in the absence of coherent pricing for banking services, which is at the heart of the present problems.

Indeed, the apparent absence of charges for traditional instruments, such as cheques, as far as issuers are concerned - coupled with the charges applied to new instruments - makes it very difficult to introduce measures which offer an incentive to change. Coherent and harmonised pricing is essential for means of payment generally, and naturally has a bearing on the development of electronic payment at the point of sale.

(b) Electronic payment at the point of sale

The trials (see III(c)) and the discussions to which they gave rise between the various participants (banks, traders, public authorities and consumers), meeting at the request of the de la Genière Group, enabled important conclusions to be drawn:

- the technical feasibility of the various systems has been proven, and some findings have been made in this regard, e.g. the superiority of the memory card and the advantages of the procedure of automating on-line transactions which was adopted in Saint-Etienne;

- the reservations observed in customers' behaviour with regard to the use of cards are not a structural obstacle to the generalisation of this type of payment, in that they are mainly seen in new card holders;

- a consensus favourable to the introduction of a new payment instrument now seems to have emerged.

This instrument will be a new deposit money medium and, as such, will necessarily have to be universal - i.e. available to all account-holders, open to all types of businesses and usable in standardised hardware - secure and economical.

Its implementation calls for a number of fundamental choices to be made:

- on a technical level, it now seems to be accepted that none of the scenarios tested will come into general use in their present state, and that the architecture likely to find favour will be on the lines of a flexible combination of the Saint-Etienne systems (on-line ATMs) and the possibilities afforded by the use of the memory card;

- on an economic level, there will have to be wide-ranging consultations on cost-sharing at national level between the various participants;

- on the legal level, there are significant problems as regards both the analysis of payments by card, the legal nature of the instrument, proof of payment and, in particular, security measures.

The introduction of this new instrument is of fundamental concern to:

- the banking industry, which is faced directly with the issue of the future development of its activities;

- the Bank of France, which is responsible for overseeing the national payment system and issuing the currency;

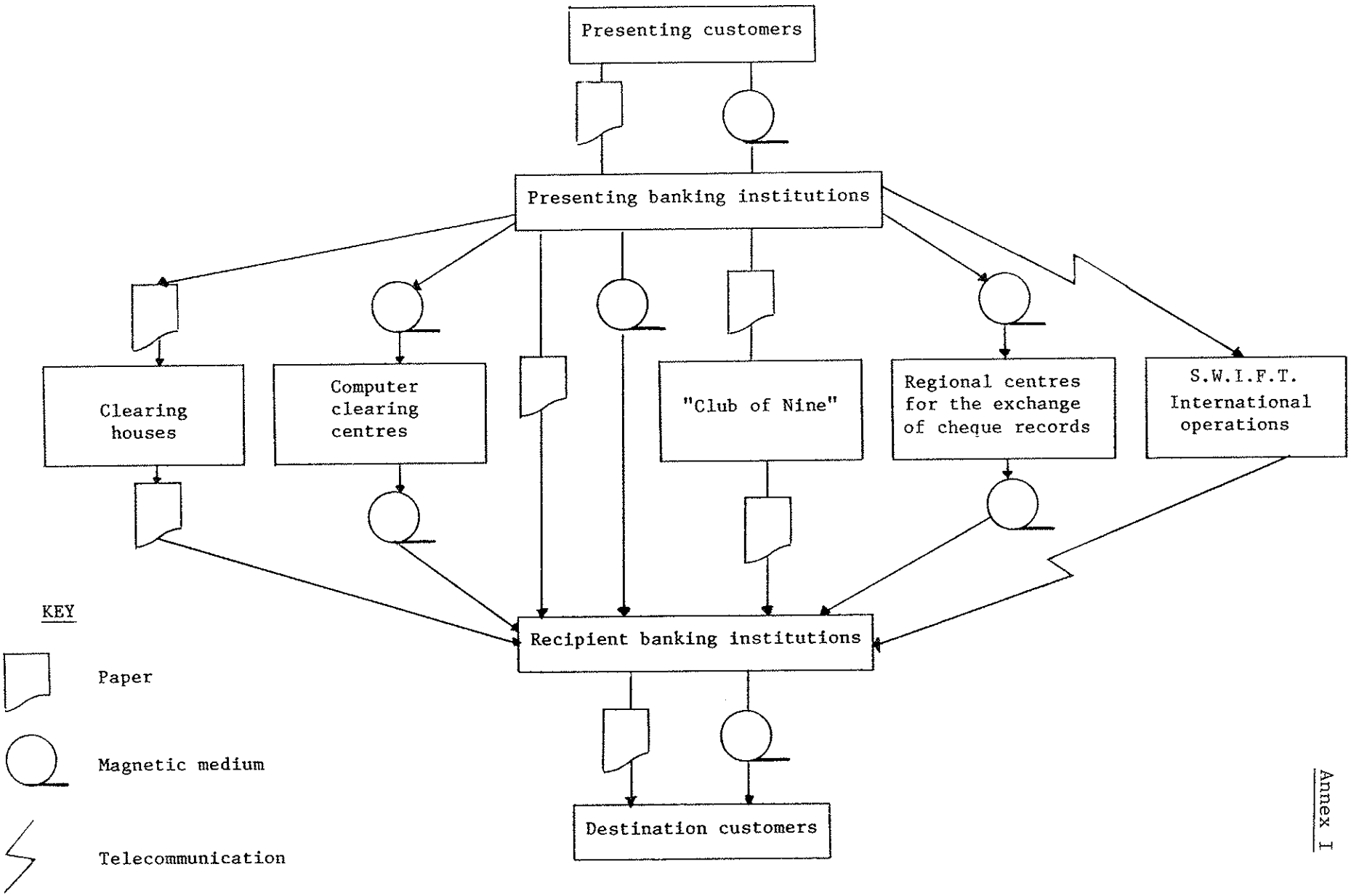
- the public authorities, which are monitoring the issue very closely in view of the national industrial and economic stakes.

The Council of Ministers decided early in the second half of 1984 that the use of the memory card should be made widespread.

All the studies currently being carried out by the banking industry clearly emphasise the interbank nature of the research and of the implementation of new technology as well as the co-operation which is going on between the various institutions in view of the amount of investment involved. This phenomenon should not be construed as a symptom of slackening competition; on the contrary, competition is still active, albeit tending to assume new forms.

THE GENERAL ORGANISATION OF FUNDS TRANSFERS

Present circuits



Annex II

BREAKDOWN OF EXCHANGES ACCORDING TO CIRCUITS IN 1983

(in percentages)

	By number of transactions	By value
Clearing houses	75.4	91.0
Paris	16.0	74.4
Provinces	59.4	16.6
Computer clearing centre	18.2	6.1
"Centralised" cheque exchanges (mainly "Club of Nine")	3.9	1.0
Regional centres for the exchange of cheque records	1.2	0.1
Bank of France*	1.3	1.8
TOTAL	100	100

* Treasury bills and interbank credit transfers presented outside the clearing system, items collected from correspondents.

4. GERMANY

I. INTRODUCTION

A feature of the economy of the Federal Republic of Germany - and one which is shared by the other western industrialised countries - is that enterprises and households hold the majority of their payment media in the form of sight deposits with credit institutions, i.e. in the form of deposit money. At the end of 1983 domestic non-banks' holdings of deposit money were just over twice the amount of bank-notes and coins in circulation in the non-bank sector (DM 202 billion/$74 billion to DM 96 billion/$35 billion).

Non-banks' drawings on their deposit money chiefly take the form of cashless transactions, whereas bank-notes and coins are used for cash payments. If the two forms of payment are considered in terms of the number and value of transactions it appears that nowadays almost all large transactions are effected on a cashless basis (1983: approximately 5.3 billion cashless payments totalling DM 14,000 billion/$5,480 billion) whereas small transactions are effected principally in cash (1983: an estimated 35 billion cash payments totalling less than DM 1,000 billion/$390 billion, approximately half of which were accounted for by the retail trade).

The amount and value of cash and cashless transactions have increased steadily over the last few years (see Annex I). Since 1978 cash in circulation has increased by an annual average of 7 per cent. (number of bank-notes and coins) or 6 per cent. (in terms of its total amount); cashless transactions have risen at an annual rate of 4 per cent. (in terms of their number) or 8 per cent. (total value). This has prompted the banking industry further to rationalise expensive payment processing and to look for cheaper payment media and techniques. To this end, machines for processing and dispensing cash have been deployed on an increasing scale from 1980 onwards. Efforts have been stepped up to encourage the change-over from paper to electronic data media (magnetic tape, diskettes, cassettes) for cashless payments, which has prepared the ground for private and corporate customers to send their payment orders in electronic form using television sets or terminals. At the end of 1983 matters were so far advanced that one out of every two cashless payments was processed electronically and one out of every fifty cash withdrawals was made from a cash dispenser.

II. INSTITUTIONAL FRAMEWORK

1. Institutions handling payments

The provision of the economy and population with cash and the handling of cashless payments are carried out in Germany by the credit institutions, the Post Office and the central bank.

In 1983 a total of almost 54 million giro accounts were held with banks and post offices and used to execute some 6.5 billion cash and cashless transactions. 92 per cent. of giro accounts were held with banks, the remaining 8 per cent. being postal accounts (for details see Annex II).

95 per cent. of the 4,848 credit institutions in Germany are actively involved in handling payments; they belong, with a few exceptions, to one of the following three banking categories:

- private commercial banks; these total 243, the three largest of which each has its own internal giro network;

- public savings banks, whose operations are restricted to a particular locality or region; together with their twelve central institutions the 592 savings banks form a uniform giro organisation, within which transactions between savings banks are largely processed;

- co-operative banks; their operations are also restricted to a particular locality or region; in like manner to the savings banks, the 3,754 co-operative banks, together with their nine central institutions, form a giro organisation.

2. Legal basis

Under the Banking Law the execution of payments (giro business) for third parties requires a licence from the Federal Banking Supervisory Office. The central bank may carry out payment transactions in accordance with the Bundesbank Law, and the Post Office in accordance with the Postal Administration Law and the Post Office Law.

There are no specific laws governing the organisational and technical aspects of handling payments; these aspects are covered by the general provisions of the Civil Code, in particular those concerning the law of agency, and by the Cheques Law, insofar as it relates to the collection of cheques. In order to be able to cope with bulk payments efficiently, the agencies handling payments have laid down certain rules, as far as the law permits, on the execution of payments, viz.:

- the relationship between the banks and the Post Office in agreements between the central associations of the banking industry, the Federal Ministry of Post and Telecommunications and the central bank;

- the relationship with bank customers in the General Business Conditions of the banks and the central bank, in the User Conditions of the Post Office, in special regulations and notices, and in standardised forms.

Any contractual or recommended uniform payment system arrangement must be reported to the Federal Banking Supervisory Office and the Federal Cartels Office and accompanied by an explanatory statement. These agencies have in each case to make sure that undesirable developments from the banking supervisory point of view and outcomes restricting competition excessively are avoided, and in particular to ensure that the contractual or recommended arrangements do not unfairly disadvantage other participants in the payment system (particularly bank customers). If the contractual agreements and recommendations are not reported, they remain inadmissible or ineffectual.

3. The rôle of the central bank in payment transactions

(a) Cash payments

Under the Bundesbank Law, the Deutsche Bundesbank (central bank) has to regulate the volume of money in circulation, thereby providing the economy with bank-notes and coins in the denominations required. For this purpose, the note-issuing prerogative was conferred on the Deutsche Bundesbank, under which it is responsible for producing, making available and regularly renewing bank-notes, replacing damaged notes, calling in notes and checking the circulation of payment media for counterfeit money. However, the production of coins (minting prerogative) is the responsibility of the Federal Government (Ministry of Finance); the Bundesbank receives the coins needed for circulation from the Federal Government at their nominal value.

In 1983 the Bundesbank dispensed DM 231 billion/$90 billion to the credit institutions and the Post Office in order to provide the economy with cash, and took back DM 222 billion/$87 billion of this amount. With currency in circulation totalling approximately DM 105 billion/$39 billion (as at end-1983) this means that the money returns to the central bank more than twice a year.

On returning to the central bank the bank-notes are checked, and damaged or dirty notes are rejected and destroyed. Likewise, counterfeit coins and coins called in or no longer fit for circulation are withdrawn. Machines are increasingly being used to check the completeness, genuineness and fitness for circulation of bank-notes and sort them. The bank-notes have accordingly been designed to be machine-compatible.

(b) Cashless payments

The function of the central bank in the field of domestic payments, as prescribed by law, principally consists of ensuring that banking arrangements are made to handle them. The Bundesbank fulfils its statutory function on the one hand by providing the banks and the Post Office with clearing facilities which are neutral as regards their impact on competition (see Section III.2.(c) for details). In this respect, with its 203 branch offices and eleven computer centres it constitutes the link between the giro systems of the banking industry and the Post Office. In addition, it acts as adviser to bodies which organise or automate payments or, in some cases, steers them (see Section II.4). It also exerts a certain influence on the banks' terms for handling payments through its General Business Conditions and by setting fees.

The German credit institutions make extensive use of the central-bank giro system. In 1983 a total of 1,870 million credit transfers, cheques and direct debits were routed through the Bundesbank's payment facilities, representing around one-third of all payment orders received by the banks from customers.

Besides its clearing function for the banking industry, the central bank acts as the fiscal agent of the Federal Government and handles its payments. In 1983 about 80 million credit transfers (mainly salaries,

pensions and social security payments) were executed on behalf of the Federal Government and some 20 million cheques and 17 million direct debits collected.

4. National payment bodies

At the beginning of 1982 a national body called the Payment System Information Group was set up on the initiative of the Bundesbank to deal with developments in the field of payments and communications technology. The Group consists of members from the central associations of the banking industry, the Federal Ministry of Post and Telecommunications and the Bundesbank, which chairs the Group.

The function of this body is to discuss those fundamental and current issues concerning cash and cashless payments which are of general significance. The purpose is to enable the members of the committee to discuss, in the interest of the banks and their customers, plans and intentions for further developments in national and international payment systems (e.g. payment instruments, handling procedures, routings).

The Group can make suggestions relating to the development of the payment system to the management working party of the banks, the Post Office and the central bank, which the working party can follow up individually. This working party has been co-ordinating the organisational and technical procedures of the national payment system for the last twenty-five years in order to ensure an economical, speedy and secure interbank clearing system. The Bundesbank chairs the working party's two sub-committees on payment-system automation and security.

Besides the above national payment bodies a private-sector institution has existed since 1982 in the banking industry called the Common Payment Systems Company, which concerns itself in particular with the further development of the Eurocard and eurocheque card systems (e.g. for point-of-sale payments in the retail trade; see Section III.1(c)(i)).

III. PAYMENT SYSTEM

1. Payment media available to bank customers

(a) Cash payments

In Germany households make most of their payments for their daily needs in cash (some 95 per cent. of payments made).

At the end of 1983 total cash in circulation - including cash on hand at banks - amounted to DM 105 billion/$39 billion, with bank-notes accounting for DM 96 billion/$35 billion (91 per cent.) and federal coins for DM 9 billion/$3.3 billion (9 per cent.). Cash on hand at banks totalled DM 8 billion/$2.9 billion.

In Germany cash payments are increasingly being automated. Vending machines for the sale of goods (e.g. cigarettes, travel requirements)

outside shop opening hours or services (e.g. tickets, parking) have been in operation for years. In 1979 the banking associations and the Post Office reached agreement on a uniform system of automated cash dispensers for the whole of the Federal Republic with a view to improving the supply of customer services and decreasing the cost of the approximately 1.2 billion cash withdrawals made every year. Now (end-1983) bank customers in 400 large towns and cities can obtain cash from approximately 900 cash dispensers by using a eurocheque card with a magnetic stripe and a personal identification number (PIN). By the end of 1984 probably 1,500 such installations should be in service. To minimise loss in case of misuse, eurocheque card holders may draw no more than DM 300 ($110) per day from cash dispensers installed at banks other than their own. In addition, blocked eurocheque cards are registered at an information centre in Frankfurt and the daily position is transmitted to the banks by telecommunication means.

(b) Cashless payments

In Germany cashless payments are effected by means of credit transfers (1983: 57 per cent. of payments), cheques (11 per cent.) and direct debits (32 per cent.). Other payment media such as money orders and receipts play a comparatively minor rôle (less than 1 per cent.).

(i) Credit transfers predominate in Germany, though their percentage of total payments has been falling for several years (in the savings bank sector they accounted for 72 per cent. of cashless payments on behalf of customers in 1966, 67 per cent. in 1972 and 55 per cent. in 1983; the share accounted for by credit transfers in payments effected by the Post Office fell over the same period from almost 100 to 71 per cent.). This development is attributable not so much to the banks, which in principle prefer credit transfers as a means of maintaining liquidity, as to the economy's need to use other more appropriate payment methods for specific purposes.

A credit transfer is an order given by a customer to his bank to arrange for the sum of money indicated therein to be debited from his giro account and credited to the payee's bank account. Customers can also issue standing orders to their banks for regular payments to specific payees (e.g. rent to the landlord). The bank then undertakes to execute the credit transfer on the date specified (e.g. at the end of the month). Very often, the payee sends the payer (e.g. insurance companies send the policy-holder), together with the request for payment (such as the premium invoice), pre-prepared credit transfer forms stating the name of the payee bank, which the payer completes simply by inserting details of his bank account and adding his signature. Should the payer have no giro account, he can pay cash at a bank or post office for transfer to the payee.

Payers with EDP equipment may in principle only use magnetic tapes to submit regular bulk payments (e.g. wages, salaries, state social insurance payments) to the banks for execution. Regular credit transfers in smaller quantities are also accepted on diskette or cassette; the banks then transcribe the data onto magnetic tape for use in the interbank magnetic tape clearing procedure. In 1983 about 1.2 billion credit transfers were made using the magnetic tape procedure, i.e. two-fifths of all credit transfers. However, the remainder (i.e. customers' irregular individual orders) are still paper-based. The banks have been trying for years to

switch these individual orders (approx. 1.8 billion) to the electronic payment system as soon as possible. The first step is an agreement between the banking associations and the Post Office on the transformation of paper-based credit transfer orders into data records and their transmission within the electronic payment system (see Sections III.2.(b) and IV). In addition, see the description of the execution of payments by means of payment orders made via ATMs or videotex (Sections III.1.(c) and (d)).

(ii) The cheque has never been as popular in Germany as in most other countries in the western world. One reason for this is the preference given to credit transfers by the savings bank organisation and the Post Office in particular; in addition, the central bank did not introduce a multilateral collection and clearing system for cheques until 1950. Since then, although cheque payments have increased in number, their share in cashless payments has declined steadily (in the savings bank sector, for instance, from 21% of cashless withdrawals by customers in 1966 to 11% in 1983). Two contrary trends were apparent here: as automation progressed, business enterprises switched on a large scale from cheques to credit transfers and on an even larger scale to direct debits, because these two types of payment orders could be issued direct from automated data bases on magnetic tapes and submitted in this form to the banks for execution. Moreover, the interest that accrues in the interval before cheques are debited was in part offset by the rise in postage costs. On the other hand, individuals' use of cheques as a payment medium for consumer goods and services has been increasing since the banks started to guarantee the payment of cheques (eurocheques) backed by a cheque card for up to DM 300/$110 (in 1983 there were some 17 million cheque cards in circulation).

Under German law cheques may not be certified in such a way that the drawee bank is obliged to pay. The purpose of this prohibition is to prevent cheques acquiring a function similar to that of bank-notes. An exception is made for the central bank, which may confirm the payment of cheques drawn on it when cover is available.

(iii) The direct debit, which was introduced by the banking associations in 1963, has greatly simplified the collection of regular payments (subscriptions, rents, fees, taxes, etc.). Nowadays almost one cashless payment in three in Germany is a direct debit.

The direct debit is made out by the creditor (payee) and presented to his bank for the collection of the equivalent amount from the debtor's (payer's) bank. In contrast to the credit transfer, the payment operation is initiated by the payee, who is thus himself responsible for ensuring that his claim on the payer is settled on time. However, this presupposes the payer either authorising the payee to collect the amount (pre-authorised debit procedure) or authorising his bank - following agreement with the payee - to pay direct debits from that payee by drawing on his account (debit procedure).

Customers with EDP equipment can in principle only use magnetic tapes to submit direct debits to the banks and the Post Office for collection. As with credit transfers, small quantities of direct debits are also accepted on diskette or cassette and the data transcribed onto magnetic tape. In 1983 about 1.4 billion direct debits were made using the magnetic tape procedure, i.e. about 85 per cent. of all direct debits.

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(c) Payments by card (credit and debit cards)

(i) In the retail trade

Credit cards do not play a significant rôle in Germany, though their use is increasing. There are currently some 800,000 credit cards in circulation, which are accepted by about 30,000 German enterprises (retailers, hotels, restaurants and airlines). Sales to credit card holders amounted in 1983 to about DM 2 billion/$0.7 billion (less than 0.5 per cent. of turnover in the retail trade). As a rule, credit card transactions do not generate any direct payments via the banking system; rather, the credit card transactions reported by retailers are collected at regular intervals by the credit card companies, then the total amount is credited to the retailer via the payment system network by means of a credit transfer and debited from card holders by means of direct debits.

Debit cards by which the card holder's bank account is debited immediately do not yet exist in Germany. However, in 1981 the banking associations and the Post Office concluded an agreement on cashless payments at POS terminals in the retail and services sectors by means of eurocheque cards with magnetic stripes. This is intended to result in the development of a uniform POS payment system in Germany through which customers of the retail trade will be able to have payments made by a eurocheque card debited from their bank accounts. Since mid-1983 a POS pilot scheme has been running in Munich with the participation of three banks, two department stores and five filling stations. Payment of the bill is effected at the POS retail terminal by inserting a eurocheque card (with the payment limit stored on its magnetic stripe) and keying in the personal identification number (PIN). The amount is subtracted from the stored payment limit and then recorded on a diskette as a direct debit for subsequent clearing. The retailer gives the diskette containing the direct debits to his bank, which then collects the direct debits from the drawee banks through the magnetic tape clearing procedure. In contrast to credit card transactions, which are cleared at regular intervals, debit card transactions generate considerably more payment operations in the banking system as a result of the immediate debiting of accounts.

(ii) Via ATMs

Alongside straightforward cash dispensers, the banks also use - albeit as yet only to a small extent - multi-function, self-service automats. These machines are designed to enable customers to carry out, as far as possible, all their routine cash and cashless payment transactions.

At present, these machines are still used mostly to dispense cash (50 to 60 per cent.), to display account balances on inquiry (10 to 20 per cent.) and to print out statements of account (30 to 40 per cent.). Other self-service functions, particularly in the sphere of cashless payments, are as yet used only to a small extent. In the case of one savings bank which has been operating five multi-function, self-service automats for a long time, in addition to its manned counter service, only 1 per cent. of transactions carried out via the automats are orders for cashless payments (0.3 per cent. credit transfers, 0.7 per cent. cheques paid in). One Hamburg bank (Verbraucherbank) constitutes an exception in that payment orders may only be made via ATMs in its branches.

On the one hand, the further distribution of machine-compatible eurocheque cards with magnetic stripes can be expected to increase the use of multi-function automats for cashless payments; on the other hand, the spread of home banking via videotex may possibly make the use of ATMs for credit transfer orders superfluous (see next section).

(d) Payments via videotex or other telecommunication facilities (home banking, cash management systems)

The Post Office's videotex service has enabled the banks to provide home banking services in two test areas (Berlin and Dusseldorf) since 1980 and in the whole of the Federal Republic since 1984. By using his television set as a terminal, the bank customer can communicate in conversational mode with his bank's computer centre via the telephone network and use various bank services.

At end-1983 more than 10,000 bank customers had giro accounts (so-called Telekontos) which they could access from their homes by means of videotex. This figure is expected to grow quickly once the videotex service has been introduced nationwide, so that home banking will soon be of greater significance in Germany.

No new payment instrument is introduced by home banking; it simply entails changing from paper-based to electronic orders. Yet the resultant gain in terms of rationalisation is great, because it means that customer orders can be executed at no great cost using the electronic interbank payment system.

With a view to ensuring the easy and secure entry and execution of payment orders via television sets, the banking industry and the Post Office have agreed on uniform organisational and legal arrangements:

- the "Terms for the use of videotex" lay down the rights and obligations of any bank customer wishing to participate in home banking. In particular, he must agree that all transactions made on his account via videotex using the personal identification number (PIN) chosen by him and the allocated transaction number (TAN) will be charged to his account;

- the "Security arrangements" are intended to ensure that payment orders and other transactions can only be carried out via videotex if the PIN and a TAN are keyed in along with the account number. In order to avoid misuse, access to the account is automatically blocked if the PIN is wrongly keyed in three times in a row, and the supply of new TANs is also blocked the third time the TAN is incorrectly entered. In order to decrease the risks, a bank may make individual videotex orders by its customers subject to an upper limit;

- the "Guidelines for standard videotex masks" contain compulsory models for the VDU masks into which the customer has to insert the details of his order using the keypad of his television set.

The banks' videotex services are aimed at both the private and the business customer. In addition, since early 1983 corporate customers with

international bank connections have been offered a telebanking system using on-line terminals as part of the "Cash Management System".

(e) Other payment instruments

The banking industry and the Post Office have developed payment instruments of their own for specific purposes; of these, the crossed money order and the receipt are of some significance.

The Post Office crossed money order is a paper instrument akin to a cheque and intended for the use of firms and public authorities (as payers) which have large numbers of payments to make to customers who have no giro account or whose bank is not known (e.g. repayment of insurance premiums and tax rebates). Unlike in the case of the cheque, the payer does not send the payment orders that he has made out directly to the payee, but submits the relevant data to his post office on magnetic tape. The Post Office debits the payer's account with the total value of the money orders and handling charges, prints the money orders and adds an authentication stamp before sending them to the respective payees. Each payee can cash his order at any post office or present it to his bank for collection in the same way as a cheque. Crossed money orders have not yet gained a significant "market share": in 1983 8.3 million money orders amounting to about DM 1.7 billion/$0.6 billion were issued (which compares with about 600 million cheques totalling approximately DM 3,000 billion/$1,100 billion).

Receipts can be used in the banking industry to collect amounts that have been paid out in cash. For instance, if Bank A pays cash to a person on behalf of Bank B on presentation of a savings book issued by Bank B, the value of the payment can be reclaimed from Bank B on presentation of the voucher receipted by the customer. However, since, on legal grounds, receipts cannot be collected in the central-bank clearing network, direct debits have increasingly taken over from receipts in recent years. In 1983 the total number of collected receipts probably came to about 1 million.

In principle, the aim of the banking industry, the Post Office and the central bank is for all payments to be carried out by means of the three standardised payment media, viz. credit transfers, cheques and direct debits.

2. Handling of payments (giro networks) within the banking system

(a) Execution of payment orders by the banks and the Post Office

Customers' payment orders are sorted by the banks according to whether their destination is an account held at:

- the bank itself (internal transfer),
- a local bank (local payment), or
- a bank in another city (intercity payment).

In the case of internal transfers the relevant amount is simply transferred from the payer's account (that of the originator of the credit transfer or issuer of the cheque) to the payee's account at the same or

another branch of the same bank. The whole process is generally carried out within twenty-four hours, and does not affect the bank's liquidity. The larger the institution and the greater its regional coverage, the higher the proportion of customer orders that is accounted for by internal transfers (in the case of the savings banks up to 50 per cent., individual post offices about 60 per cent. and the Post Office as a whole about 90 per cent.).

The transmission of payment orders to other banks depends on the routes and clearing facilities available in each case, the type of order determining which is chosen as most appropriate.

As regards local transactions, viz. the forwarding of credit transfers, cheques and direct debits to other banks in the same town or city (about 10 to 30 per cent. of customer orders), there are three possibilities:

- direct interbank exchange of the payment instrument by means of

  (i) settlement in the accounts that the banks maintain in each other's books (individual bank/bank transactions)

  (ii) settlement in accounts held at central clearing institutions (uniformly regulated bank/bank transactions)

- participation of the central bank where it has a branch in the same town or city or nearby (see Section III.2.(c)).

Intercity payments (about 40 per cent. of payment orders) can be introduced by the first institution to receive the order into

- the institution's or organisation's own giro network (see Section III.2.(b)), or

- the central-bank giro network (see Section III.2.(c)).

(b) Giro networks internal to institutions or organisations

In Germany the savings banks' and credit co-operatives' organisations each have their own giro network with which to carry out intercity payments to virtually any town or city. In addition, the large banks and the Post Office can carry out cashless payments between large towns and cities via their internal networks. All the giro networks make the utmost use of electronic data processing. A total of some ninety computer centres (including the Bundesbank's) are used to process payments (and effect other tasks).

The computer centres process payment vouchers using optical character recognition and payments on magnetic tape (or on diskette or cassette) in accordance with the conventions on the exchange of paperless data media before forwarding the items - if necessary via other computer centres - to the bank of the recipient of the credit transfer or the issuer of the cheque/originator of the direct debit. If the recipient institution is a member of another organisation, the payment must be transmitted at some stage in the payment process - at least by the time it reaches the town or

city in which the recipient institution is located - into a clearing system to which the other institution belongs.

The computer centres of the organisations' own giro networks are linked together by telecommunication systems which can be used for the same-day transmission of urgent payments (e.g. salary transfers sent in by the payer on magnetic tape). In addition, telecommunication links internal to organisations are now in existence or being set up between computer centres and banks in their respective areas, so that paper-based credit transfer orders presented by customers - exceeding a minimum amount (e.g. DM 1,000/ $370) or in general - can also be transmitted from the first bank to receive the order to the recipient's bank by telecommunication means, as long as both banks belong to the same organisation. For this purpose the first bank to receive the order converts the data from the paper-based credit transfer order into electronic data records using video terminals or character reading devices.

(c) Central-bank clearing facilities

The Bundesbank's clearing facilities are available to all banks involved in payments business on the same terms.

The Bundesbank offers the following clearing procedures for the processing of interbank payments:

(i) Local clearing

The banks in the 203 towns and cities in which the Bundesbank has a branch are able to exchange cheques, direct debits and other claims as well as credit transfers and other credit instruments with one another in the daily clearing procedure. At the close of settlement (between 12.30 and 2.30 p.m.) the Bundesbank branch determines the clearing balance for each bank, and debits or credits its central-bank account with that amount as appropriate. For institutions which do not take part in the settlement process, there is a local transfer procedure involving the transfer of credit balances from one central-bank account to another.

In 1983 the central-bank clearing facility was used for 0.4 billion local payments (0.3 billion credit transfers and 0.1 billion cheques and direct debits).

(ii) Intercity payments

The central-bank giro network can be used to access any bank in the Federal Republic. The intercity payment system can cope with paper-based, paperless (recorded on magnetic tape) and telegraphic payments. The banks use the Bundesbank's simplified cheque and direct-debit collection procedure to collect cheques as well as paper-based and paperless direct debits.

In 1983 the Bundesbank's intercity payment system was used for 1.5 billion payments (0.3 billion credit transfers, 0.4 billion cheques and 0.8 billion direct debits).

As early as 1969 the heavy demands made on the Bundesbank's giro network prompted it to automate the handling of payments. In 1971 its first clearing computer centre came on stream. Now the Bundesbank runs computer centres in each of the eleven federal Länder, where 99 per cent. of intercity payments are processed by machine, i.e. the payment data are automatically recorded, checked, sorted and grouped together according to various criteria for delivery, accounting and statistical purposes. The remaining 1 per cent. of intercity payments consist of large payments which, particularly in view of their urgency, are transmitted via the shortest route, i.e. without going through the computer centres, to the branch at which the payee has his account. A telecommunication network is planned between the Bundesbank branches with a view to speeding up these large payments further.

IV. CURRENT AND FORESEEABLE DEVELOPMENTS

Since the mid-1970s the banking industry and the Bundesbank have been directing their efforts to replacing payment vouchers by electronic data records in order to cut the cost of and time involved in payment processing. So far, the automation process has reached the half-way stage with almost all regular bulk payments (about 50 per cent. of all payments) being carried out on magnetic tape.

The other 50 per cent. of payments are the subject of further rationalisation efforts: on the one hand, the roughly 1.8 billion individual transfers made per annum and, on the other, the approximately 0.6 billion cheques and 0.3 billion direct debits still processed in paper form. In order to transform these payments into electronic procedures the banking industry is pursuing the following three major projects:

1. Extension of electronic transfers: in which either the bank customer himself makes the order in electronic form (via videotex or ATM) or the first bank to receive the order converts the order voucher that the customer has duly filled out into an electronic data record (manually using a VDU or automatically by means of an appropriate voucher reading system).

   The conversion of transfer vouchers into electronic data records by the first bank to receive the order is still in its infancy. In 1983 the share of converted transfers did not even amount to 1 per cent. (about 10 million payments).

2. Introduction of a paperless (electronic) cheque collection procedure: under which cheques of up to DM 1,000/$370 are retained by the first office in the banking system where they can be machine read, and only the machine-read data are transmitted into the clearing networks (on magnetic tape).

   The banking associations, the Post Office and the Bundesbank are currently discussing the actual configuration of a paperless cheque collection procedure, which is expected to be introduced in 1985.

3. Reduction of the volume of cheques and possibly the volume of cash: by which the use of the eurocheque card as a payment (debit) card is encouraged for cashless purchases of goods and services.

In the light of the results of the POS pilot scheme in Munich (see Section III.1.(c)(i)) the banking associations have developed a concept for cashless payments at automated retail terminals (POS terminals) using the eurocheque card with magnetic stripe; trials are to be carried out - with the participation of retail organisations - in 1985 in a number of cities. Eurocheque cards inserted in POS terminals will be checked on-line via an automatic dialling facility at a regional authentication centre of the banking industry to see whether they are blocked and to verify that the customer's credit limit is sufficient to cover the transaction.

Development of cash, sight deposits and cashless payments in Germany

Year	Bank-notes[1]		Coin[1]		Sight deposits of domestic non-banks[1,2] (DM million)	Number of giro accounts[4] (millions)	Cashless payments[3]	
	Number (millions)	Value (DM million)	Number (millions)	Value (DM million)			Number of transactions[4] (millions)	Value (DM million)
1975	912	55,143	16,746	5,406	132,214	43	4,000	7,261
1976	947	59,038	17,918	5,700	129,738	44	4,100	8,023
1977	1,018	65,567	19,237	6,098	143,177	45	4,250	8,897
1978	1,108	74,799	20,779	6,578	166,908	47	4,350	9,503
1979	1,150	79,386	22,381	6,989	171,581	49	4,500	10,352
1980	1,196	83,730	24,074	7,461	174,978	51	4,750	11,685
1981	1,200	83,790	25,590	7,817	172,485	52	5,000	12,766
1982	1,221	88,575	26,859	8,120	186,313	53	5,150	13,074
1983	1,277	96,073	28,431	8,619	202,137	54	5,300	13,852

1 As at the end of the year.
2 Including non-banks' balances at the central bank.
3 Debits to non-banks' giro accounts in the year in question.
4 Partially estimated.

Share of banks, the Post Office and the central bank in the German payment system (end-1983)

Banking category	Number of giro accounts	Value of sight deposits of non-banks	Number and value of non-bank payments executed in 1983[1]	
	(53.9 million)	(DM 202 bn/ $74bn)[2]	(5.3 bn)	(DM 14,000 bn/ $5,480 bn)
Savings banks[3]	44%	38%	42%	26%
Commercial banks[4]	21%	35%	19%	55%
Credit co-operatives[3]	27%	20%	21%	13%
Post Office	8%	6%	16%	4%
Central bank	less than 1%	1%	2%[5]	2%[5]

1 Debits to non-banks' giro accounts.
2 Including non-bank balances at the central bank, totalling DM 2.8 billion/ $1.0 billion.
3 Including central institutions.
4 Including real estate credit institutions, instalment credit institutions and banks with special functions.
5 Excluding central-bank clearing operations.

5. I T A L Y

I. INTRODUCTION

Overall the Italian payment system continues to be characterised by the extensive use of cash, not only to settle small everyday transactions but sometimes also for high-value transactions. The number of bank current accounts (approximately 16 million) and the frequency of use of cheques (on average less than three times a month) are not very high, despite the fact that as a percentage of GNP the stock of deposits is one of the highest in the world. Credit cards and electronic payment systems have a rather limited market share.

The situation varies very much according to geographical area. According to a survey conducted by the Italian Bankers' Association (ABI) on a sample consisting of 1,600 persons of over eighteen years of age belonging to households with an income of over Lit. 5 million, in north-western Italy, 75 per cent. of the population has at least one current account, whereas in the South and in the Islands the percentage falls to 30 per cent.

In recent years the payment system has undergone intense change, with the use of payment media other than cash increasing and with the various institutions involved in the management of payment services embarking on automation. Between 1978 and 1983 the ratio of cash in circulation to GNP fell from 7.9 to 6.4 per cent. and the number of bank current accounts increased by some 5 million. The Interbank Society for Automation (SIA - Società Interbancaria per l'Automazione), which uses electronic systems to transfer funds within the banking system, started operating in this period. The most important developments consist in the creation of a nationwide network of automatic cash dispensers, known as Bancomat, the forthcoming implementation of an interbank network of POS terminals and of a data transmission network covering the entire banking system, and the planned introduction - backed by sixteen major banks - of a national credit card.

Apart from technological innovations, inflation should also be cited as a factor that assisted the recent development of the payment system, since this caused the public to pay more attention to cash management. One result was the tendency for a proportion of notes and coin to be replaced by bank current accounts and hence for greater use to be made of bank payment instruments.

The banks have been stimulated to adopt greater automation internally by increased labour costs - which account for around 75 per cent. of the Italian banking system's aggregate operating costs - and by heightened competition within the banking system.

II. INSTITUTIONAL FRAMEWORK

The institutions authorised to provide payment instruments and services are the Bank of Italy, the Postal Administration and the banking system.

1. The Bank of Italy

Under Law No. 1362 of 25th May 1926, the Bank of Italy is the sole institution authorised to issue bank-notes, which are legal tender for all payments within the country.

The central bank has been involved in recent years in increased activity in connection with checking and reissuing used notes. In order to tackle this workload efficiently, the Bank recently installed, in one branch only for the present, a machine for sorting Lit. 10,000, 50,000 and 100,000 notes. In the course of 1984 a further twenty of these machines were installed in branches which receive substantial amounts of notes.

In addition to bank-notes the Bank of Italy issues two other payment media - the cashier's cheque (vaglia cambiario), used mainly for payments on behalf of the Treasury, and the bank cheque (assegno bancario).

The banks and other institutions that hold free deposits and lombard loan accounts with the central bank can use the funds transfer service, which is operated by the Bank of Italy via automated means using its own data transmission network linking all its branches with its computer centre in Rome. In the last two years the Bank has radically renovated its data transmission network on both the hardware and the software sides.

In 1976 the funds transfer service was radically altered with the introduction of the "single centralised account for advances and deposits". Since then, each bank has had a single centralised account to which all its branches may make credits or debits in real time at any branch of the Bank of Italy.

The clearing service constitutes a further activity carried out by the Bank of Italy in the payment field for the credit institutions and certain categories of operator.

The Bank runs clearing houses at eleven of its larger branches, and provides clearing services at all its other branches. The only difference between the services provided in the clearing houses and those available in other branches lies in the range of operations that can be performed and the number of participants.

In 1976, at the same time as it introduced the single centralised account as mentioned above, the Bank of Italy introduced an automated procedure which, by linking the balances from the individual local clearings, enables a single net position to be determined at national level for each bank and debited or credited to the appropriate single centralised account.

2. The Postal Administration

The payment instruments that the Postal Administration provides at its 14,200 post offices are the postal current account and the money order. As far as the processing of payments into or out of current accounts is concerned, increasing use is being made of automated procedures based on a network of terminals enabling collection and payment operations requested by

holders of postal current accounts to be executed automatically and in real time.

3. The banking system

All categories of banks in the banking system (commercial banks, savings banks, co-operative banks) operate in the area of payment services; in fact they manage the bulk of payment instruments.

Payment instruments available to users of the banking system include the cheque, in the two forms of the personal cheque and the banker's draft, and funds transfers between bank accounts (giro transfers).

In recent years there has been a steady increase in the share of payments that the banks execute by automated means via electronic interbank funds transfer systems. The first project that became operative was that developed by the savings banks (STACRI - Automated Telecommunication System between Italian Savings Banks) and currently administered by ICCRI (Central Institute for Italian Savings Banks). Another system which has been recently developed is SETIF (Electronic Interbank Funds Transfer Service). SETIF is managed by the Interbank Society for Automation (SIA), which was set up in 1978.

III. PAYMENT SYSTEMS

1. Payment media available to customers

(a) Bank-notes and coin

In 1983 the average stock of bank-notes and coin in circulation amounted to $22.3 billion, equivalent to 6.4 per cent. of GNP. Of the total, 2.4 per cent. was accounted for by state notes and coin, production of which has returned since the mid-1970s to levels sufficient to eliminate the shortages which had occurred in previous years.

Of the bank-notes issued by the Bank of Italy, the biggest increase in the period from end-1978 to end-1983 was recorded by the large-denomination (Lit. 50,000 and Lit. 100,000) notes, with the numbers in circulation respectively doubling and tripling, to account for 17.4 and 12.6 per cent. respectively of the total number of bank-notes in circulation at end-1983. The low-denomination notes registered a small increase, while the number of notes of intermediate denominations (Lit. 10,000 and Lit. 20,000) decreased in absolute terms.

The number of forgeries detected also went down (19,391 in 1983, as against 43,104 in 1978). This was partly due to the replacement of bank-notes that had been in circulation for some time by new types.

At the end of 1983 notes and coin held by the public accounted for 94.9 per cent. of the total. Relative to household consumption the amount of currency in circulation fell from 12.9 to 10.6 per cent. between 1978 and 1983. In this period the composition of the public's liquid assets, and

hence payment habits, underwent a number of changes, including the spread of the direct crediting of current accounts for the payment of private-sector wages and salaries, the increasing number of centres where banking services are available, the opening of bank branches in firms, etc.

The drop in the ratio of currency in circulation to consumption was partly attributable to the lower level of growth recorded by the share of wages and salaries in gross national product and the rise in nominal interest rates, which prompted households to switch some of their assets previously held in cash into bank current accounts, which in Italy are interest-bearing.

(b) Deposit money

(i) Cheques of the Bank of Italy

Cashier's cheques are issued for amounts of not less than Lit. 5,000 and not more than Lit. 500 million only against cash payment; they are cashable upon presentation at any bank branch (including those of the central bank itself), and can be used for payments to the state. At present, two series of cashier's cheques are available - ordinary and special. Ordinary cheques come in seven denominations and can be used for all types of payment. Special cheques consist of two denominations, and are issued by the Bank of Italy by automated means on the basis of data supplied on magnetic media by the remitter. They are used solely for tax refunds and the payment of severance awards to state employees. In 1983 the number of cashier's cheques issued by the Bank of Italy amounted to 3.1 million, totalling $9.7 billion.

Bank cheques can be issued by holders - mainly banks - of current accounts with branches of the Bank of Italy. The use of this instrument has been very limited in recent years.

(ii) Postal current accounts

At the end of 1983 there were 503,000 accounts at post offices, most of which were held by businesses and public bodies; in recent years the number of accounts has stayed more or less constant. Most of the payments to these accounts are recurrent and fairly small, e.g. settlements of gas, electricity and telephone bills, subscriptions to periodicals and some tax payments. These payments are generally made with printed forms prepared for optical reading on which the payer has to indicate his name, the amount, the number of the postal current account to be credited and the name of the account holder. These forms may be presented at any post office, which accepts the amount in cash, cashier's cheques or bankers' drafts, returns part of the form to the payer as a receipt and has the beneficiary's account credited. The same forms may also be used by holders of postal current accounts; by signing the form and giving the number of their own account instead of their name, they can have the amount due transferred from their account to that of another account holder.

The current accounts service has been considerably modernised in recent years: the paying-in forms are prepared for optical reading either by the payee authority or by the post office counter clerk for subsequent automatic processing at regional centres. Recently, account holders have been

offered the facility of receiving data relating to account movements on magnetic tape.

Accounts can be debited by cheques which can be cashed at post offices; a large proportion of these are processed automatically and booked in real time. Special cheques are issued for the payment of state pensions.

In 1983 inpayments totalled $100 billion (415 million operations), cheque withdrawals $92 billion (10.4 million items) and postal giro operations $93 billion (23 million operations). In addition, 27.2 million special cheques, worth $8.6 billion overall, were issued for the payment of state pensions.

(iii) Money orders

Money orders are usually employed to remit sums to persons who are not holders of a postal current account. They are issued against payment in cash, and are sent to the post office nearest the beneficiary's home, who may either collect the amount in cash or have it credited to his postal or bank account.

In 1983 16.6 million ordinary money orders, worth $1.4 billion, and 3.3 million telegraphic orders, worth $600 million, were issued in favour of domestic payees. If one turns to international movements, the total amount remitted to payees abroad was negligible ($57 million), but foreign remittances to Italy were substantial (4 million orders worth a total of $930 million).

(iv) Cheques drawn on banks

Between 1978 and 1983 the number of current accounts with banks increased from 11.6 million to 16 million. Having regard to Italy's population, the number of bank accounts is still below the levels recorded in other advanced economies, but nevertheless the substantial increase that has occurred in this five-year period points to significant progress made by the banking habit.

With a view to obtaining sufficiently detailed statistical data to provide it with a satisfactory insight into payment operations, the Bank of Italy recently embarked on a systematic survey under the auspices of the Interbank Convention for Automation Problems (CIPA - Convenzione Interbancaria per i Problemi dell'Automazione). At present the survey is restricted to CIPA member banks, i.e. to a group of thirty-one large and medium-sized banks and to the central institutions for particular categories of bank which together accounted for approximately 70 per cent. of total balance-sheet assets of Italian banks at the end of 1983.

Although covering only a sample of banks, this survey has the merit of being based on uniform criteria, and it is therefore considered preferable to utilise its findings here.

Of the 16 million bank current accounts outstanding at the end of 1983, approximately 11 million were administered by CIPA member banks and, of these, some 8.5 million were held by customers in the household sector.

As far as the use of cheques is concerned, in 1983 customers of CIPA banks drew 327 million cheques, worth a total of $368.7 billion, on their accounts.[1] On average in 1983 thirty-one cheques were drawn, for an average amount of $1,130, per bank account. The household sector accounted for 59 per cent. (193 million cheques) and other operators for the remainder (134 million). Moreover, the household sector used more than a quarter of the total cheques that it issued (48.8 million amounting to $13.16 billion) to withdraw cash at the branch at which the account was held, the average amount being $269.8, and the remaining three-quarters to effect payments of an average unit value of $658.33.[2] The average value of cheques issued by other operators was $1,974.

The small number of cheques drawn on each individual account and, above all, their high average value confirm that factors continue to impede more widespread cheque use, especially by private operators. A particularly important factor in this regard is the cost of cheques, which makes them too expensive to use for low-value transactions. Stamp duty together with the cost of the cheque form itself comes to Lit. 330, on top of which there is a bank charge of between Lit. 500 and 800.

A further impediment to more widespread cheque usage is the difficulty in cashing cheques except at the branch on which they are drawn, i.e. at other banks or even at other branches of the drawn bank. To make it easier to cash cheques some banks have for some time issued cheque cards, special identity cards which commit the drawee bank to guarantee to honour cheques up to a set amount (at present usually US$ 120). There are 500,000-600,000 cheque cards in circulation, but their use is very limited, partly because not enough has been done to publicise them.

Despite these constraints the volume of cheques is steadily rising, which is prompting the banking system to seek new operating procedures capable of producing time and cost savings.

The two most important ventures undertaken by the banking system in this area are:

- the introduction of the bank identity code CAB (Codice di Avviamento Bancario), which unequivocally identifies individual bank branches. By printing this code in magnetic characters on cheques (and on any other credit instrument or document to be transmitted from one point in the banking system to another), the instruments concerned can be sorted automatically, resulting in considerable time and cost savings;

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1 In addition, 3.9 million special cheques (for a value of $7 billion) were issued by the banks at the request of customers for payments to persons not holding bank accounts.

2 The rather high average value of cheques issued by the household sector is possibly partly due to classification problems. These can occur, for instance, in the case of small businessmen (traders, craftsmen, etc.), who, on opening a current account, fail to state that the account is connected with their business. Moreover, in some instances small businessmen use a single account for both household and business purposes. In such cases banks almost inevitably class the customer in the household category.

- the initiation of studies designed to culminate in a system of cheque truncation which will allow the paper instrument to be kept at the branch which negotiated it without it having to be sent to the drawn branch. At present, implementation of such a system will depend on finding satisfactory solutions to a number of legal problems, notably responsibility for verifying the drawer's signature and observing time limits for lodging protest.

(v) The bankers' draft

The bankers' draft, somewhat similar from the point of view of its characteristics to the money order or traveller's cheque, is very widely used. It is issued solely by specially authorised banks and central credit institutions (fifty-one at end-1983) for amounts deposited in cash at the time of issue or debited to the applicant's account. These issue procedures obviously make it more acceptable to creditors and easier to negotiate within the banking system.

According to the survey mentioned above, in 1983 252 million bankers' drafts were issued for a total value of $208.7 billion, giving an average value per draft of $855. This low average value is due in part to the fact that bankers' drafts are widely used to pay wages and salaries, i.e. where payment is not made by direct credit to the beneficiary's account. To avoid employees whose pay is received in the form of bankers' drafts rushing to the banks to convert some or all of them into cash - which would nullify the advantages of using bankers' drafts, viz. less risk of robbery and reduction in the cost of managing large quantities of cash - the banks usually break the recipient's pay down into several low-value drafts, which can be more conveniently used on the market. The statistical evidence available indicates that the average value of bankers' drafts issued for the payment of wages and salaries is around $164.6.

The management of bankers' drafts confronts the banking system with similar problems to the cheque. Consequently, the use of bank identity codes has been extended to bankers' drafts and a truncation system is under study.

(vi) Giro transfers, direct credits and pre-authorised payments

In the course of 1983 CIPA member banks made more than 60 million funds transfers between customers' accounts, amounting in total to around $570 billion. The huge volume of funds transfers has prompted the banks to develop automated management techniques with a view to reducing the volume of paper media which is generated by the conventional processing of these operations.

The banks have sought to pursue this objective firstly by reaching agreements with their customers whereby pre-authorised payments and direct credits are transmitted on magnetic rather than paper media and secondly by setting up an interbank system for automatically sorting orders which are being routed from one bank to another.

More specifically, in 1983 CIPA member banks received payment orders on magnetic media that gave rise to some 18 million credits to beneficiaries' accounts for a total value of US$ 10.5 billion. By far the

greater part (81.6 per cent.) was accounted for by the payment of wages and salaries. The magnitude of these operations continues to be rather low, primarily because the practice of crediting wages and salaries direct to employees' accounts is still not very widespread in Italy. In fact the instrument primarily used for the payment of salaries is still the banker's draft. In 1983 more than 40 million drafts were issued for that purpose (for a total value of US$ 8.16 billion) in comparison with the above-mentioned 18 million direct credits to current accounts. One important development in this context is that the banking system and the state have concluded an agreement covering the direct crediting of the wages/salaries of some categories of public employee. Under the agreement the Bank of Italy, as the state's treasurer, will send to the SIA a magnetic medium containing the relevant banking data in respect of the payees, which the SIA will use to transmit the orders to the banks concerned. The procedure began to be implemented in October 1984 and will be fully operational by the end of 1985.

In 1983 some 10 million direct debits were remitted to CIPA member banks on magnetic media (chiefly concerning payments of public utility bills and certain taxes). Most of these payments were handled by the SIA.

(c) Card-based payments

In Italy there are five main groups which issue credit cards. Two of them (Diners Club and American Express) issue travel and entertainment cards, the other three (Eurocard, Comites* and VISA-Bankamericard) bank cards.

The total number of credit cards in circulation reached 2 million in 1983, having doubled over the last five years. The number of active cards (i.e. those used at least once a year) is, however, substantially lower: as far as the bank cards are concerned - which together account for more than 80 per cent. of the total - this amounts to only 25-30 per cent. of the cards issued. Only in the case of the travel and entertainment cards does the proportion of active cards approach 100 per cent.

Some bank cards enable the amount advanced to be repaid in instalments. In some cases they can also be used to cash cheques at member banks and withdraw cash from Bancomat machines.

The total turnover of the credit cards of the five main groups can be estimated at around $400 million in 1983, excluding transactions by foreign card holders visiting Italy.

Cards issued by large stores and car-hire companies are of much less importance, being used solely to purchase goods and services from the issuer.

A group of sixteen banks recently launched a project for a joint national credit card which should become operational in 1985. The Eurocard

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* Card issued by the Banca Commerciale Italiana.

and Comites systems have already announced their readiness to join the new system. At international level the new credit card is seeking links with other existing institutions.

(d) Payments in a telematics context

The development of home banking and other forms of payment in a telematics context is still at a very early stage in Italy. Some financial institutions have provided their major corporate customers with terminals from which they can obtain information concerning their position with the bank. It is planned to extend this service in the future to medium-sized corporate customers and to make it possible for accounts to be debited or credited directly from the terminals.

(e) The interbank network of cash dispensers

As noted earlier, according to the statistical survey by CIPA member banks, in 1983 households used almost 50 million cheques for cash withdrawals.

Clearly this is a huge volume of operations entailing substantial costs for the banks and for customers themselves. What is more, it is bound to increase as a consequence of the steady growth in the number of bank accounts held by private operators.

With a view to improving the efficiency and the quality of this service, the Italian banks have in recent years introduced ATMs designed to supplement and, in some cases, replace the conventional branch office. ATMs are at present used almost exclusively for cash withdrawals.

The installation of ATMs - when they are not located within, or in the external walls of, bank offices - is subject to advance authorisation by the Bank of Italy, in that ATMs are viewed as a species of territorial expansion of banks and hence are subject to the relevant legal requirements (Banking Law, Article 28).

However, in 1980 the Interministerial Committee for Credit and Savings introduced an exception for ATMs installed in firms and institutions, on the ground that they can only be used by a limited circle of customers, and hence have a marginal impact on interbank competition. The installation of such ATMs is free from restrictions, although the Bank of Italy has the power to suspend proposals notified to it by the banks.

The supervisory authority bases its stance with regard to the spread of ATMs and POS terminals on the principle that co-operation in the payment services area helps to maintain proper competitiveness in the exercise of banking business generally.

In accordance with this principle the Bank of Italy looks with favour on applications to set up networks of ATMs which embody co-operation agreements between several banks - even taking the form of consortia - whereby customers of one participating bank can use machines belonging to other co-operating banks.

The setting-up of shared networks, in which medium-to-small banks can also participate, puts the latter in a position to offer payment services that are reasonably similar to those offered by a bigger bank. It is further necessary that dominant positions do not arise in the course of operating shared networks, and that the accession of new participants, albeit possible in principle, is not rendered impossible in practice by the imposition of excessively onerous conditions.

By following these guidelines it has been possible to set up a single interbank network of ATMs (Bancomat) - which the pre-existing bank and interbank networks have joined - which is open to all banks and may constitute a springboard for a further expansion of the range of automated services offered to customers. Bancomat came into operation on an experimental basis in April 1983 and definitively in November that year.

The Bancomat network operates as follows:

- users are issued with a magnetic card on which are recorded, among other things, the daily and monthly withdrawal limits (generally $329 and 1,970 respectively); this can be used round the clock in any ATM in the network;

- the machines operate off-line, with operations being recorded on a magnetic medium which is processed by the individual participating banks daily. The latter transmit, on magnetic media or by wire, information relating to operations carried out by customers of one bank on ATMs of other banks to the manager of the system, the SIA, which sorts them using the same procedures as SETIF described below; operations among savings banks are handled by STACRI, which is connected to the SIA for operations between savings banks and commercial banks. The SIA also updates the black-list, which, given that the ATMs operate off-line, has to be inserted in each machine by the individual banks.

At the end of 1983 307 banks belonged to Bancomat, and the number of ATMs linked to the network came to around 1,000. At the same date there were just over 1.7 million cards in circulation.

Preliminary data indicate that Bancomat has been favourably received by the public in the first months of its operation. This has encouraged the banks to investigate new ventures with a view to increasing the supply of automated payment services.

2. Exchange circuits within the banking system

(a) Intrabank networks

Almost all the large and medium-sized banks have telecommunication networks that connect the various branches with head office in real time.

(b) Clearing services

Clearing services are offered by the Bank of Italy at its branches in all the provincial capitals. At eleven branches located in large cities, including those with stock exchanges, clearing operations are carried out in clearing houses run by the branches in question.

There are three distinct types of clearing operation:

- the daily clearing of bank articles;
- the daily settlement of securities contracts;
- the end-of-month settlement of securities contracts.

The following are eligible to participate in the clearing houses: branches of the Bank of Italy (on their own account and as operators of the Provincial Treasury Offices), commercial banks and special credit institutions, stockbrokers, jobbers and companies and agencies which have a large volume of collections and payments or securities transactions to effect. In contrast, the clearing services provided in towns without a clearing house are restricted to branches of the Bank of Italy and to commercial banks, given the smaller range of operations that can be performed there.

At the end of 1983 the total number of participants in the clearing houses and clearing services came to 1,528, comprising 1,058 banks, 196 stockbrokers and 82 jobbers and financial companies plus the branches of the Bank of Italy and the Provincial Treasury Offices.

It is at the daily clearing of banking articles that day-to-day payments routed through the Bank of Italy, the Treasury and the banking system as a whole are settled (see Annex).

The clearing can cover liquid due debts and credits, even where they relate to participants in another clearing house or in clearing services operated at another branch of the Bank of Italy.

At the close of the local clearings (1 p.m.) the balances recorded by each member are transmitted to a central file for nationwide inter-house clearing which is operated by an automated procedure by the Bank of Italy's computer centre.

The procedure for the settlement of the balances takes place at the end of the working day by means of debiting and crediting the accounts maintained by each participant at the Bank of Italy. Member banks which take part in more than one clearing of banking articles can elect for either local settlement or for the centralised settlement of balances at just one branch of the central bank.

Utilisation of the procedure for the centralised settlement of balances is conditional on opening a centralised account for advances and deposits at the Bank of Italy. Such accounts are operated using an automated procedure and can be debited or credited from any branch of the central bank.

Future developments currently under study include:

- abolition of physical production at the meeting of some types of particularly numerous and bulky articles;

- new systems for notifying the Bank of Italy of articles settled in clearings which will enable the physical participation of all those involved in the daily meetings to be reduced if not made altogether unnecessary;

- direct involvement in the clearing of banking articles of the Postal Administration through the intermediary of its provincial departments. This would relieve the Treasury of some tasks and speed up the execution of numerous payments routed through the Postal Administration.

The daily and end-of-month settlement of securities contracts takes place at the clearing houses in Florence, Genoa, Milan, Naples, Rome and Turin, where there are stock exchanges which record a large volume of operations.

The following are eligible to participate in these settlements: the Bank of Italy, commercial banks, special credit institutions, stockbrokers, jobbers and first-rank financial companies and agencies.

The daily settlements concern the execution of securities contracts between members of the local clearing house. The limited time for the execution of such contracts has, so far, ruled out the clearing of contracts concluded with operators belonging to other clearing houses.

The daily settlements mainly concern government securities, bonds, shares and option rights. In 1983, daily cash settlements totalled $29.5 billion.

The end-of-month settlement is concerned with the execution of forward, option and contango contracts, and mainly involves shares listed on the official stock exchange. It is in this context, too, that out-of-town operations between operators involved in the end-of-month settlement are settled.

Finally, in order to facilitate the transfer of registered and bearer shares, participants in the end-of-month settlement may utilise the services of the Società Monte Titoli, acting as trustee and agent for the operators concerned, to effect the transfer of securities by simply debiting or crediting the deposit accounts which they maintain with it. Similar facilities should soon be available for the daily settlements as well, either using the Società Monte Titoli or, in the case of government securities, the centrally managed deposits held with the Bank of Italy.

(c) Interbank electronic funds transfer systems

STACRI, the Automated Telecommunication System between Italian Savings Banks (about 80 institutions) provides a teleprocessing link between the member banks for the automated handling of giro transfers, payment orders, cheques and other types of payments and also message-switching and data transmissions. In 1983 STACRI handled about 9 million orders worth about $8 billion.

SETIF, the Electronic Interbank Funds Transfer Service, operates as follows:

- member banks of the SIA and, through their intermediary, also a number of firms send to the SIA payment or collection orders involving customers of banks other than the bank that received the order. The orders are transmitted on magnetic media or, in some cases (currently around ten banks), via telecommunications;

- the SIA sorts the orders automatically, transmits them, on magnetic media or by line as above, to the appropriate banks and determines the position of each of the latter vis-à-vis the banks that sent in the orders;

- the banks which receive the orders proceed, in turn, to debit (or credit) the accounts of their customers against the correspondent accounts they maintain with the banks which transmitted the orders.

In 1983 the SIA handled some 12 million orders worth around $9.4 billion. This volume of operations is lower than the level originally foreseen when the SIA was set up (40 million). This is attributable to a combination of technical, organisational and operational factors which now seem to be on the way to being overcome. Indeed, in 1983 SETIF traffic rose significantly owing mainly to the conclusion of an agreement between the SIA and the telephone company SIP for the pre-authorised payment of telephone bills and to SIA's taking on the rôle of manager of the Bancomat network.

IV. CURRENT AND FORESEEABLE DEVELOPMENTS

The most significant projects currently under study under CIPA auspices are as follows:

- extending the range of functions of the ATMs, while still maintaining the facility for customers of one bank to use their cards in another member bank's machines;

- implementation of an interbank system of POS terminals.

As far as (a) is concerned, the project, which has now reached the stage of the definition of operating standards, plans to make it possible for holders of Bancomat cards not only to make cash withdrawals but also to pay cash in, to make credit transfers and to pay bills.

As for the POS network, the plan is to initiate on an experimental basis - almost certainly in 1985 - a nationwide interbank network of terminals interconnected via concentrators with the management body (again the SIA), which will have the task of administering the information necessary for executing the operations of debiting customers and crediting participating commercial firms. The Bancomat card will again be used, although it will have recorded on it a spending limit different from that applying to cash withdrawals.

Another important project - now approaching actual implementation - is the creation of the interbank data transmission network, which will link up all the Italian banks, either directly or via the sub-networks of particular categories of bank.

Once this network is operational it will enable the banking system to make a decisive leap forward with the modernisation and automation of its activities and customer services, especially in the payment field.

It is important to observe in this context that, with an eye to the implementation of the interbank data transmission network, research has started at the CIPA into the implementation of a cash management service that will enable customers to obtain at home and very quickly a complete picture of the situation of their accounts with any bank (balance reporting) and to carry out the money transfers that they deem to be the most expedient having regard to their own operational requirements and optimum cash management.

At the end of 1983 some of the major Italian banks and savings banks unveiled a project for a national credit card.

Under this project, which any credit institution based in Italy can join, a management company owned by the participating banks would be set up to undertake the responsibility for managing the magnetic files, for keeping accounts of the positions of the member banks vis-à-vis each other, for matters in connection with the trade-mark and for advertising campaigns.

The member banks would be responsible for issuing and withdrawing cards, and would bear the risk of customers becoming insolvent. The task of finding accredited outlets would be shared between the member banks and the management company.

The postal service is planning to create, by 1988, 693 "electronic post offices", where real time funds transfer operations could be carried out at any window, in addition to normal post-office services.

Annex

Operations at the clearing houses and clearing services:

daily clearing of banking articles[1]
(1983)

Operations	Value ($ billion)	Percentage of total
Bills	10.3	0.32
Cashier's cheques, bankers' drafts, cheques	580.0	18.1
Balances from the settlement of spot securities contracts	8.9	0.28
Other operations[2]	2,411.6	74.89
Out-of-town articles	209.2	6.5
A. Total operations	3,220.0	100.00
B. Clearing balances	736.0	
B/A	.	22.9

1 In the statistics each article appears both as a credit and as a debit.
2 Invoices, receipts, coupons, drawn and maturing securities, payment orders, giro transfers, foreign exchange operations and operations with the Treasury, other non-documentary operations.

6. JAPAN

I. INTRODUCTION

In Japan individuals, businesses and government are now using a variety of payment instruments.

Individuals traditionally use mainly cash for purchasing goods and services from retailers, and the cheque has not gained popularity. In the 1960s the banks tried to encourage their personal customers to use cheques but their efforts were largely unsuccessful. However, since the early 1960s the banks have been promoting credit cards and pre-authorised direct debit and credit systems, which have spread rapidly. It could be said that in the personal sector payment methods have progressed from cash to electronic media, bypassing cheques. Since cash is still widely used for retail transactions, however, the financial institutions have installed a large number of cash dispensers and ATMs so that personal customers can easily withdraw cash when necessary.

Businesses, on the other hand, make very extensive use of cheques, bills and promissory notes. These instruments are collected and settled through the financial institutions' branch networks, local clearing houses and the domestic interbank exchange system. Wages and salaries were formerly paid monthly in cash but nowadays many companies use the direct credit system, and indeed firms with a large staff send magnetic tapes instead of paper orders to the banks for payroll processing. The direct credit system is becoming more popular for the payment of pensions, dividends and so on.

Payments by the Government are commonly made by government cheque.

II. INSTITUTIONAL FRAMEWORK

1. Institutional structure

Most payment services are offered by private financial institutions, such as the ordinary banks, which include city banks and regional banks, the trust banks, sogo (mutual) banks, credit associations, credit co-operatives and agricultural co-operatives, with the different groups being governed by separate laws. Those other than the ordinary banks are specialised institutions engaging in specific areas of activity, such as the small business or agricultural sector, long-term credit and so on. This financial specialisation is a characteristic feature of the Japanese institutional structure, and in periods of fast economic growth the specialised institutions and the ordinary banks have successfully complemented one another. However, following a decline in the demand for funds after the Japanese economy entered the current period of stable growth, their relationship has become competitive and their business operations have increasingly converged, so that now practically all institutions offer virtually the same payment facilities.

At the same time, however, the private financial institutions have co-operated in establishing interbank networks such as clearing houses and

the Zengin System (see below) in order to increase the efficiency of the payment systems.

The postal savings administration, with deposits of Yen 84,000 billion, is the world's largest single financial institution, being approximately three times the size of the world's largest bank. Established in 1875, it has grown exceptionally rapidly during the last twenty years. It operates under the wing of the Ministry of Posts and Telecommunications and benefits from somewhat greater freedom than is enjoyed by rival private financial institutions. Its deposits are placed almost entirely with the government Trust Fund Bureau, which finances small business, housing and so on through specialised government financial institutions. The growth of the postal savings administration, and its ambitious plans to expand its range of retail banking services, has been a source of concern to the private financial institutions, which consider that it benefits unduly from a number of special privileges. In terms of deposits the postal savings system completely overshadows the postal giro system, and in the area of funds transmission it has evolved from relative insignificance to become the private payment system's greatest competitor.

Recently non-banks - finance companies, retailers, securities companies, insurance companies - have begun to enter the hitherto traditional domain of the banks, offering payment services via credit cards or providing close substitutes for deposits. Technological advances, in the communications sphere in particular, have given the impetus to this development.

2. The rôle of the central bank

The Bank of Japan, the central bank and issuer of the currency, has as the goal of its operations to stabilise the value of money and thereby contribute to the stable development of the Japanese economy. It is also its objective to support and develop the financial system, especially the payment system. To achieve these aims the Bank regulates the money supply and supervises the payment system with the greatest attention. It also provides various payment services for customer financial institutions and handles Treasury payments and receipts by cashless means. Financial institutions which hold current accounts with the head office or branches of the Bank of Japan (thirty-four offices in all) are able to make payments or settlements by drawing cheques on the Bank. In addition, the Bank executes payments and settlements between customer financial institutions by means of transfers between their current accounts in its books. In this way, it effects transfers between a customer bank's branches in different areas and also between different banks. The net credit or debit balance resulting from the clearing of cheques and bills is also settled by means of transfers between the banks' current accounts at the Bank of Japan's head office or branches. Similarly, the net balance arising from domestic exchanges in the Zengin System is settled through a "settlement account" with the Bank.

The Government holds an account with the Bank on which it draws by cheque. Orders for Treasury payments through the Government's account (for example social security benefits) may also be sent on magnetic tape to the various financial institutions, which credit the amount to the beneficiaries' accounts by batch processing.

III. THE PAYMENT SYSTEM

1. Cash payments

(a) Legal framework

The present currency system in Japan was established in 1882 with the founding of the Bank of Japan. Bank-notes issued by the Bank are legal tender without limit in all public and private-sector transactions (Article 29 of the Bank of Japan Law). The maximum value of the bank-note issue is fixed by the Minister of Finance with the approval of the Cabinet (Article 30 of the Law), and the Bank is required to maintain reserves equivalent to the value of bank-notes issued (Article 32). These reserves comprise gold and silver bullion, foreign exchange, SDRs, bills, government bonds, advances to the Government and secured loans.

Coins are issued as the subsidiary currency by the Government, which supplies the Bank of Japan with the quantities required for payments over its counters. The coins now in circulation are issued under the Temporary Currency Law of 1938, which stipulates that they must be accepted in settlement in amounts of up to twenty times a given denomination (e.g. up to Yen 2,000 in 100-yen coins).

(b) Demand for cash

The proportion of the bank-note and coin circulation held by private financial institutions to meet cash withdrawals from accounts is relatively high in Japan (13.4 per cent. at the end of 1983). The bulk of the funds withdrawn from the banks is used for the payment of wages and salaries, for personal consumption expenditure and for the settlement of smaller transactions by businesses. In recent years cashless media such as cards and electronic funds transfers have become popular, but in the household and retail sectors a very large proportion of payments is still made in cash.

The value of cash in circulation at any one time is influenced by consumers' cash-holding propensity and by payment practices, neither of which would be expected to change radically in the short term. An increase in personal income or consumption attributable to economic factors will boost the demand for cash. Though slightly affected by financial conditions and the phase of the business cycle, the amount of cash in circulation during the last ten years has remained broadly stable at 7-8 per cent. of nominal GNP.

(c) Automated handling of cash

Cash dispenser services were initiated in 1969 by some city banks with off-line computer systems, and began full-scale operation from around 1970 following the adoption of on-line computer systems by many financial institutions. A large number of banks have now installed machines not only inside their premises but also in the outside walls of their offices and even in department stores and railway stations, on company premises and many other sites (see Annex). Cash dispensers off bank premises are treated as a sub-branch by the Ministry of Finance; their installation is subject to

Ministry regulation in the same way as the establishment of a bank office, though they are treated more flexibly. Automated depositors and ATMs were introduced in 1973 and 1977 respectively. ATMs in particular, with their multiple functions, have spread very rapidly. Machines are generally in operation from 8.45 a.m. to 6 p.m. on weekdays and from 9 a.m. to 2 p.m. on Saturdays, which is longer than normal bank opening hours.

2. Cashless payments

Cheques, bills and promissory notes are used as paper-based cashless instruments of payment. Cheques include government cheques, bank cheques and postal cheques. For the most part they are used by public authorities and business corporations and are not widely employed by the general public. It is rare for private individuals to receive salaries or purchase goods and services by means of cheques. Nonetheless, it is generally acknowledged that cheques are still the most important of all cashless payment media. In 1983 the total value of cheques handled by the Tokyo Clearing House averaged Yen 3,233 billion per working day. Bills and promissory notes are used for payments in the business sector and are also eligible for discounting by financial institutions. The average value of bills and promissory notes cleared in 1983 at the Tokyo Clearing House was Yen 439 billion per working day, equivalent to 14 per cent. of that of cheques cleared. The Law on Bills and the Law on Cheques contain detailed provisions on the nature of the two instruments, how they should be drawn and endorsed and the general framework for cashless payment by these means.

Procedures for the transmission of cheques and bills between financial institutions are governed by the rules of the local clearing houses. Instruments drawn on the same clearing area are collected through local clearing houses in 179 locations throughout Japan, while those drawn on another clearing area are collected through the domestic interbank exchange system. Cheque and bill forms issued by the banks to their customers carry the numbers of the clearing house, the branch office, and the customer's account in MICR print. The numbers are used for computerised classification and calculation. The Tokyo Clearing House has a large sorter-reader for its own processing of large numbers of cheques and bills. The settlement of clearing balances is effected through the financial institutions' current accounts with the Bank of Japan.

3. Card-based payments

(a) Credit cards

Credit cards have become fairly popular. Although exact figures are not available, by 1983 some 45 million cards had been issued by credit card companies, including bank-affiliated credit card companies, finance companies, department stores and others. Some of the bank-affiliated credit card companies have links with overseas credit card companies such as VISA, Master Charge and Amex, so that holders of their cards may use them overseas during their travels. Settlements by card users are made through pre-authorised direct debits. This method of collection is used not only by bank-affiliated credit card companies but also by the credit card services of department stores and finance companies and other credit card companies.

All persons who wish to use credit cards are required first to conclude pre-authorised direct debit contracts with financial institutions. Card users receive bills for payment monthly and settle them either in a lump sum or on an instalment basis. Bank-affiliated credit card companies, however, are not allowed by administrative regulation to offer their card holders instalment payment facilities.

(b) Multi-purpose cards

The new Banking Law that came into effect in April 1983 allows banks to enter the credit card business directly (previously they had established bank-affiliated credit card companies for this purpose). City banks are now preparing to form their own credit card companies, while sixty-three regional banks and seventy-one sogo banks have set up respective joint ventures. The new law also enabled the banks to issue a new type of card, the multi-purpose card. New bank cards issued by the regional banks and sogo banks from 1983 have combined the functions of a cash dispenser or ATM card and those of a credit card, so that the customer can use a single card for purchases, cash withdrawals and consumer finance. However, by administrative regulation they still cannot be used for the on-line real-time processing of funds transfers.

4. Electronic payments

(a) The pre-authorised direct debit

The pre-authorised direct debit system was introduced in 1955 for the settlement of telephone bills. It was rapidly expanded from the early 1960s and is now used extensively for the payment of taxes, school tuition fees, life insurance premiums, credit card bills, television licence fees and other public utility charges. The supplier (payee) sends the bill (possibly on magnetic tape) to the user's (payer's) bank, which debits the amount from his account and sends him a receipt or debit advice. These transactions are conducted on the basis of three-party agreements between user, supplier and financial institution. A handling charge is paid by the payee to the financial institution for each transfer, but it is fairly low by comparison with the actual cost.

In order to facilitate the operation of the direct debit system, the "integrated account" was introduced in 1973. Time deposits are the most popular form of savings in Japan, and ordinary deposit accounts have become transaction accounts. The integrated account combines these two types of account in a single passbook, and includes an overdraft facility. Direct debits are deducted from the ordinary account, and if it contains insufficient funds the shortfall is automatically made up with an overdraft against the collateral of the time deposit. The integrated account offers both savings and overdraft facilities and has come to be widely accepted.

(b) The direct credit

The direct credit system is used primarily for the payment of wages and salaries, dividends and pensions. The direct crediting of wages and salaries, for example, was begun in 1969 on the basis of an agreement among several banks. Since then the system has made rapid progress, and more than 65 per cent. of leading Japanese business firms now make use of

it. Initially transactions were paper-based, but with the spread of business computerisation firms began to present their transfer orders on magnetic tape.

IV. EXCHANGE CIRCUITS WITHIN THE BANKING SYSTEM

1. Intrabank networks

The most important feature of the intrabank network is an on-line real-time processing system connecting branch terminals to computer centre via telecommunication lines. The on-line system was introduced in 1965, and in its early stages it handled individual business operations such as deposits and domestic money transfers separately. Since around 1975 an integrated on-line system has been in use, and today all city banks and many regional banks have switched to this new system. The on-line system, together with interbank systems, has not only reduced branch operating loads and shortened customer waiting time but has also enabled the banks to develop new services in the payments field.

Apart from the private banks' on-line systems, the postal savings administration began making preparations for the introduction of a computerised on-line system in 1978. By March 1984 this system covered a network of some 20,000 post offices throughout Japan, raising fears among the private banks from the point of view of competition.

2. Interbank networks

(a) Zengin System (Data Telecommunication System of All Banks)

Various interbank networks have been developed on the basis of the on-line systems of individual financial institutions.

At the end of 1983 the Zengin System provided 699 private banking institutions with on-line connections to the Tokyo Centre operated by the Federation of Bankers' Associations of Japan. Each participant uses a Zengin terminal interface connected to its own on-line centre, permitting 20,800 branch offices to communicate with each other directly and instantaneously. In August 1984 the system was extended to all private financial institutions, including agricultural co-operatives, enlarging the network to 7,400 institutions with more than 40,000 branch offices.

Interbank money transfers are handled by this system and settled through adjustments to the participants' accounts with the Bank of Japan, which is also linked to the Zengin centre. Transactions to and from anywhere in Japan can be completed within an hour. The Zengin System enables remittances to be effected quickly and accurately. Interbank settlements arising from the direct credit and direct debit transactions mentioned above are effected through the Zengin System as well as through the clearing system.

(b) Interbank cash dispenser networks

There are two types of interbank on-line cash dispenser network.

One features the reciprocal use of cash dispensers on the basis of a co-operative agreement among financial institutions. This system was launched in March 1980, and there are now four networks run by different categories of financial institution. Cash-card holders can use their own bank's cash dispensers at no charge and those of any other partner bank in the group for a small fee.

The second type of cash dispenser network is the NCS (Nippon Cash Service Co.), launched in 1975 and jointly owned by fifty-four banks. The NCS has installed some 250 cash dispensers in railway stations, hotels, department stores, supermarkets and the like in the three largest metropolitan areas. Card-holding customers of any NCS participating bank can use these outlets. Since the beginning of 1984 a small charge has been made for the service.

(c) Magnetic tape exchange system

The Tokyo Clearing House operates a magnetic tape exchange system for the economical execution of direct credits. For example, a company sends its bank a magnetic tape containing its instructions for the crediting of wages and salaries, giving the bank branch code and account number of each employee, together with the sum to be credited. The bank sends the tape to the Tokyo Clearing House by courier. The Clearing House then consolidates all such tapes received and re-sorts the entries by payee banks, producing new tapes for these banks, which then credit the employees' accounts. The funds are settled through the Clearing House. Tape-based direct crediting has significantly reduced payment transaction costs for both employers and banks. The system also has the advantage of relieving employees of the risk involved in carrying large sums of cash on their persons. The financial institutions which participate in the Zengin System are now jointly studying the possibility of changing from magnetic tape exchange to direct data transmission through the Zengin System.

V. MAIN ISSUES UNDER STUDY

1. Trials with home and corporate banking

Until recently the use of telecommunication lines was strictly regulated. In 1982 restrictions were partially removed by legislative amendment, and further deregulation is expected. In response to this and changing circumstances, banks are modifying their methods of delivering services and adopting home and corporate banking.

A number of banks are conducting home banking trials using a CAPTAIN (Character And Pattern Telephone Access Information Network) videotex network operated by the Nippon Telegraph and Telephone Public Corporation (NTT). This system enables bank customers to receive confirmation of account balances, direct debits and credits and, from November 1984, to transfer funds to other accounts in their homes. It is intended in future also to combine banking, shopping and reservation facilities. Another system, the INS (Information Network System), using the latest technology in optical cable, LSI, etc., is to be tested by NTT from November

1984. Home banking is expected to develop quickly when the INS system is introduced.

Corporate banking has already been introduced. At present there are two types of service. One connects the bank's large computer with those of its corporate customers through the Digital Data Exchange network (DDX), which was specially developed for electronic data transmission. The other connects the bank's large computer with its customers' small desk-top, or "personal", computers via public telecommunication lines. There is almost no difference between the on-line data transmission services provided through large computers and those provided through personal computers, with both offering information and funds transfer services. The information services include those related to individual transactions, such as details of debits and credits, exchange transactions and outstanding balance inquiries, and general information. The funds transfer services include standing instructions for credit transfers to third parties (e.g. wages and salaries) and the debit of public utility charges, and also funds transfers between corporate customers' head offices and branches. However, the on-line real-time processing of funds transfers is not permitted at present.

2. BOJ Wire project

The Bank of Japan is conducting studies on the establishment of a new data communication system, like the FedWire, between the central bank and financial institutions by mid-1987. The most important aim of this system is to prepare an interbank electronic funds transfer system. At present, interbank funds transfers are effected mainly by Bank of Japan cheques. In the future, however, transaction data will be fed into terminal units located at financial institutions through an on-line system.

Annex

Installation of cash dispensers (including ATMs) in Japanese financial institutions, as of end-March 1984

	Number of institutions	Number of domestic offices	Number of domestic offices with cash dispensers installed (inc. ATMs)	Percentage of domestic offices with cash dispensers installed (inc. ATMs)	Number of cash dispensers and ATMs	of which ATMs
Commercial banks, of which:	86	9,659	9,072	93.9	22,466	10,360
City banks	13	2,952	2,943	99.7	11,264	6,251
Regional banks	63	6,298	5,779	91.8	10,713	3,763
Trust banks	7	350	350	100.0	489	346
Long-term credit banks	3	59	0	0.0	0	0
Mutual loan and savings banks	71	4,227	3,663	86.7	5,155	1,317
Credit associations	456	6,509	5,276	81.1	6,486	3,149
Credit co-operatives	468	2,750	298	10.8	329	77
Agricultural co-operatives	4,345	15,658	1,552	9.9	1,588	548
Fishery co-operatives	1,786	2,244	1	0.0	1	0
Labour credit associations	47	555	143	25.8	143	42
Total	7,259	41,602	20,005	48.1	36,168	15,493
Post office	1	23,469	1,724	7.3	1,724	approx. 1,350

7. THE NETHERLANDS

I. INTRODUCTION

1. General description of the payment system in the Netherlands

The Netherlands is a highly industrialised country with some 14.3 million inhabitants, a surface area of 37,300 square kilometres and a gross national product of $131.9 billion. It has a wide network of bank and post offices. There are 90 commercial (universal) banks, 965 banks organised on a co-operative basis and 69 savings banks. Together these banks operate 6,441 branch offices, i.e. one office for every 2,222 inhabitants. In addition to the banks, there are the Postal Cheque and Giro Services with a total of 2,731 offices, i.e. one office for every 5,236 inhabitants.

The total number of offices in this relatively small country ensures that banking services, especially payment services, are within easy reach of almost everyone. In addition, the pricing of payment services is very favourable, especially for private individuals. No charge is made to personal customers for maintaining an account, for transfers or for daily statements. As a result the vast majority of Dutch households possess one or more chequing accounts. At the end of 1983 there were 13.18 million such accounts, or 0.9 per capita.

The payment system in the Netherlands is essentially based on three instruments, namely cash, guaranteed cheques and transfers. Cheques as they are known in the United States are used in commerce on a very small scale. The number of cash payments made is not known. In 1983 about 1,223 million cashless payments were carried out, one-quarter in the form of guaranteed cheques. The guaranteed cheque began to gain ground around 1968. In 1983 over 119.6 million guaranteed cheques used for cashless payments were processed by the banks and about 153 million by the Postal Cheque and Giro Services.

At the end of 1983 the total currency circulation - excluding notes and coin at banks - amounted to Fl. 26.5 billion ($8.6 billion) and the value of sight deposits to Fl. 53.3 billion ($17.2 billion). The per capita figures were $602 for currency and $1,209 for sight deposits.

In the Netherlands cashless payments are processed in three (inter-connected) transfer circuits: the circuit of the Netherlands Bank, that of the banks and that of the Postal Cheque and Giro Services.

The banks' circuit and that of the Postal Cheque and Giro Services are about equal in size. The two systems offer a wide variety of services to the customer (see Section III).

In the Netherlands there is close co-operation in the field of transfer services, especially between banks, and this has led to a highly efficient payment system. At the level of the banks' circuit, interbank co-operation is reflected in the Bank Giro Centre, in which practically all the banks participate.

Perhaps partly because of the wide availability of guaranteed cheques, the need for POS terminals and ATMs has been less than in other developed countries. At the end of 1983 cash dispensers were still a very insignificant element of the payment system, and no POS terminals were then in operation. However, the financial institutions are preparing trials with POS terminals and cash dispensers to further improve their services. Credit cards payments do not play a significant rôle in the Dutch payment system.

2. Developments over the past five years

Under the influence of technological advances, such as the introduction of the public switched data network and the development of the OSI standards*, many institutions are engaged in constructing or extending their own data communication systems.

In 1985 the banks participating in the Bank Giro Centre plan to introduce a new data communication infrastructure based on OSI standards. Initially this system will only process urgent payments.

Work is still in progress on the establishment of a data communication infrastructure integrating the existing circuits of the banks, the Postal Cheque and Giro Services and the Netherlands Bank, which will handle payments between the participating institutions with settlement at the Netherlands Bank. The infrastructure will be based on OSI standards and will use the public data network DN-1.

The banks and the Postal Cheque and Giro Services are preparing trials with POS terminals at about eighty petrol stations.

In 1983 some banks installed cash dispensers on their premises. The banks aim to create a "guest facility" for each other's customers, and for this and other purposes they have developed a joint bank card.

In 1979 the Netherlands Bank's circuit was improved with the introduction of an on-line system. Among other things, the clearing input from the banks' circuit is transmitted through this system. A new system is planned for 1985, which will operate on an on-line real-time basis and will have an inquiry facility.

Efforts are being made to tailor payment methods more to the needs of users. In 1978, for instance, all the banks introduced a simple form for ordinary credit transfers, and users are allowed to retain their account numbers when changing bank or bank branch. The issue of statements is also being brought more into line with the needs of the individual user, with the objective of issuing statements less frequently.

The public, especially consumer organisations, are showing a greater interest in the payment services on offer and the attendant charges.

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* Open Systems Interconnection

II. INSTITUTIONAL FRAMEWORK

1. Institutions

In the Netherlands payment services are provided by the Netherlands Bank (the Dutch central bank), the deposit-taking institutions and the Postal Cheque and Giro Services.

(a) The Netherlands Bank

The Netherlands Bank (De Nederlandsche Bank N.V.) is a state-owned limited liability company. The Bank Act of 1948 secures it a large degree of independence from the Government.

The Netherlands Bank has the sole right to issue bank-notes. The bank-note circulation is subject to a royal decree to regulate the reserve ratio; this decree provides that at least 50 per cent. of the note circulation, plus third-party deposits held at the Bank, must be covered by gold, convertible currency holdings and net claims on the IMF.

The Netherlands Bank acts as settlement institution and as cashier to the central government.

The Bank watches closely over developments in the banking sector. A special Payment Systems Policy Planning Department, which monitors both national and international developments, was set up in 1982.

The Bank is closely involved in establishing the National Payment Circuit, a data communication infrastructure that will be able to handle all payments.

(b) Deposit-taking institutions

The banking sector in the Netherlands is made up of commercial banks, banks organised on a co-operative basis, savings banks, mortgage banks and security credit institutions. The last two do not offer payment services and will not be dealt with here.

As is the case in many other countries, the different institutions are increasingly offering the same range of services. As a result, and with the rise in costs and the decline in economic growth, competition has grown.

Up to the 1960s the banks did not play a significant rôle in small-value payment transactions, dealing primarily with corporate and institutional payments while the Postal Cheque and Giro Services handled virtually all the payment transactions of private individuals. This market division changed when the banks, prompted by their need for additional deposits in order to expand their lending operations and improve their liquidity, began promoting the use of personal accounts by the public at large. Mechanisation and automation had advanced sufficiently to permit the processing of the large numbers of payment orders resulting from such accounts.

To ensure smooth and rapid processing of interbank transfers, the Bank Giro Centre (Bankgirocentrale) was set up in 1967. This institution is used by the commercial banks, the savings banks and the banks organised on a co-operative basis.

(i) Commercial banks

In the Netherlands there are ninety commercial (universal) banks with 2,366 branch offices. This figure includes a large number of establishments of foreign banks dealing mainly with payments on behalf of business customers. The four largest banks operate some 80 per cent. of all bank offices in the Netherlands and are represented throughout the country. The commercial banks offer a wide range of services to their customers, including insurance, payment facilities, credit, mortgages, foreign exchange and in some cases even travel services. They operate on both the retail and the wholesale market and the largest of them have a network of foreign offices.

(ii) Banks organised on a co-operative basis

The 964 banks in this category are organised under Rabobank Nederland B.A. The Rabobanks maintain a total of 3,040 offices and are strongly represented in country areas. Originally, indeed, they were agricultural credit institutions, but they have developed a full range of banking activities and are now also represented in the cities. Though independent in many ways, the products that these banks offer are completely standardised. Rabobanks are typically retail banks, but they are now entering the wholesale market and opening foreign branches.

(iii) Savings banks

The savings banks are non-profit-making institutions, one of their objectives being to promote thrift. The need to remain competitive has encouraged concentration. Most savings banks co-operate in De Nederlandse Spaarbankbond, which owns a commercial bank; but the savings banks have remained independent and operate under their own names. Though they are still geared to collecting savings and deposits they have gradually introduced a full range of banking facilities and stockbroking services.

(c) The Postal Cheque and Giro Services

The Postal Cheque and Giro Services (PCGD), part of the Dutch Post Office, have been providing payment facilities for over sixty-five years. Together with the Post Office Savings Bank, they offer many banking services to their customers. For many years the Postal Cheque and Giro Services were virtually the only institution offering payment services to private individuals. At the end of the 1960s, however, when the banks entered retail banking on a much larger scale, they began to face competition and they are now losing ground to the banks. Their legal status is a hindrance to their development, and a new legal structure is under discussion.

2. Bodies responsible for monitoring and promoting developments in the payment system

The Steering Committee on the National Payment Circuit is the only national body with responsibilities in this field. It is composed of

representatives of the commercial banks, the co-operative banks, the savings banks, the Postal Cheque and Giro Services, the Netherlands Bank and the Ministry of Finance. Its aim is the technical integration of the three domestic transfer systems on the basis of OSI standards, to obtain an improved service at lower operational cost.

A number of other developments are, however, the subject of collaboration between the banks and the Postal Cheque and Giro Services. For example, a joint committee has been set up to implement an experimental POS system at petrol stations. In addition, there is collaboration on Eurocard and a common inpayment procedure. The costs of transfer services are also the subject of joint discussions.

III. PAYMENT SYSTEMS

1. Payment media available to customers

(a) Cash payments

(i) Legal basis

The present system of cash payments in the Netherlands is based on two Acts, viz. the Coinage Act of 1948 for coins and the Bank Act of 1948 for bank-notes. The Coinage Act provides that the guilder, the unit of account of the Dutch currency system, is divided into 100 cents. Coins are produced exclusively by the Mint, an institution under the supervision of the Ministry of Finance. The Bank Act provides that the Netherlands Bank, as central bank, has the sole right to issue bank-notes. These bank-notes are legal tender up to any amount. The Netherlands Bank is not authorised to issue bank-notes in a denomination of less than 5 guilders.

At the end of 1983 the currency in circulation in the Netherlands consisted of:

- bank-notes in six denominations: Fl. 5, 10, 25, 50, 100 and 1,000;
- coins in seven denominations: 5, 10 and 25 cents and Fl. 1, 2.50, 10 and 50.

The Fl. 0.01 coin ceased to be legal tender in 1982 and was withdrawn from circulation. As a unit of account, however, the cent continues to be used.

Between the end of 1978 and the end of 1983 the currency circulation increased by 42 per cent. The value of the bank-notes in circulation at the end of 1983, excluding those at banks, totalled Fl. 25 billion ($8.1 billion) and that of coins Fl. 1.5 billion ($0.5 billion). Fl. 100 bank-notes accounted for 50.4 per cent. and Fl. 1,000 notes for 37.2 per cent. of the bank-notes in circulation; the proportion of the total currency in circulation accounted for by coins was less than 7 per cent.

Over the year the volume of currency in circulation shows a distinct wave pattern, with peaks in the summer months and in December. Within each month, there is generally a low in the third week. In 1983 the bank-note circulation fluctuated between Fl. 23 billion ($7.6 billion) and its end-year figure of Fl. 26.5 billion ($8.6 billion).

(ii) Bodies managing the currency

Coins in denominations of less than 1 guilder are brought into circulation by the Post Office and bank-notes and coins in denominations of 1 guilder or more by the central bank, banks, post offices and some large enterprises. The often substantial amounts taken up by these institutions are debited to their current accounts with the central bank. The public in turn takes up the notes and coins from the institutions concerned so as to meet normal household expenditure, their withdrawals being debited to their accounts, to which in most cases their salaries are credited each month. The system makes use of the network of bank branch offices and post offices all over the country. Apart from its head office, the central bank itself uses fifteen branches throughout the country to effect this distribution.

Cash no longer needed by the banks and post offices is returned to the central bank and the remitter's current account is credited accordingly. Bank-notes returned to the central bank in this way are counted, checked for counterfeits and sorted into clean and soiled notes; all these operations are combined in one automated process. The stock of notes and coins held at the banks and the Postal Cheque and Giro Services fluctuates between 4 and 6 per cent. of the currency circulation. At the end of 1983 the figure was 6 per cent., corresponding to about Fl. 1,486 million ($482 million).

As already noted, the Bank Act of 1948 gives the Netherlands Bank responsibility for the currency circulation in the Netherlands. Bank-notes are put into circulation by meeting the demand from banks and the Postal Cheque and Giro Services which hold current accounts at the Netherlands Bank. As, on the one hand, they will tend to keep any debit balance at the Netherlands Bank (on which they must pay interest) as small as possible and, on the other hand, will seek to invest their unneeded cash so as to earn maximum interest (the central bank does not pay any interest), they will hold their stock of bank-notes to the minimum and return any unneeded notes to the Netherlands Bank. In 1983 a total of Fl. 729.2 billion ($236.7 billion) of bank-notes was taken up by banks and a total of Fl. 713.7 billion ($231.7 billion) was returned. The bank-notes returned from circulation are handed in at the Netherlands Bank's head office or its branches in the provinces. The returned notes are processed centrally at the Bank's head office.

(iii) Users

In the Netherlands the average household makes most of its payments in cash. However, the larger the amount involved, the greater is the tendency to use transfers or guaranteed cheques. Transfers are the most frequent payment media used for the settlement of rent, insurance premiums, gas, water and electricity bills, subscriptions and so on.

While no precise figures are available, the use of cash to pay wages, salaries, pensions and social security benefits is becoming rare,

virtually all such payments now being effected by transfer. Cash is, however, still used in cattle trading and in the second-hand car market, as well as in transactions where taxation can thereby be evaded.

The number of cash payments made is not exactly known. Their total value in 1983 has been estimated at about Fl. 424 billion ($137.7 billion).

(iv) Degree of automation

At the end of 1983 some thirty-two cash dispensers had been installed on banks' premises on an experimental basis. In 1983 some banks planned to install "through the wall" cash dispensers which would be activated by a debit card and offer a "guest facility" to the customers of other banks. Little information is available on the use of cash dispensers, but they are unlikely to have had an impact on the overall payment system. Despite the vast numbers of cash payments made, automation of cash dispensing is still in its initial stage.

The automated counting and sorting of coins is well established.

Bank-note sorting at the Netherlands Bank is fully automated. In one integrated process soiled notes and counterfeits are removed (though thanks to the very advanced technology used in producing bank-notes, forgery is rare), the notes are counted and their numbers registered. The machines used in this process are each equipped with a device to produce magnetic tapes for the large file registration system which is kept on the Bank's central computer. In 1983 some 676 million notes were processed by these machines.

(b) Cashless payments

(i) Legal basis

There is no general legislation governing transfer payments in the Netherlands. Regulations are contained in the Postal Giro Decree of 1966 (revised) and in the General Terms and Conditions of the Netherlands Bankers' Association of 1971. Otherwise, the normal civil and commercial laws apply. This means that no one is under an obligation to accept cashless payment in settlement of debts, since only coins and bank-notes are legal tender. However, the legal view that has evolved over the years is that anyone who makes public (or causes to be made public) the fact that he holds an account is regarded as having given prior consent to payments into and/or transfers to that account, which he cannot therefore reasonably refuse. It is planned to include a provision in the new Civil Code to the effect that a transfer payment is equivalent in law to payment in coins or bank-notes. Under the present regulations, these types of payment can only be equated in times of war or other exceptional circumstances under the Financial Transactions Emergency Powers Act of 1978.

The Bank Act of 1948 concerning the central bank contains a section which in general terms provides that the Netherlands Bank must facilitate domestic money transfers.

(ii) Payment instruments

In the Dutch transfer system the following payment instruments may be distinguished:

- ordinary credit transfers,
- pre-prepared transfers,
- direct debits,
- cheques,
- other payment instruments.

When making an ordinary credit transfer, the account holder instructs his bank or postal giro office to debit his account with the amount indicated in his transfer order, and to credit that amount to another account, likewise indicated by him, at a bank or postal giro office. Practically all irregular payments in trade and industry, as well as some household payments, are effected by means of ordinary credit transfers. This payment instrument is also used on a large scale by the central government and local authorities.

Pre-prepared transfers fall into two categories, the regular transfer and the inpayment transfer. In the case of the regular transfer, the account holder gives his bank or postal giro office a standing order to transfer, at fixed dates, fixed amounts to an account indicated by him. This form of payment is frequently used for rent, subscriptions, insurance premiums, etc. On the fixed dates the bank or postal giro service effects the transfer, without any further action on the part of the account holder or the creditor being required.

The second form of pre-prepared transfer, the inpayment transfer, is initiated by the creditor. Together with his bill, he sends the debtor a fully prepared transfer form, in most cases complete with the debtor's account number, which he knows from previous payments. All the debtor has to do is to sign the form and send it to his bank or postal giro office. This payment medium is used for both regular and irregular payments of either fixed or varying amounts, e.g. for telephone bills, insurance premiums and subscriptions, as well as for bills for deliveries to regular customers.

Direct debits constitute a separate category, though they have much in common with inpayment transfers. The transfer is again initiated by the creditor, who has been authorised beforehand by the debtor to charge his account for goods delivered or services performed, without any further action on the debtor's part being required. This procedure is frequently used by public utilities among others.

Direct debits can be made only within the individual transfer circuits. For inpayment transfers the banks and the Postal Cheque and Giro Services have developed a joint procedure.

With a satisfactory transfer system available to the public from an early date, the cheque never played a major rôle as a domestic payment instrument in the Netherlands. In the second half of the 1960s, however, the guaranteed cheque was introduced. The first (1967) was the guaranteed bank cheque issued by the banks for domestic use, and the second (1969) the

guaranteed giro cheque of the Postal Cheque and Giro Services; the eurocheque was introduced in 1973. The guaranteed bank cheque and the guaranteed postal giro cheque are guaranteed by the issuing institutions for up to Fl. 100 and Fl. 200 respectively; they are made available to account holders on request and are free of charge. The eurocheque is guaranteed up to an amount of Fl. 300; an account holder using eurocheques pays an insurance charge of Fl. 10 per year to cover the consequences of loss or theft of the cheques.

These three payment instruments can be used only in conjunction with a cheque card carrying the card holder's account number and signature. The cheques can be used in the Netherlands for practically all purchases. In addition, the guaranteed postal giro cheque and the eurocheque can be used in a number of other countries for cash withdrawals (both) or purchases (eurocheques only).

A total of 119.6 million guaranteed bank cheques and 153 million guaranteed postal cheques were used in payment transactions in 1983.

In 1979 the banks introduced a new form of bank cheque to be used for the payment of taxes.

Other payment instruments, such as credit cards and the newly introduced travellers' cheque denominated in Dutch guilders, play an insignificant rôle. As already mentioned, no POS networks have yet been installed.

Table 1 in the Appendix shows the shares of the different instruments in total transfer payments.

Compared with 1978, the number of ordinary credit transfers has declined as smaller business customers, too, have increasingly changed over to inpayment transfers and direct debits.

The form in which transfer instructions are given is gradually changing. The share of ordinary credit transfers submitted to the banks on transfer order forms that have to be converted manually into machine-readable transfer instructions decreased from 21 per cent. of the total of bank transfer items in 1978 to 15 per cent. in 1983. This is partly due to the fact that business customers are using more transfer orders that permit OCR reading. Within the category of machine-readable transfer instructions itself there are changes, too. The punched card is losing ground, while the diskette is making the most headway. The volume of transfer instructions transmitted over data communication links is growing. In 1983 about 0.4 million such orders were received by the Bank Giro Centre, against 0.2 million in 1982.

The developments are illustrated in Table 2 in the Appendix.

(iii) Degree of automation

At the Postal Cheque and Giro Services the entire transfer processing system has been fully computerised in three centres. Users very frequently present their orders for credit transfers or direct debits in the form of magnetic tapes. Private account holders send their payment orders

to one of the three centres. The Postal Cheque and Giro Services are gradually replacing punched cards by machine-readable forms.

The banks' transfer system is marked by greater diversity as regards the level of automation, which varies with the individual bank. The system of the Bank Giro Centre is fully computerised and is operated in two centres. The Bank Giro Centre receives the information from the banks almost entirely in the form of machine-readable data carriers. It also processes the guaranteed bank cheques and eurocheques, which it retains in the same way as the guaranteed postal giro cheques are retained at the Postal Cheque and Giro Services.

2. Exchange circuits within the banking system

(a) Transfer circuits

In the Netherlands cashless payments are processed in three (interconnected) transfer circuits:

- the banks' circuit, in which the commercial, co-operative and savings banks participate;
- the circuit of the Postal Cheque and Giro Services;
- the circuit of the Netherlands Bank.

The relative importance of these circuits is shown in Table 3 in the Appendix.

(i) The banks' circuit

The banks' circuit is basically a decentralised system. In 1967 the banks, each of which is fully independent, founded the Bank Giro Centre to facilitate payments among themselves and between the banks and the other transfer circuits by means of the centralised processing of transfer orders. The transfer orders received by the banks' branch offices are converted to machine-readable data carriers, nowadays practically all in the form of magnetic tapes. The data carriers are sent to the Bank Giro Centre, where the information is processed in such a manner that for each individual bank a machine-readable data carrier is obtained, containing all credits to accounts of that particular bank's customers.

It should be noted that the Bank Giro Centre is merely an intermediary between the participating banks. It receives debit items and converts them into credit items, for individual banks and account numbers, by means of an automated system. The Centre does not know the balances on accounts, makes no entries in accounts and, consequently, does not produce statements of account. It is the individual banks themselves which, using automated processes, make the actual debit and credit entries in the accounts and produce the statement of account, which they send to their customers.

It is clear that these purely technical operations of the Bank Giro Centre must be followed by financial settlement. For this purpose the participating banks have authorised the Centre to effect a daily clearing

through the Netherlands Bank, the account of each bank being debited or credited with the difference between its total debit and credit items.

Since all commercial banks, banks organised on a co-operative basis and savings banks make their mutual transfers in this manner, the Bank Giro Centre represents the heart of a national interbank transfer circuit.

Each bank has its own internal processing system for in-house payments, the Bank Giro Centre being used mainly for exchanging payments with other banks, the postal circuit and the Netherlands Bank. Most savings banks are connected to the Bank Giro Centre through a joint computer centre at De Bank der Bondsspaarbanken, a commercial bank that is owned by savings banks. Many savings banks have only a regional base, but by operating their own data communication network they are able to offer services all over the country through each other's offices.

The way in which the Bank Giro Centre functions causes the public to view the banks' transfer system as an integrated entity.

(ii) The circuit of the Postal Cheque and Giro Services

The Postal Cheque and Giro Services are characterised by a high degree of centralisation. The services operate three centres, where all transfer orders are processed. The booking process in these centres is divided into two parts: one in which the accounts are debited and one in which they are credited. Apart from these centres the Postal Cheque and Giro Services operate a number of conversion centres throughout the country, where payment orders received are converted and put onto machine-readable data carriers.

Most of the booking procedure in the three centres is computerised, but verification of the debtor's signature, and that the name and number on the voucher belong to the correct account, is done manually. In the case of ordinary credit tranfers the original voucher is attached manually to the daily statement and sent to the creditor.

The Postal Cheque and Giro Services are moving from punched cards to forms that permit optical character recognition.

The circuit of the Postal Cheque and Giro Services has greatly constributed to the success of the Dutch cashless payment system.

(iii) The circuit of the Netherlands Bank

The circuit of the Netherlands Bank embraces only a limited circle of account holders, mainly banks, money and capital-market institutions and public authorities. The system is highly centralised and completes all transfer orders on the day of receipt. Statements of account are in the possession of the participants on the next day.

The Netherlands Bank's circuit serves as the final settlement system for the other two systems. In addition to its rôle as settlement institution, the central bank acts as cashier to the central government.

(b) Exchange circuits, clearing and settlement

To exchange items the banks, as has already been noted, use their Bank Giro Centre. After processing, the resulting payment obligations are netted out so that an institution will either owe or be paid an amount. Clearing figures are presented each working day to the Netherlands Bank via the on-line system at about 12 noon. Until about 1.15 p.m. other items, for instance payments stemming from money-market transactions, can also be presented to the Netherlands Bank via the on-line system. The Netherlands Bank determines the banks' positions and makes the final settlements at 3.30 p.m. Until that time banks may present items to the Netherlands Bank to correct their positions.

Items from the banks' circuit for the postal circuit are also passed through the Bank Giro Centre. For various organisational and commercial reasons the Postal Cheque and Giro Services do not accept tapes from the Centre, so these payment instructions are first converted to punched cards. Settlement of these items is effected through an account held by the Bank Giro Centre with the Postal Cheque and Giro Services. This account is regularly replenished through a payment in the books of the Netherlands Bank.

The banks hold accounts with the Postal Cheque and Giro Services for payments to be made from a postal giro account holder to a bank account holder. Ultimately, the amounts are withdrawn from the Postal Cheque and Giro circuit through the accounts held at the Netherlands Bank.

IV. GENERAL REMARKS

In the Netherlands there are no legal requirements governing the pricing of payment services by either financial institutions or the Netherlands Bank. In a number of fields the banks have agreed on minimum rates. In the case of personal accounts only a few categories of transaction have been explicitly priced; revenues in this field stem mainly from earnings on interest margins. In the case of business accounts there are various kinds of commission as well as revenues from interest margins. Because of the increasing costs of payment services the financial institutions are considering more explicit pricing. In the long run the aim is to attain pricing that will cover costs.

The Dutch payment system is efficient and well organised. The high degree of co-operation between all the financial institutions concerned ensures a continuous evolution. While the past five years have seen changes in the system as a result, they have not been of a fundamental nature.

Appendix

Table 1

Number of transfer transactions and shares of the different instruments in the total, 1978-83

Instruments	Number[1] of transactions, in millions		Percentage[1] of total	
	1978	1983	1978	1983
Ordinary credit transfers	544	501	50	41
Regular transfers	.	29	.	2
Inpayment transfers	168	228	15	19
Direct debits	150	191	14	16
Guaranteed cheques	233[2]	273	21	22
	1,095	1,222	100	100

1 All figures are estimates.
2 This figure relates only to cheques used for transfers.

Table 2

Machine-readable transfer instructions, 1978-83

Type of carrier	Millions of items*	
	1978	1983
Magnetic tape	58.6	84.4
Diskette/cassette tape	3.0	21.2
Punched card	16.0	12.8
OCR	13.1	15.5

* The figures relate only to the banks.

Table 3

The relative importance of the three transfer circuits in the Netherlands

1983	Banks	Postal Cheque and Giro Services	The Netherlands Bank
Transfers handled, in millions of items	629	593	0.6
Transfers, in billions of guilders	820	725	3,920

End-1983	Banks	Postal Cheque and Giro Services	The Netherlands Bank
Number of sight accounts, in thousands	8,231	4,949	1
Total balance on sight accounts, in billion of guilders	38.1	15.2	.

8. S W E D E N

I. INTRODUCTION

Transfers of funds are effected mainly by the banking sector and the Post Office.

The banks' participation in the payment system is still largely characterised by co-operation rather than competition. Cheque and bank giro transactions will be handled by any bank branch, irrespective of the issuing bank.

Although the Post Office has engaged in very few banking activities in its own right since 1974, its rôle in the payment system is more important than that of the banks. While the Postal Giro co-operates closely with one of the commercial banks on the one hand, and the government-owned PK-Bank on the other, it also provides services to other banks, such as cheque encashment and the paying out of sums withdrawn from commercial and savings banks.

Two major changes have occurred in the payment field in the last few years: firstly, increased competition between the banks and the Postal Giro, and secondly, greater use of credit cards.

Nowadays, most salaries, wages, pensions, dividends, family allowances, etc., are paid by means of transfers to bank accounts. For many years it has been possible to use accounts with the PK-Bank as giro accounts. In 1982, mainly with a view to retaining deposit balances, the savings banks offered the same service to their customers, and shortly after the other banks followed suit. As a result, almost every household in Sweden now has a giro account. 90 per cent. of the total amount of payment transactions and 10-15 per cent. of the total number of transactions are handled by the giro systems. However, in the household sector cash payments are still predominant, most payments being made in retail shops.

In Sweden there are two ATM systems in operation. The Bankomat system is marketed by the commercial and co-operative banks jointly, while the Minuten system is marketed by the savings banks. The services offered include withdrawals and balance inquiries. There is no call for a deposit function because most deposits are made by credit transfer. Most ATMs are installed in branch offices or located in or near shopping centres, with the bulk of transactions being made during peak hours, when the banks are open.

So far about 1,074 ATMs have been installed and more than two million cards have been issued. In 1983 nearly 70 million withdrawals were made.

The number of credit cards has grown substantially lately. Most of the cards are selective or exclusive cards in the sense that they can only be used in particular bank branches, stores, etc.

POS debit cards are marketed by a number of oil companies. There is a general feeling today - reflected in opinion polls - that, on the whole, consumers are not yet ready to accept debit cards as a payment instrument, except, perhaps, for payments at petrol stations.

The development of the payment system in Sweden is not subject to specific legislation. With the exception of the circulation of notes and coin, the central bank has not sought to influence its development.

II. INSTITUTIONAL FRAMEWORK

Payment services in Sweden are mainly provided by three institutions - the central bank, the Postal Giro and the banks.

1. The central bank

The Swedish Constitution of 1974 states that the Bank of Sweden is an agency of Parliament and has the sole right to issue bank-notes. The Bank of Sweden Act contains a note cover regulation, however, which says that the amount of notes outstanding has to be covered by gold and short-term foreign exchange claims, government securities and claims on banks.

It is implicit in the central bank's exclusive right to issue bank-notes that it is responsible for providing the economy with sufficient bank-notes in the denominations required. The central bank is also responsible for the circulation of coin.

As mentioned earlier, the Swedish banks perform a variety of services on one another's behalf. As a consequence, there is a need for a well organised clearing system to settle debts and claims between banks. The clearing procedure will be described later, taking cheques as an example, but the procedure is by and large the same for other kinds of transactions. The central bank is responsible for the final interbank settlement in the clearing.

Apart from the matters mentioned above, the central bank does not play a direct part in or try to influence the development of payment systems. In this sense the central bank plays a fairly passive rôle. The bank is, however, very concerned about the process and its implications for monetary policy, and consequently plays an important rôle as an observer.

2. Postal Giro

The predominant payment system is the Postal Giro, which carries out all kinds of payments, ranging from small payments between individuals to the Government's payments. Total transactions can amount to several billion kronor per day.

From its inception until the end of June 1974 the Postal Giro was administered by the Postal Savings Bank, and formed the Post Office Bank, a separate division within the Post Office. In 1974 the Post Office Bank was wound up and the Postal Savings Bank merged with a government-owned commercial bank (the PK-Bank), while the Postal Giro became a separate central unit within the Post Office.

As the Post Office co-operates very closely with the PK-Bank with respect to payment transactions, since 1974 its services to this bank have been the subject of a contract between the two parties.

3. Bank Giro

The Bank Giro, in which all banks participate, is not a legal entity. It can be described as an organisation jointly owned by the banks with the purpose of facilitating bank giro procedures. The system has a central institution called the Bank Giro Centre.

4. Savings Bank Giro and Private Giro

By law the various bank groups should compete on equal terms. The commercial banks also compete among themselves, which is not the case among savings banks and co-operative banks.

As mentioned earlier, all banks participate in the Bank Giro, which is used mostly by enterprises. In order to attract new customers the savings banks started in 1982 to co-operate with the Postal Giro. As a result, a new giro system was introduced called the Savings Bank Giro, which provides giro facilities for individuals. Today, about 1.5 million salary accounts with savings banks have giro facilities.

At the same time, the commercial banks (with the exception of the PK-Bank) and the co-operative banks introduced via the Bank Giro a similar system called Private Giro, to which approximately 1 million accounts are connected.

Not counting the Postal Giro and the Bank Giro, there are consequently three giro systems run by banks for individuals: one system run by the PK-Bank in co-operation with the Postal Giro, another system run by the savings banks also in co-operation with the Postal Giro and a third system run by the other banks in co-operation with the Bank Giro. Consequently, almost every household in Sweden now has a giro account.

5. The banks

Recently the banking sector in Sweden has started to undergo changes, and this process is likely to continue in the future. There are many reasons for this, in particular the growing competition not only between banks but also between banks and other institutions. Finance companies, for example, have increasingly been encroaching on the banks' market since the beginning of the 1980s.

Nevertheless, as already mentioned, the Swedish banking system, historically, has been characterised by co-operation rather than by competition. Banks, when introducing new instruments, etc., first agreed upon standards before they started to compete. This co-operation has led to a situation whereby the banks perform a variety of services on one another's behalf for the benefit of customers. A customer of, for example, a small regional savings bank therefore has access to the same nationwide services as a customer of one of the large commercial banks with branches all over the country.

The banking sector has also been changing dramatically during the last few years in both institutional and functional terms.

Institutionally, the number of savings banks has fallen by approximately two-thirds since 1950, and this trend will continue. There are two main reasons for this. The first is that there are still a large number of very small banks experiencing growing competitive disadvantages. The second is that large savings banks must merge and grow in size if they are to compete with other banks in providing services to the business sector as well as to households. Moreover, the basic legal framework has been the same for all three banking groups since 1969. Today there are fifteen commercial banks, 153 savings banks (July 1984) and twelve co-operative banks effecting a wide variety of fund transfers through their 3,600 branches.

The financial instruments used by the banks also differ considerably from those used only a few years ago. The most fundamental change has been the abolition of many types of deposit accounts. Only five years ago the banks offered their customers at least seven different types of deposit account. Today most banks, in order to cut costs, offer only one - a so-called combination account - on which the interest paid is related to the length of time for which the funds have been on deposit in the bank and the size of the balance. Partly for this reason, it is no longer possible to measure M_1 in Sweden.

III. PAYMENT INSTRUMENTS

Despite all the technical innovations during the last ten to twenty years Sweden is still a "cash society". Studies undertaken in the early 1970s predicted the imminent emergence of a "cashless society". Today there are no such predictions. On the contrary, there seems to be general agreement that customer requirements, and not what is technically feasible, will decide the course of future developments.

In retail trading businessmen, customers and banks all seem to be of the opinion that cash is the cheapest payment instrument and will probably remain so for some time to come. Today approximately 97 per cent. of the total volume of retail transactions is effected in cash, 2 per cent. by card and 1 per cent. by cheque.

1. Cash payments

In 1903 the sole right to issue bank-notes was vested in the Bank of Sweden, which had been established by Parliament in 1668, and all issues by private banks had to cease. The issuing of coin is a long-standing central-government prerogative. Both bank-notes and coin are legal tender for cash payments, although there are certain limits on the compulsory acceptance of coins by the public. Since 1st January 1975 the Bank of Sweden Act has no longer set a ceiling on the value of the total note issue; however, the Act still contains a note cover regulation, although it imposes no restrictions on the composition and value of the covering assets. According to the Bank of Sweden Act, notes are required to be issued in denominations of S.kr. 10, 100, 1,000 and 10,000 and may be issued in denominations of S.kr. 5, 50 and 500. Notes have so far been issued in all these denominations except for S.kr. 500. Since the autumn of 1983,

however, S.kr. 5 notes are no longer issued, and it has also been decided that in late 1985 the Bank of Sweden will start to issue a S.kr. 500 note. All bank-notes are produced directly by the Bank of Sweden in its printing works; the Bank is responsible for the design of new notes, the substitution and destruction of worn and damaged notes and the detection of forgeries; notes and coin are put into circulation by the Bank's head office and eight regional branches together with their fourteen sub-branches via banks and post offices. The Royal Mint is responsible for minting metal coins in four denominations, namely S.kr. 5 and 1, and 50 and 10 öre; 25 and 5 öre coins are no longer minted and will cease to be legal tender at the end of June 1985. At the end of 1983 the amount of currency outstanding totalled S.kr. 44,961 million, the equivalent of $ 5.62 billion, 95 per cent. of which was in notes and 5 per cent. in coin.

2. Payments through the Postal Giro

The basic payment services offered by the Postal Giro are inpayments, outpayments and transfers. By mixing these basic services, a variety of payment transactions are possible. Even if the services are much the same as those offered by the Bank Giro, the Postal Giro is far bigger, particularly in the two sectors of government payments and payments by individuals.

The payments it transacts are effected by means of transfers between various postal giro accounts. The book-keeping, the crediting and debiting of accounts, and the printing of account statements are all done by computer. Individuals and smaller enterprises initiate transactions manually by sending special giro forms by post and by ordering the Postal Giro to debit the payer's account and to credit the payee's account or to pay the amount in cash. The payment orders of larger companies are now generally sent to the Postal Giro on magnetic tape. The latter method is used by firms with a large number of payments to make. There is also a procedure for direct data transmission from a customer's computer to that of the Postal Giro Centre. For firms which receive large numbers of inpayments (rents, premiums, mail order payments, etc.), the inpayment cards are printed in such a way that they can be read optically in the Postal Giro Centre. The data are then delivered to the account holder on magnetic tape with the account statement. In the so-called auto-giro service (direct debiting) amounts are transferred automatically from payer to payee at the initiative of the payee, provided that the payer has given his authorisation.

Individuals with a salary account at the PK-Bank have access to giro facilities identical with those supplied to customers by the Postal Giro. Today, 1.3 million salary accounts held at the PK-Bank are linked to the Postal Giro system.

3. Payments through banks

A payment transaction through a bank is normally effected either by Bank Giro or by writing a cheque. The Bank Giro is used mostly by enterprises, whereas individuals tend to use cheques.

(a) Cheques

The usefulness of cheques as a means of payment is a result of the

co-operation between the banks. The banks redeem each other's cheques irrespective of the bank on which the cheque is drawn.

At the beginning of the 1960s a new payment procedure was introduced, which meant that almost all employees in Sweden had their wage or salary payments made by transfer to a bank account. As a result, the number of cheque accounts and the volume of cheques used increased rapidly. The growth in cheque usage has now stopped, largely because the banks - in order to cut costs - have imposed charges for low-value cheques. The introduction of cash dispensers and the growing use of credit cards have also reduced the need for cheques. Today, each individual uses approximately ten cheques per year.

Since the banks redeem each other's cheques, a system to settle the debts and claims arising between them is needed. Today, this settlement is wholly computerised via the Bank Giro.

All cheques are standardised as far as account number, identification, description, layout, etc., are concerned. They are filed by the cashing bank and the issuing bank receives only the accounting data plus a code to tell it where the cheques are filed. Should the issuing bank need a particular cheque, it can be produced by referring to the code. This procedure seems complicated, but only one cheque in about 10,000 ever has to be consulted.

(b) Giro transfers

The Bank Giro can be concisely described as a system for transfers between bank accounts. In contrast to the Postal Giro there is no need for special payment accounts, since ordinary bank accounts - normally cheque accounts - are linked to the giro system. And the updating of the accounts is done by the account-holding bank.

The services offered by the Bank Giro are rather similar to those offered by the Postal Giro, e.g. OCR service, auto-giro (direct debit) services, data media input, direct data transmission, etc. The main difference is that payment documents are handed over to the system at the local bank office, which debits the payer's account and then forwards the documents to the Bank Giro Centre. However, payers using data media input are directly linked to the centre.

The main task for the centre is to sort and check all giro transactions, notify payees and supply the banks with accounting data. The data clearing between the banks is run through the centre, wages and pensions are channelled to the banks via the centre, etc.

4. Cards

The use of credit cards has grown substantially in Sweden during the last few years. Today, there are something like 100 different cards on the market, of which about ten can be used everywhere in Sweden. Two cards are travel and entertainment cards. All the others are selective or exclusive cards in the sense that they can only be used in particular bank branches and stores. In 1983 42 cards were issued per 100 inhabitants, and about 2 million cards had been issued in total.

The use of debit cards is very limited, with most such cards being issued by oil companies and car-hire firms. Many travel and entertainment cards are also classified as debit cards. In total, there are about 20 different debit cards, and approximately 1 million such cards have been issued.

A more widespread use of debit cards in the future is unlikely. Many companies are reluctant to install terminals because of the high costs involved and a general feeling that debit cards and POS terminals have yet to gain public acceptance.

The savings banks have also learned from their own experience. Some years ago they started a trial project in order to evaluate a POS system. The project lasted for about a year, and it was concluded that the time had not yet come to install a permanent POS system.

Households' payments in the retail sector will therefore continue to be made in cash. Taking all payments in the retail sector together, 97 per cent. are made in cash, 2 per cent. by credit card and 1 per cent. by cheque. In terms of the total amount paid the figures are slightly different: 90 per cent. in cash, 7 per cent. by cheque and 3 per cent. by credit card.

(a) ATMs

In the early 1960s the first ATMs were installed by the savings banks in order to compensate customers for banks' closing on Saturdays. Since then, ATMs have become more and more common, and people are increasingly using the machines even during bank opening hours. ATMs are a fast and convenient way for customers to get cash, and for the banks they have been a way to reduce the work-load at bank offices, especially during peak hours and when salaries are paid out.

The services offered by ATMs are withdrawals and balance inquiries. It is not possible to deposit money, there being no need for such a service since salaries, etc., are transferred to bank accounts automatically.

Today, there are two competing systems: the Bankomat and the Minuten systems, marketed respectively by the commercial and co-operative banks and by the savings banks.

The Bankomat system consists of about 400 machines. It is connected with each individual bank's computer via the public computer network, DATEX. In the case of Minuten, which consists of about 600 machines, each machine is connected to the savings bank's own computer centre via leased telecommunication lines.

In other words, both systems work on-line, and a total of about 1,074 ATMs have so far been installed. In 1983 more than 2 million cards were issued for use in ATMs. Nearly 70 million withdrawals were recorded and the amount withdrawn exceeded $4 billion.

Several years ago the banks agreed to link the two systems together. So far, however, no action has been taken, and the systems are unlikely to be linked, if at all, before 1985, when Minuten will have installed a new generation of ATMs comparable with those already installed by Bankomat.

(b) Home banking

Home and corporate banking projects are currently under way in a number of countries. To a certain extent this development is also taking place in Sweden, but the general opinion is that it will not have a major impact - at least as far as home banking is concerned.

The reason is that in Sweden well-developed giro systems already exist and most wages, pensions, dividends etc. are transferred to bank accounts automatically.

It is expected that the auto-giro (direct debit) service now offered by both the Postal Giro and the Bank Giro will expand rapidly in the future at the expense of home banking, as home banking is both more complicated and more expensive for the user than auto-giro.

In the corporate sector developments might be different. The public computer network, DATEX, in combination with new technology will enable enterprises not only to effect payments but also to exchange information.

At present one can only speculate on future developments in this field. There are currently many different trial projects in operation, but so far no permanent home banking or corporate banking system has been established.

5. Circuits

(a) Clearing procedure

Since the banks perform a variety of services on one another's behalf for the benefit of customers, there is also a need for a system to settle debts and claims between them. For all transactions this is normally effected via the Bank Giro, and although only the clearing procedure for cheques is described, it is in principle the same for all kinds of transactions.

Clearing is effected via the banks' data-processing centres, with the Bank Giro as the connecting link. Tellers enter all cheques, irrespective of the issuing bank, on their terminals, which, in most banks, are on-line to their computer centres. The computer can sort the cheques according to account number, and all clearing cheques are recorded on a special magnetic tape, which is sent to the Bank Giro every day. The Bank Giro performs the outward clearing between the banks. The transactions dealt with in the outward clearing are returned on magnetic tape to the receiving bank's computer centre, whereupon accounts can be updated. The maximum time it takes for a cheque redemption to be booked is one and a half days.

Before a magnetic tape is sent to the Bank Giro the transactions recorded on it are added together to arrive at the position against each bank. These amounts are reported to the central bank, where they are booked to each bank's cheque account.

The clearing procedure is regulated by an agreement between the participating banks. The agreement states that the bank which issues a cheque shall pay a specific charge for each transaction to the bank that

cashes it. The handling costs of the Bank Giro are apportioned between the banks on the basis of the number of cleared transactions they receive.

(b) ATM networks

As has been mentioned earlier, there are two extensive ATM networks in operation. The commercial banks operate the Bankomat system, while the savings banks have their Minuten network.

The ATMs are connected on-line to the bank's central computer, enabling the bank to check the customer's card number and credit balance at the time of the transaction.

The Bankomat system uses the public computer network, DATEX, while in the Minuten system the machines are connected to central computers via leased telecommunication lines, which also link the savings banks' terminals to the central computers.

IV. Current developments and trends

As a result of the growing use of cards over the last few years the Swedish Telecommunications Administration has also become interested in payment services and has asked some of the bigger credit card companies whether they would be interested in some form of co-operation. This contact has resulted in the foundation of a "Society for Electronic Payment and Credit Card Handling", the purpose of which is to:

- study possibilities for future payment systems;
- ascertain the requirements of telecommunication networks;
- indicate areas where field trials or pilot tests would be appropriate.

Today all the banks and a majority of the most important credit card companies are represented in the Society, together with the national associations of the retail trade, hotels and restaurants, travel agencies, petrol companies, etc. Membership of the Society entails no financial obligations.

The Society has already started a field trial to test a data communication system and terminals for credit card authorisation. Nine credit card companies have jointly founded a company, Kontocentralen AB, in order to carry out the trial in co-operation with the Swedish Telecommunications Administration. The objective is to reduce fraudulent use of cards, to simplify payments and to gain experience regarding the telecommunication traffic parameters. Retailers, hotels, restaurants and travel agencies are participating in the trial, which started in September 1984 and will last for one year.

In the trial credit card terminals are linked via the telephone network to a central computer, where relevant information is stored (e.g. hot lists). If the value of the purchase is higher than the lower limit, a call will be forwarded from the central computer to a computer at the credit card company. The use of the terminal will replace manual searching in hot lists and telephone calls for authorisation. The total number of terminals

will be 400, and the trial is taking place in 8 major cities, including Stockholm, Gothenburg and Malmö. The Swedish Telecommunications Administration is assuming the cost of the terminals, and Kontocentralen is financing the central computer and the administration of the trial. Charges for communication will be paid by the terminal user.

The field trial will also present an opportunity for investigating the rationalisation potential and possible improvements in handling credit cards and the design of an effective and reliable authorisation system. It can, however, also be seen as a first step towards introducing electronic payments.

The Society has also undertaken a study of a possible future payment system. The investigation showed that different interested parties place different, and often conflicting, demands on an electronic payment system and are likely to benefit from it in differing degrees.

Earlier studies and pilot schemes have often been based on a general model for a system or a newly developed technique. In many cases such an approach failed the test of consumer acceptance. It seems more effective to let interested companies analyse the value of electronic payment systems, make the investments and control the applications. On the other hand, it is highly unlikely that one single company or institution will be able or willing to establish a general electronic payment system in Sweden in the near future, partly because of developments that have already taken place in individual sectors, e.g. petrol sales. Electronic payment systems will thus probably continue to be developed gradually in different ways in different branches in the light of the requirements and possible benefits in each case. A gradual process of standardisation is therefore of the utmost importance.

A government commission which has looked into credit card questions has also recently published its proposals. Some of the proposals, should they be approved by parliament (in many cases an unlikely eventuality), would quickly restrict the use of credit cards. One of the commission's proposals, for instance, is that all card credit should be repayable within 10 months.

V. Conclusions

The development of new payment systems or payment instruments has slowed down in Sweden during the last few years. Existing systems have been consolidated, and consideration has been given to future courses of action in the payments field.

Over the past year a number of reports have been prepared by various committees analysing the present situation and attempting to outline the future development of payment systems.

A common conclusion reached by these reports is that so far too much attention has been given to pursuing the possibilities created by new technology and too little to meeting actual needs with the aid of the technology available.

A further common conclusion is that in future there will not be a revolution in the Swedish payment system. Instead, there will be a slow, continuous process of small changes over a long period of time.

In Sweden today no real debit card system exists, and it has often been discussed whether one is needed. The savings banks have introduced a credit card which can also be used as a debit card and in ATMs. The problem, however, is that no one wants to pay for running the debit card system. The savings banks have no incentive to try to reduce the number of cash payments in stores if they cannot recover costs through transaction charges payable either by the retailer or the customer. Retailers are unwilling to pay for the service, and it is doubtful whether customers will accept charges merely for the benefit of using a plastic card instead of cash.

When discussing the conditions for the introduction of new payment systems in retailing, one cannot compare Sweden directly with other countries, as there is little use of cheques in Sweden. The problem is therefore less a technical than a financial one: that of finding a payment system which is cheaper than cash and of apportioning the cost of running the system. The experience so far is that consumers are only willing to pay for a payment service if they get credit at the same time.

In the traditional payment system - cheques and giro - there is unlikely to be any major change in the near future, except that transactions will be handled faster.

One conclusion that can be drawn, therefore, is that if changes occur they are likely to happen within the retail sector and they will involve the use of cards. What effect the recently published proposals by the credit card commission will have on that development is at this moment impossible to say.

9. SWITZERLAND

I. INTRODUCTION

The structural changes which have been emerging in the monetary system since the end of the 1960s have taken much more definite shape in the last five years. The introduction of new, more abstract payment instruments has continued at a growing pace, though the proportion of paperless electronic payment instruments is still low. A breakthrough on a wide scale is not likely to be feasible until a broad consensus can be achieved on the basic conditions which will facilitate the widespread use of the new payment instruments. This, in turn, is essential because the establishment of new payment systems involves incurring high fixed costs, which is only worthwhile if they can be spread over a high volume of transactions. If the basic conditions are to be fulfilled, a series of arrangements must be worked out between various groups.

In practical terms, these arrangements concern the drawing-up of instructions and rules of conduct which ensure that a useful framework for the longer term can be established and maintained.

The basic consensus underlying the payment instruments in use today forms the subject of this chapter and will be illustrated by means of a descriptive analysis of existing institutions and instruments.

II. INSTITUTIONAL FRAMEWORK

The Federal Government, the central bank, the Postal Administration and the banks are the main agencies handling the Swiss payment system.

The development of payment media and their functions

For a long time, coins were issued by different institutions. The wide variety of coins led to high transaction costs, which reduced the degree of division of labour and specialisation. A political consensus making it possible to lower substantially the amount of funds tied up in the monetary system was achieved in 1850, when a coin-issuing monopoly was conferred on the Federal Government. The coinage was standardised, creating a uniform currency area throughout Switzerland. The same pattern of events was repeated in the case of the introduction of bank-notes. Again, issuing was done on an individual basis: a large number of "issuing institutions" issued their own range of notes, which differed from those of other banks in both nominal value and format in the interests of product differentiation. The drawbacks associated with this diversity meant that this new instrument was unable to gain acceptance even in fields where it showed significant advantages over coins. The political consensus achieved at the beginning of this century resulting in the establishment of a state monopoly was certainly a useful arrangement and explains why the bank-note subsequently gained acceptance very quickly as a payment instrument.

In the field of cashless payment instruments other ways of solving the problem were sought. The right to set up giro systems was conferred on both the central bank and the Postal Administration, but the banks, too, were able to offer them. This arrangement still applies today. During the first decades of this century only the Swiss National Bank and the Postal Administration had nationwide giro networks, whereas the banks were in

competition, offering their payment services on the basis of links with correspondent banks, as is still the case today in international payments. In these circumstances only the Postal Administration's postal cheque service was able to gain acceptance. This did not change until, at the beginning of the 1950s, the banks managed to reach a consensus: a uniform bank giro network was set up, with the accounts kept centrally at the Swiss National Bank. In recent years the volume of payments has increasingly been shared between the Postal Administration and the banks, and this has considerably heightened the need for co-ordination. The National Bank is working towards achieving constructive agreements, whereby the principle of unanimity applies: a consensus will only be reached if all the agencies are in accord, this being the case when all of them will benefit from the agreement in the long term. In this way, the advantages associated with the monopolisation of a payment instrument - uniformity of the payment system, universal media - can be realised at least in part, without the drawbacks - centralisation - having to be tolerated.

To this end, the Swiss National Bank has created a co-ordination body in which the banks and the Postal Administration are represented. The aim of the discussions is to reach agreements which will produce an improvement in the cost/benefit ratio of the monetary system.

With the same aim in mind, a feasibility study was commissioned at the end of 1983 to examine how and under what conditions a POS system could be introduced. As the retail trade would play an important rôle in the introduction of this instrument, it is represented in the working party.

The co-ordination process is proving to be particularly difficult in the banking system, as practically all banks offer payment services. In order to facilitate the process of reaching a consensus, a central body (Telekurs AG) has been set up with the aim of carrying out joint tasks, including the further development of the bank payment system. The institution - in which all banking groups are proportionally represented - is a useful instrument in the search for consensus. In the past decade all the important innovations in bank payments have been introduced on a co-ordinated basis. This applies to the giro, the eurocheque, cashless salary payment and Bancomat (cash dispensers). This co-ordinated approach explains to a large extent why these innovations have gained acceptance relatively quickly and on a wide scale.

III. PAYMENT SYSTEMS

3.1. Cash payments

3.1.1. Legal basis

Notes and coin are the official medium of exchange and are legal tender in Switzerland and Liechtenstein. Exclusive coinage rights are vested in the Federal Government under the terms of the Coinage Act of 18th December 1970. Coins are legal tender in quantities of up to one hundred at a time.

The note-issuing monopoly is regulated by the Central Bank Act of 23rd December 1953. Under that Act, the central bank is not only required to issue bank-notes but also to contribute to the development of an optimum payment system.

3.1.2. Suppliers of the service

The pattern of currency circulation is broadly the following: the central bank supplies currency to the banks in large amounts; the banks meet the needs of the companies which have to pay out wages and salaries in cash; wage and salary-earners normally meet their obligations (bills) by paying cash to retailers and at post offices; savings are also paid into the banks in cash; the banks and post offices place their excess cash with the central bank, where the notes are counted and checked for counterfeits and damaged notes are separated from those in good condition.

This money flow has been changing rapidly as companies switch over to salary accounts. However, customers have not yet changed their payment habits to the extent of engaging in cashless transactions on a large scale. Banks still see considerable growth potential in this field in the years ahead.

3.1.3. Participants in cash payments

The main participants in the cash transfer system are wage and salary-earners, consumers, retailers and post offices. From 3.1.2. above it can be seen that nearly all economic units are involved in the cash payment system. The ratio of currency in circulation to gross national product is 10 per cent., an extremely high percentage as compared with other countries.

3.1.4. The payment instruments used

Coins exist in eight denominations ranging from Sw.fr. 0.01 to Sw.fr. 5.

Bank-notes are issued in six denominations ranging from Sw.fr. 10 to Sw.fr. 1,000.

Until 1969 coins had a silver content of 835/1,000. However, with the rise in the price of silver in 1967, the real value of the coins exceeded their nominal value and nearly all of them disappeared from circulation. After this, other metals were substituted for silver.

3.1.5. The nature of payment transactions

Cash is the dominant medium of payment used by private households. Nearly all transactions between consumers and retailers are effected in cash, and bills are also paid in cash through the post offices.

3.1.6. The rôle of the central bank

The central bank is responsible for the whole life cycle of bank-notes from their design and production to their withdrawal and

destruction. Distribution and withdrawal are effected through the two head offices and eight branches of the central bank. These primarily supply the banks and post offices, which, in turn, are in direct contact with companies and private households.

3.1.7. Degree of automation

Highly advanced machines have been in use for several years. The new series of bank-notes in circulation is designed to permit the automation of such labour-intensive tasks as counting and checking to detect torn or unfit notes, forgeries, etc.

3.1.8. Responsibility for the currency

The central bank bears most of the responsibility for management of the currency. This is important, since the degree of automation is a function of the technical features of the paper instrument. The new bank-note series in Switzerland, for instance, incorporates all known technical elements capable of increasing the level of automation.

3.1.9. Cost of cash transactions

Relatively reliable statistics are available on the cost of payments made through a post office; the average cost of a cash inpayment is 50 US cents. (By comparison, a postal giro transfer costs an average of 13 US cents.) Other figures on costs are not available.

3.1.10. Cash dispensers

Switzerland has two national cash dispenser networks:

- Bancomat and
- Postomat.

There are also a series of local and regional networks with an estimated 250 machines. At the end of 1983 the Bancomat system comprised 273 machines and Postomat 104. Attempts are currently being made to reach agreement on integrating the various networks, with implementation planned for 1985.

3.2. Cashless payments

3.2.1. Legal basis

Special legislation exists only in the case of cheques. The payment services provided by the banking sector, in contrast to those offered by the postal giro system, are virtually exempt from regulation by the public authorities. The postal authorities, for instance, are not allowed to open savings accounts or to grant overdraft credits. The charges on the various transfer instruments and the interest rates on cheque accounts are also strictly regulated. The postal giro system is therefore at a competitive disadvantage.

3.2.2. Survey

The following description concentrates on the giro systems, the dominant cashless payment systems in Switzerland.

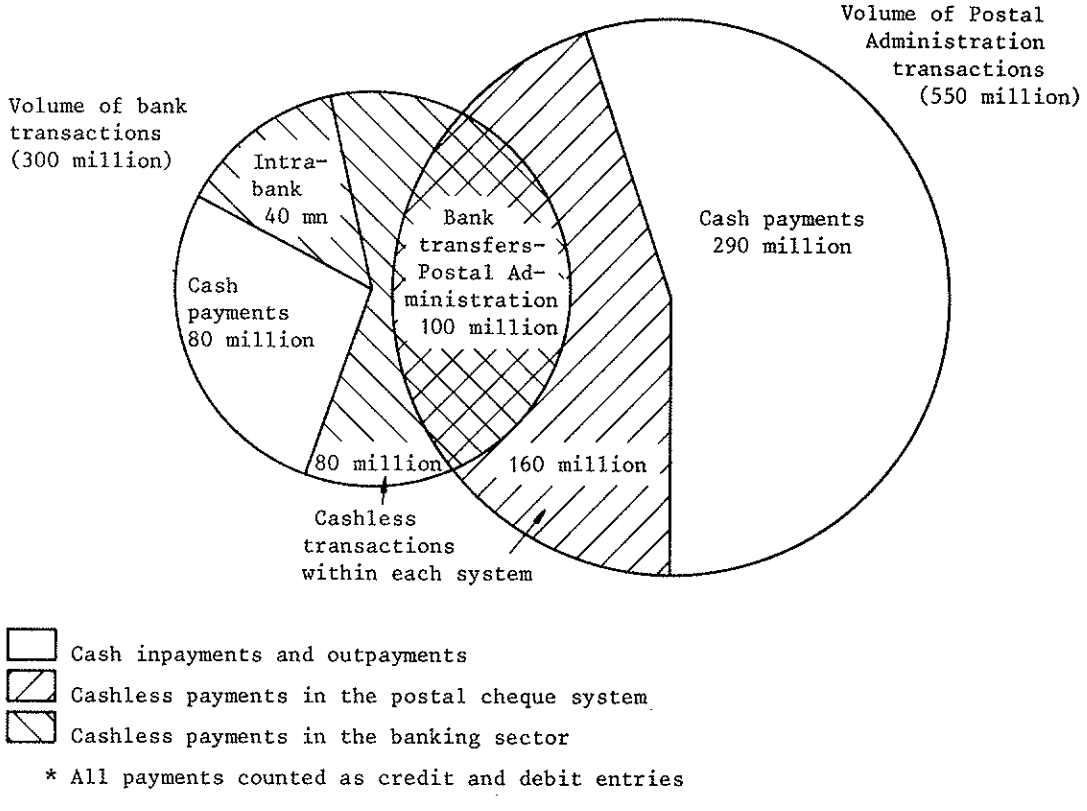
In Switzerland there are three institutions offering giro services:

- the central bank;
- the Postal Administration;
- the banks.

Taking the total number of transactions[1] as the criterion (see Chart 1) for measuring the relative importance of the three systems, the following result is obtained: (1) postal giro (65 per cent.); (2) bank giro (34 per cent.); and (3) central-bank giro (1 per cent.).

Only the two main systems, the postal giro and the bank giro,[2] will be discussed here.

Chart 1: Comparison of Money Transactions in the Bank and Postal Cheque Systems (1980)*



* All payments counted as credit and debit entries

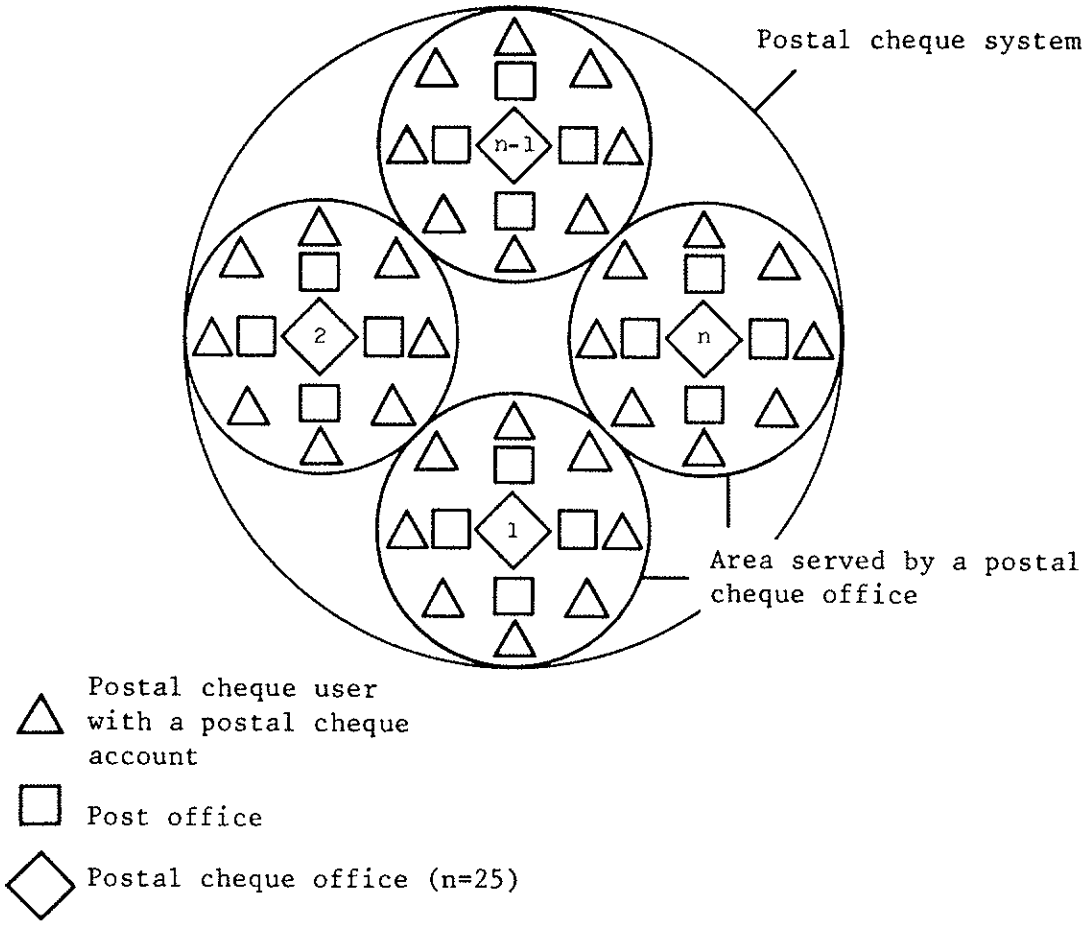
1 This criterion is a good indicator of the volume of resources in the payment system and is in this sense an important standard of reference for the development of an optimal monetary transfer system.

2 See Kevin J. Kearney, conference paper prepared for the BAI Inter-Industry Conference on Corporate-to-Corporate EFTS, March 1977, New York, p. 8 et seq.

3.2.3. The postal giro*

3.2.3.1. Survey (see Chart 2)

Chart 2: The Organisational Structure of the Postal Cheque System



3.2.3.2. The system of postal cheque accounts

(a) Characteristics

From an organisational point of view the postal cheque account is the smallest element in the postal system; its main characteristics may be summarised as follows:

- no payment of interest;

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* See Joseph Marbacher, Das Zahlungsverkehrssystem der Schweiz, Berne 1976, p. 151 et seq. (Translation by the BIS.)

- no initial deposit;[1]

- a statement of account produced free of charge twice a month;

- giro transfers executed free of charge;

- types of transactions:

  . cash inpayments,
  . cash outpayments,
  . giro transfers;

- no third-party cheques may be presented;

- no overdraft facilities (i.e. no credit);

- postal cheque accounts are designated by a number, the name (company name) and address of the account holder. Accounts may not be held under a pseudonym. Moreover, a register is published containing the names of all account holders.[2]

(b) Structure

As the system of postal cheque accounts can best be described in terms of the characteristics of account holders, it is expedient to analyse not only the change in the number of postal cheque accounts over time but also the categories into which postal cheque account holders fall and changes in these categories. However, the first aspect to be examined is the quantitative changes over time in postal cheque accounts.

Chart 3 shows that the number of postal cheque accounts has grown steadily. There was a pronounced shift in the trend in both 1967 and 1975; whereas in the twelve years from 1955 to 1967 the number of accounts rose at an almost constant rate of 8,000 per year, from 1967 to 1975 the increase averaged 27,000 per year, and from 1975 to 1983 the average rise totalled 70,000 accounts per year. If the proportion of the total population holding postal cheque accounts is taken as an indicator of the success of the cashless payment system, the result for the period 1955-67 proves to be rather modest, as the proportion rose by only 1 per cent., from 5 to 6 per cent.[3] Far more progress was made in the following period (1967-74), as the rate of increase accelerated from slightly over 2 per cent. in 1967 to more than 7 per cent. by 1974. In the final period (1975-83) the rate of

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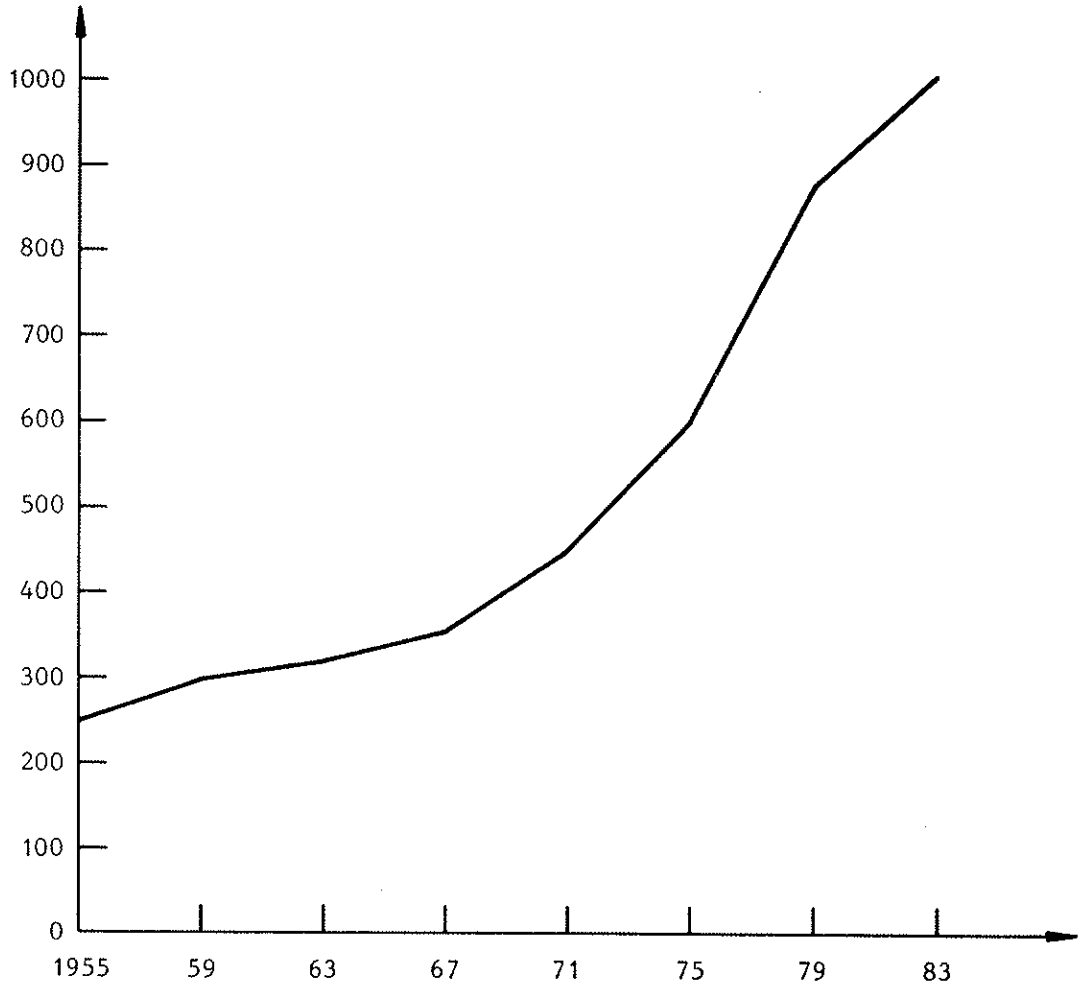
1 The initial deposit of Sw.fr. 50 was abolished on 1st June 1969 "in order to (make) the postal cheque account even more consistent with a cashless payment system" (PTT, 1969 Annual Report, p.14).

2 This contrasts with the practice of the banks, which do not publish registers of accounts and which allow accounts to be held under a pseudonym.

3 In this period the resident population increased from 5 to 6 million; see 1973 PTT Statistics, p. 126.

increase was as high as 10 per cent. The main reason for this marked change was the introduction of the direct crediting of wages and salaries, and cash dispensers.

Chart 3: Number of Postal Cheque Accounts (in thousands)



However, since most transactions are still effected in cash or involve the handling of cash at some stage, post offices assume considerable significance as a further element in the postal cheque system. They constitute the most important link between the cash system and the cashless payment system operated by the Postal Administration. As far as monetary transfers are concerned, the chief function of the post offices is to receive and pay out cash. For this purpose the Postal Administration has at its disposal a dense network of over 4,000 post offices spread throughout Switzerland.* The fact that there are post offices even in remote areas is of particular importance. The widespread distribution of post offices is primarily due to the obligation imposed on the postal authorities by their charter to provide a large proportion of their services to all households. This contrasts with the banks, which are able to confine their network of branches to areas where their operations are likely to be profitable.

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* There are around 3,000 communes in Switzerland.

3.2.3.3. The postal cheque offices

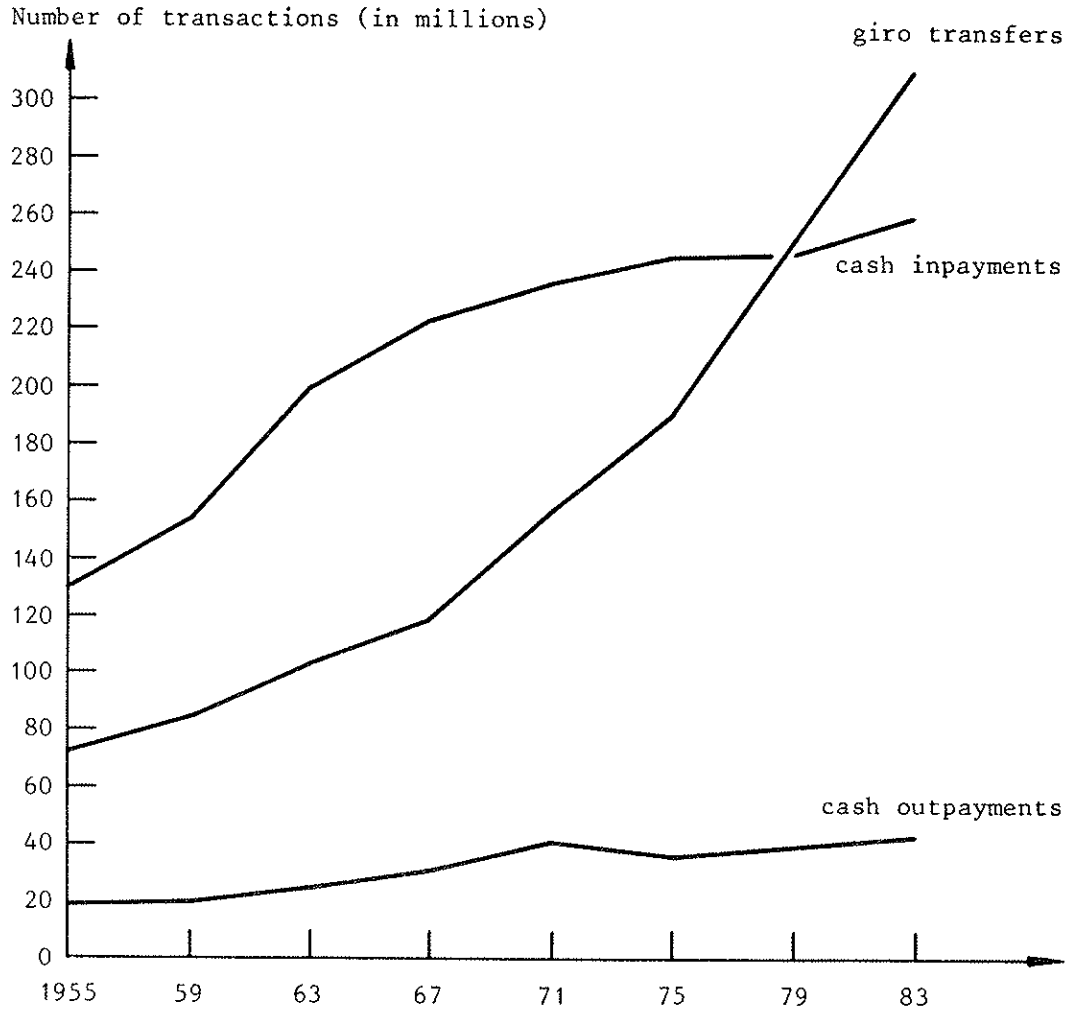
The third sub-system of the postal giro consists of the account-keeping postal cheque offices. Each transaction flows through such an office, where it is credited and/or debited. The Swiss postal giro system is decentralised and comprises twenty-five postal cheque offices, a number which, in the light of modern transmission technologies, is too high.

3.2.3.4. Postal giro services

Chart 4 shows the three main types of postal giro transfer: (1) inpayments, (2) outpayments and (3) giros. The significance of inpayment transfers, which are effected by private households at the post offices in cash form and are credited to the giro account, is clearly illustrated. It is important to note that the postal giro system did not start issuing cheques that could be used as payment instruments in the retail sector until the autumn of 1984.

On the other hand, it is evident that the number of giro transfers is growing faster than that of cash inpayments; the former exceeded the latter for the first time in 1979. This is a clear indication of the shift away from cash payments towards cashless payment instruments.

Chart 4: Main Monetary Transfers in the Postal Cheque Service



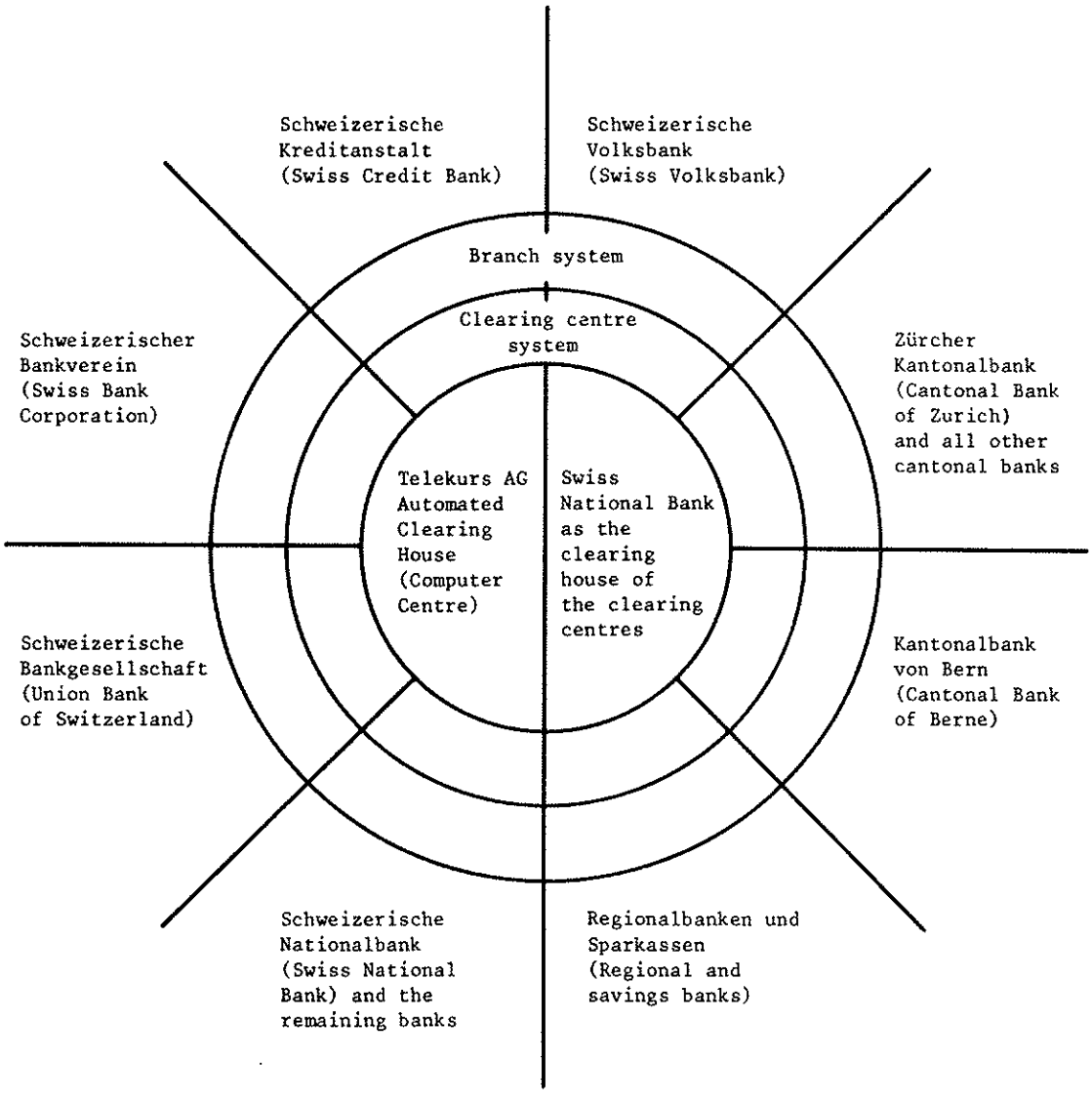
3.2.4. The bank giro system

3.2.4.1. Introduction and general survey

Chart 5 shows, in greatly simplified form, the overall structure of the banks' giro system (hereinafter referred to as the "bank clearing house system"). The following sub-systems can be identified:

- the branch system;
- the clearing centre system;
- the Swiss National Bank as the clearing house of the clearing centres;
- Telekurs AG (computer centre and development centre).

Chart 5: The Organisational Structure of the Bank Clearing Centres



The first two of the above-mentioned sub-systems can be subdivided further on the basis of affiliation to a clearing centre (see the corresponding segments of the circle in Chart 5):

- the Schweizerische Bankgesellschaft (Union Bank of Switzerland);
- the Schweizerischer Bankverein (Swiss Bank Corporation);
- the Schweizerische Kreditanstalt (Swiss Credit Bank);
- the Schweizerische Volksbank (Swiss Volksbank);
- the Zürcher Kantonalbank (Cantonal Bank of Zurich), acting as the clearing centre for all member cantonal banks except that of Berne;
- the Regional and Savings banks;
- the Swiss National Bank, acting as the clearing centre for all other banks participating in the bank clearing house system.

These sub-systems will be described briefly below, with special emphasis on aspects of the monetary transfer system.

3.2.4.2. The bank branch network

The bank branch network is concerned mainly with sight deposit accounting, in contrast to the post offices where no accounts are kept. This means that bank giro transfers are normally sent to the bank branch of the payer, where the account is debited, and are then transmitted through the clearing centres to the branch of the payee.

3.2.4.3. Clearing centres

From an organisational point of view, it is significant that, with one exception, all the clearing centres are located in Zurich. The bank clearing house system - unlike the postal cheque system with its twenty-five offices - has a highly centralised processing structure. Seen as a whole, the present structure based on clearing centres has the advantage of providing a good foundation for further development towards a single clearing centre.

On the other hand, a disadvantage of the centralised structure is that items sent to and from the more remote districts take longer to arrive. This is not a serious drawback, however, as Switzerland is a relatively small country. Furthermore, this factor is likely to become less significant with the development of electronic payment systems.

3.2.4.4. The computer centre (Automated Clearing House)

To complete the picture, mention should be made of yet another sub-system of the bank giro system - the computer centre (see Chart 5). Customers' transfers, which since 1975 have included a line of optically readable code, can to a large extent be processed automatically at the data-processing centre. The same is true of the data carriers prepared by firms for cashless wage and salary payments. This electronic processing

centre, which is an essential element of any electronic payment system, is likely to become considerably more important with the development of paperless payment media.

3.2.4.5. The Swiss National Bank as the clearing house of the clearing centres

Chart 5 illustrates a further sub-system, namely the Swiss National Bank as the clearing house of the clearing centres. Its function derives from the fact that all the clearing centres have an account (giro or bank clearing-house account) at the Zurich office of the National Bank and that the total debtor positions of the individual clearing centres can thus be offset against each other.

Despite this centralisation of accounts, the original idea of establishing a clearing house (mutual offsetting of debit and credit balances) has never been realised. As a result, on the assumption that each bank has sufficient central-bank money available to cover all its payments, the volume of central-bank money actually required by the payment institutions will be considerably greater than it would be in a clearing-house system. The above assumption is not totally founded, however, since the necessary cover is not always available in practice, particularly in the case of the large banks, which can be expected to receive substantial inpayments. Thus, for a short time (until the payments arrive from the other clearing centres), a negative balance exists.

3.2.4.6. Telekurs AG

Telekurs is responsible for both the computer centre and the further development of the bank payment system. All the banks have a share in the capital, varying according to their size. Telekurs is also responsible for the following joint activities, among others:

- Bancomat, eurocheque, Eurocard, data-media applications.

3.2.5. Users of the service

The postal giro system is used by all population groups (see above). The bank system is primarily used for payments between companies, but this is changing now with the widespread use of salary and wage accounts.

3.2.6. The payment instruments

The main instrument in the cashless system is the giro. The cheque is now promoted in the form of the standardised "eurocheque", which can be processed automatically. Direct debits are only possible in the banking system. Their volume is comparatively insignificant. All other payment media, such as cash inpayments for transfers, bank cards, credit cards, crossed money orders, etc., are of minor importance.

3.2.7. The level of automation

Both the postal giro system and the banks work with machine-optical vouchers and with paperless exchange data media. Both groups have their own computer centre.

The computer centre was established by all the Swiss banks in 1971. To start with, the centre processed only MICR encoded giro-credit transfers. In 1976 the banks introduced a magnetic-tape exchange system which enables bank clients with their own EDP installations to send magnetic tapes to the computer centre. This system is now operated in the field of payment orders and salary payments.

The client can also fix the date on which the payment is to be made. The tapes on which details of payment orders or salary payments are recorded go direct to the computer centre, where they are processed and distributed to the receiving banks in magnetic-tape or paper form.

The market share of the computer-processed items is growing fast and now accounts for about 50 per cent. of all cashless transactions.

There is no access problem, all banks being entitled to participate. Only a small number of banks pass through the intermediary of another bank.

The postal giro has also installed a computer centre. Its function is limited on the input side to the processing of OCR paper-based giro transfer instruments and on the output side to the production of magnetic tapes and punched cards.

These media give the receiving company or public authorities the advantage of automated processing of accounts receivable. The system met with immediate success. The market share of the transactions processed in this way grew rapidly to about 30 per cent. of all giro transactions in Switzerland. The transaction costs of such transfers are less than half those of a normal giro transaction.

Access to the system is open to all customers, including the banks.

3.2.8. Responsibility

The management of the Postal Administration bears sole responsibility for the system. The banks have set up an institution called Telekurs AG, which is owned by all banks. The Swiss National Bank is a member of this group.

3.2.9. Cost considerations

Reliable figures are available only for the postal giro system. The average value of a postal giro transfer is Sw.fr. 7,180 and the cost per transaction is 13 US cents. The average value of a bank transaction is much higher than that of a postal giro transaction. A bank transaction is also more costly than a postal payment, because the bank system is more complicated and cumbersome. A second reason for the higher cost is that the decision-making process is much more intricate (numerous banks involved in taking decisions) than in the postal giro system (only one decision-maker: the management of the Postal Administration).

3.2.10. Summary

The most significant points with respect to the instruments used in the Swiss payment system may be summarised as follows:

- giro transfers and cash payments predominate, and
- cash dispensers and direct crediting of wages and salaries have gained widespread acceptance.

3.3. Card-based payments

The universally known credit card organisations are also active in Switzerland, though the number of card holders, at about 330,000, is still fairly low. In addition, a number of credit cards are issued by individual department stores and retail organisations and can only be used on a local or regional basis. The volume of these cards is estimated at 400,000. It should be noted in this connection that quite a sizable number of individuals hold more than one card. It is likely that around 15 per cent. of the working population holds one or more cards.

Up to now, POS cards are available for use at public telephones and petrol stations, but their volume is small, because the systems are experimental. Most of the larger banks now issue their customers with magnetic-stripe cards which can be used at the bank counter for identification and input. To an increasing extent customers can use these cards at indoor ATMs, of which there are an estimated 400.

An important factor in the further development of the card systems is the decision taken by the banks last year to drastically reduce the number of different cards. The eurocheque card is to be used as the standard medium, not only for cash dispensers but also for ATMs, and later also for POS transactions. This will go a long way towards making the eurocheque card a universal payment instrument.

3.4. Home banking

A practical trial of the Postal Administration's videotex system was launched in 1983. About 2,000 participants are involved in this trial, which is also geared to provide home banking facilities, though with the emphasis more on information (balance inquiry, share and bond prices) than on payment transactions. However, the banks have already defined standards for the various payment transactions. Legal provisions are not yet in existence.

3.5. Exchange circuits within the banking system

In this connection, see Section 3.2.4.

The interbank payment system does not so far provide for proper clearing in the sense of the offsetting of credit and debit balances. All payments are handled individually, requiring sufficient liquidity in the giro account at the Swiss National Bank in each case.

An extensive restructuring of the interbank payment system along EFTS lines is currently planned (called the Swiss Interbank Clearing Project, abbreviated to SIC). Payments will be entered via video terminal at the banks and transmitted on a paperless basis. Unresolved questions concern the granting of credit, settlement and the sharing of the work between the National Bank and the banks.

IV. General remarks

Attempting an assessment of the development of the Swiss payment system, it may be noted that the change in the structure of the monetary system that has been emerging over approximately the last decade towards the use of more abstract payment media has assumed a much more definite form over the last five years. Scarcely any doubts remain as to the long-term trend. Cashless wage and salary payment has gained acceptance considerably faster than was still being predicted five years ago, even if this does not automatically involve a transition to cashless forms of payment, for which the appropriate instruments are still largely lacking in Switzerland, the cheque being suitable in only a limited context. Over the next decade cashless payments are likely to take on the most important rôle. The POS system should constitute a useful instrument; its suitability as a substitute for cash payment will have to be put to the test over the next few years. Similarly, the pessimistic forecasts regarding the acceptance of cash dispensers have not proved to be correct in Switzerland; over recent years cash dispensers have spread rapidly, creating an important basis for the further development of cashless systems, particularly in the POS field.

Interestingly enough, it is in the area for which the banks alone are responsible, the interbank sector, that little progress has been achieved. On a national level there is little standardisation of bank transactions, the processing of which is still largely paper-based. However, planning is at an advanced stage. The implementation of an efficient interbank payment system will thus be of central significance over the next five years if Switzerland is to maintain its position as a financial centre. However, the problems encountered, not least in connection with international indebtedness, have shown that the clearing systems must be carefully scrutinised to ensure that they still meet the requirements of security, monetary policy and resource allocation under the changed conditions of the financial system.

However, the developments that have taken place so far show that the monetary system offers a wealth of opportunities to work out arrangements that benefit the economy as a whole. Many of these opportunities have been exploited in Switzerland; others remain to be taken up. Here the National Bank can make a major contribution on the basis of its neutral position and overall economic orientation.

Although solutions based on voluntary co-operation are associated with considerable problems, it is to be hoped that this approach will continue to be mutually beneficial.

10. U N I T E D K I N G D O M

I. INTRODUCTION

The UK payment system changed relatively little, in the eyes of the consumer, between 1979 and 1983: the most notable visible developments were probably the growth in the number, and sophistication, of automated teller machines through which the depositor could obtain access to his account both during and outside normal working hours, and the growth in the number and type of institutions offering some form of payment services. But during these years the prospect of radical change grew ever stronger, in large part because of the possibilities opened up by the development of electronic methods of transferring funds. Although this potential EFT revolution remained generally more apparent than real, developments in the period suggest that the dynamics of change may ultimately produce a very different situation, both in the way in which services are delivered to the consumer and in the institutions providing them, from that which has prevailed for many years past.

1. Banks

Underlying all developments in the last five years was the growing awareness by the major banks in the United Kingdom of the importance for their future of the retail side of their business. Between the mid-1960s and the late 1970s the clearing banks' share of the personal savings market shrank because of official credit and other controls, the development of the wholesale side of their business and, most importantly, increased competition. Thus, between 1963 and 1983 the banking sector's share of the personal sector's liquid assets remained virtually unchanged at about 35 per cent. (having hit a low point of 32 per cent. in 1977), whilst the building societies' share rose in a fairly steady progression from 22 per cent. in 1963 to almost 50 per cent. in 1983. This trend has occurred despite the recent rapid growth in the number of personal customers of the clearing banks, the frequency with which these customers use their bank accounts and the proportion of the work-force whose wages and salaries are paid direct to their accounts.

The result of these various developments was that the clearing banks suffered a series of parallel pressures, all against a background of at times rapid inflation, with a particularly marked increase in their staff costs: a sustained fast growth in the volume of their transactions, and especially in the volume of paper to be handled; increased pressure on their branches, especially at peak hours; greater sophistication shown by individuals in the management of their savings; and consequently a declining base of interest-free current-account deposits. The banks have thus been forced by these market pressures to automate as much as possible of the existing paper clearing systems, and to persuade their customers to make more use of electronic systems; to install an increasing number of their own ATMs, and to enter into ATM-sharing agreements with other banks, so as to give personal customers easier and more convenient access to bank facilities; to begin to pay interest on various types of current (chequing) accounts; and at the same time to charge more realistic fees for the services supplied to their customers in an attempt to recover the costs of these increasingly expensive facilities.

Deregulation was an even more important factor in the banks' environment and stimulated an even greater degree of competition. In October 1979 exchange control, which had been in force for forty years, was abolished. Domestic credit controls then became readily avoidable by operations offshore, and the supplementary special deposits scheme was consequently abolished in June 1980. Official regulation of the terms of consumer instalment credit was discontinued in July 1982.

In response to these pressures and developments, the clearing banks have attempted over the last five years to increase the retail lending side of their business by building up their (more profitable) credit card lending, by putting increased emphasis on personal loan facilities, and by competing more vigorously with the building societies in the market for house purchase mortgages. Some of the clearing banks have also expanded into other areas of business, such as estate agencies and (though this occurred in early 1984) stockbroking, as well as building up their existing financial planning and advisory services. They perceive a need to preserve their deposit base by providing in-house to their customers a full range of personal financial services.

2. Building societies

Despite the clearing banks' more aggressive stance in 1979-83, they were not alone in offering an increased range of services to their depositors, as some building societies broadened their services to offer additional money transmission facilities. At the beginning of the period only one building society offered a chequing account to its depositors and that scheme only operated in a limited geographical area in the north of England. By the end of the period that scheme had been expanded and four more societies, in partnerships with banks, were offering cheque book facilities; and several other societies had introduced special accounts linked to a bank credit card enabling their customers to obtain a cash advance from the respective bank's ATM and to pay their credit card account from their interest-bearing balances with the society.

The most notable example of the use of the latest technology to create a rôle in the payment system is that of a building society which, in co-operation with a clearing bank, has introduced the first home banking and home shopping service in the United Kingdom. Other new departures by building societies at the end of 1983 included the issue of their own certificates of deposit, the sale of travellers' cheques and the installation, by several societies, of their own ATMs.

3. Credit cards

The credit card companies, too, have broadened their services in the last five years. Most card issuers now offer a "gold" or premium card for their more affluent customers (unlike the ordinary bank credit card, these premium cards are subject to an annual fee, in the same way as travel and entertainment cards). An additional new facility with ordinary bank credit cards is the ability to pay a range of regular bills, including public utilities, by automatic charging to a credit card account.

4. Automated clearings

Throughout the period, work proceeded on the Clearing House Automated Payment System, known as CHAPS. This EFT service, which became operational on 9th February 1984, provides the facility for same-day guaranteed payments to be made, above a certain value limit, anywhere in the United Kingdom. It complements the paper-based Town Clearing which provides a same-day value clearing within the City of London.

Bankers' Automated Clearing Services Ltd. (BACS), the automated clearing house, also expanded its facilities for the bulk exchange of automated debits and credits, and a major campaign was launched to encourage the use of customer-generated debits and credits through BACS. Finally, interbank items in the paper-based credit clearing were brought to a standard to facilitate automated processing by the addition of a full destination code in MICR or OCR characters.

5. Electronic funds transfer at the point of sale

1979-83 was a period when the future promise of electronic funds transfer at the point of sale (EFT POS) counted for more than actual developments affecting the consumer. In November 1981 the UK clearing banks announced their intention of introducing a new payment system based on the use of terminals at the point of sale. In May 1983, after a study of the various problems involved, the banks reaffirmed their decision and announced their belief that trials could begin in 1986. While work proceeds towards this nationwide system, the only actual EFT POS schemes in operation at the end of 1983 amounted to two regional schemes for petrol sales at garages in Scotland and in the south of England, with a third introduced early in 1984: another experimental scheme had operated from June 1980 to July 1981 in eastern England.

6. Corporate cash management

The services offered by the banks to meet the needs of their corporate customers continued to expand. Such customers made full use of the additional facilities in BACS, and were ready to use CHAPS when it came into operation; they have been able to choose between a growing number of cash-management systems, of varying sophistication, offered by UK and foreign banks; and, through their banks, they have been able to utilise the growing network provided by the Society for Worldwide Interbank Financial Telecommunication (S.W.I.F.T.) for transmitting international payment instructions.

7. Future developments

For the clearing banks' competitors, who may have been dissuaded from offering money transmission services by the cost of establishing and operating a paper-handling system, advances in technology offer an opportunity for bypassing paper-based services altogether. The clearing banks' dominance of money transmission services is thus put in question just at the moment when competition for deposits between the clearing banks and other deposit-taking institutions is becoming more intense. This was illustrated by the fact that towards the end of 1983 two large non-clearing banks applied for membership of the Bankers' Clearing House in London.

II. INSTITUTIONAL FRAMEWORK

1. The major banks

In the United Kingdom the nature of the payment system, together with the direction and the speed of its development, has been dictated largely by the major clearing banks. The nationwide coverage of these banks' branches, and the concentration of their head offices in London, has tended to foster the growth of compatible systems developed in co-operation, but without abandoning the competitive basis of the banking system.

At the end of 1983 594 institutions in the United Kingdom had been authorised, under the Banking Act, to accept deposits: 290 of these were recognised banks, the remainder being licensed deposit-takers (the criteria for authorisation as a licensed deposit-taker are less demanding than those for a recognised bank). A further five banks were exempted from the provisions of the Banking Act. The ten London and four Scottish clearing banks, together with the five clearing banks operating in Northern Ireland, provide the basis for the domestic payment system. These institutions perform the key rôle in both the paper-based and electronic funds transfer systems.

Six of the London clearing banks (Barclays Bank, Coutts & Co., Lloyds Bank, Midland Bank, National Westminster Bank and Williams & Glyn's Bank) form the Committee of London Clearing Bankers and own The Bankers' Clearing House Ltd. Four other banks are also functional members of the Bankers' Clearing House. The Bank of England has been a functional member since 1864; the Co-operative Bank, which is owned by the UK co-operative movement, and the Central Trustee Savings Bank, which among its other functions acts as the clearing agent for Trustee Savings Bank England and Wales, have been functional members since 1975; and the National Girobank, a self-accounting body within the Post Office, became a functional member in 1983. Late in 1983, Citibank and Standard Chartered Bank applied to join the Bankers' Clearing House, but their applications were deferred pending the outcome of a major review of the ownership, membership and control of the money transmission system, which was set in train by the Committee of London Clearing Bankers, in conjunction with the other members of the Bankers' Clearing House.

In Scotland, the Bank of Scotland, The Royal Bank of Scotland and Clydesdale Bank comprise the Committee of Scottish Clearing Bankers. These three banks, together with Trustee Savings Bank Scotland (since 1983), operate as an unincorporated association for clearing local cheques; similar arrangements apply in Northern Ireland between the four members of the Northern Ireland Bankers' Association (Bank of Ireland, Allied Irish Banks, Ulster Bank and Northern Bank) and Trustee Savings Bank of Northern Ireland.

2. Other banks

Most other recognised banks and licensed deposit-taking institutions, including many which are represented in the United Kingdom as branches of, or are subsidiaries of, overseas banks, play only a very limited rôle in the payment system, since they concentrate mainly on

providing wholesale banking facilities to their customers. However, a small number are actively expanding their business in the personal retail sector.

3. Other institutions

Certain other institutions are involved in the payment system. The government-owned National Savings Bank operates through post offices. Most deposits with the National Savings Bank tend to be longer-term savings and therefore play little part in the money transmission system. However, depositors of the National Savings Bank Ordinary Account, as well as being able to draw cash at post offices, can arrange to make payments by standing orders, by warrants (similar to cheques) payable to third parties or by transfers initiated at post office counters.

The Post Office is itself directly involved in the payment system through its responsibilities for issuing and redeeming postal orders, and for handling the cash payment of various state benefits to the public. It also operates the National Girobank.

The building societies have begun to play a more important rôle in the payment system in recent years, but their involvement is still limited to a few societies, mostly the larger ones. At end-1983 there were 206 societies, compared with 480 in 1970, with 6,644 branches between them. The societies are mutual organisations and most deposits with them are in the form of shares which confer voting rights. Their mutual status, and the tight legislation to which they are subject, restrict the societies to a comparatively narrow range of activities, primarily their original purpose of taking savings deposits and lending to finance house purchase, though some societies have joined with banks in co-operative schemes to offer limited money transmission services to the societies' customers. Proposals are currently under discussion to give building societies the statutory authority to offer, if they wish to do so, a wider range of services, including payment services, to their depositors.

Government departments make many of their payments by means of payable orders drawn on the Paymaster General's Office or, in a few cases, on themselves. The banks collect these through the General Clearing system.

4. Credit card issuers

Bank credit cards have played an increasing role in the UK payment system in recent years. There are two main bank-owned credit card issuing groups and two travel and entertainment cards in general use. Barclays Bank first issued their Barclaycard in 1966. They are affiliated to VISA, as are a number of other banks, each of which issues its own cards. Barclaycard used to do the processing for all UK VISA-card transactions, but the Co-operative Bank took over the processing of its own cards in April 1984 and the Trustee Savings Banks are to do the same in 1985. Four other clearing banks formed the Joint Credit Card Company in 1972 to operate the Access card, which is issued by each of these banks (and also by five other banks) under its own name, and is affiliated to MasterCard and Eurocard. American Express and Diners Club (which is jointly owned by National Westminster Bank and Citibank in the United Kingdom) both issue travel and entertainment cards which are in widespread use. Most banks offer a "gold" or premium card to their more affluent customers.

5. Supervisory and regulatory authorities

Supervision of recognised banks and licensed deposit-takers is vested in the Bank of England by the Banking Act, 1979. The Act requires an institution to have prior authorisation before a "deposit", as defined, may be accepted. Certain institutions were exempted from the provisions of the Act because their activities are regulated by other legislation: the building societies, for instance, are supervised by the Chief Registrar of Friendly Societies, an official who is responsible partly to the Treasury and partly direct to Parliament.

Neither the Bank of England nor any government department has any statutory authority formally to regulate the payment system, although the banks' payment operations in certain respects fall within the provisions of legislation on consumer protection and similar matters. The main day-to-day involvement of the authorities in the payment system is limited to the Bank of England's participation in the paper and electronic clearing systems on behalf of itself and its own customers, including government departments, and as the ultimate settlement bank.

There are a number of interbank committees and working parties to oversee the operation and development of the clearing systems. The different elements of these systems have their own agreed rules, but these are not embodied in legislation.

Liaison between senior representatives of banks involved in the payment system is maintained through the Inter-Bank Money Transmission Consultative Committee.

III. PAYMENT SYSTEMS

1. PAYMENT MEDIA AVAILABLE TO CUSTOMERS

(a) Cash payments

The Bank of England has gradually assumed the sole right of note issue in England and Wales, under the Bank Charter Act, 1844. This Act also separated the note-issuing function of the Bank from its other activities by dividing the Bank into two Departments for accounting purposes. The accounts of the Issue Department relate solely to the production, issue and payment of bank-notes and to the portfolio of securities by which the note issue is backed. The Banking Department, which under the terms of the 1844 Act embraces the rest of the Bank's activities, issues bank-notes to, and receives them from, its customers, including in particular the clearing banks.

The Currency and Bank Notes Act, 1954, empowers the Bank of England to issue notes of such denominations as the Treasury may approve: at end-1983 bank-notes were in issue for denominations of £1, £5, £10, £20 and £50. These are all legal tender in England and Wales, but in Scotland and Northern Ireland only the £1 note is legal tender. Three Scottish banks and four banks operating in Northern Ireland each retain the right to issue

their own notes but, apart from a very small fiduciary issue, these are covered by holdings of Bank of England notes, or of coin. The notes issued by these banks in Scotland and Northern Ireland are not legal tender, but in their respective regions are readily accepted and circulate freely alongside Bank of England notes.

The Royal Mint is responsible to the Treasury for the issue of coin throughout the United Kingdom. At end-1983 coins were in issue in eight denominations: 1/2 penny, 1 penny, 2 pence (bronze); 5, 10, 20 and 50 pence (cupro-nickel) and £1 (nickel/brass); coins equivalent to 5 and 10 pence issued prior to decimalisation in 1971 are still in circulation.

The clearing banks draw their requirements of bank-notes from the head office and seven branches of the Bank of England, against payment drawn on their balances with the Bank; they distribute the notes to their own branches, in response to public demand, through their own cash centres which number just over 100. Soiled notes and those surplus to requirements can be returned to the Bank against payment by the Bank. The Royal Mint delivers coin to bank cash centres or direct to their branches, against payment by the banks. However, coin surplus to the banks' requirements cannot normally be returned to the Royal Mint, so, on occasions, the banks have to store considerable quantities of surplus coin.

To counteract the tendency for the lives of notes to shorten, which together with inflation has led to an excessive, and expensive, issue of new notes, the Bank of England attempts to encourage the use of higher denomination notes, and imposes periodic "moratoria" during which it restricts the issue of new notes to the banking system, issuing used notes instead. A factor of growing importance for the production and supply of bank-notes is the increasing number of ATMs installed by banks and building societies; the consequent demand for clean, machine-usable notes is being met partly from the output of note-sorting machines installed by the Bank of England and the major clearing banks.

At mid-December 1983 the value of notes and coin in circulation other than with banks totalled £12.1 billion, some 10 per cent. of which was in coin. The average value of notes and coin in circulation with the public outstanding at mid-months during 1983 was £11.4 billion, which represents an increase of 44 per cent. on the average outstanding during 1978. But consumers' expenditure in 1983 was 85 per cent. higher than in 1978, suggesting that the share of cash in the total value of payments fell during the same period. In the fifteen years to end-1978 the value of consumers' expenditure increased on average by 11 1/2 per cent. each year, whilst cash in circulation increased by about 9 1/2 per cent. per annum. But in the years since 1978 the value of consumers' expenditure has grown appreciably more quickly than the growth of cash.

Part of the reason for this has been a move away from the payment of wages in cash, which has been gathering pace in recent years. Between 1978 and 1983 the proportion of employees paid in cash is estimated to have fallen from 55 per cent. to 40 per cent., a more rapid fall than in any previous period. There has also been an accompanying (but less abrupt) movement to monthly rather than weekly pay and an increase in the number of employees with bank accounts. By 1981 it is estimated that 61 per cent. of adults in Great Britain held bank current (chequing) accounts, compared with

45 per cent. in 1976, and this movement has continued since then, albeit more slowly, with the proportion estimated at 63 per cent. for 1983. The increased incidence of account-holding has been accompanied by a growth in the use made of bank accounts, with the number of banking transactions per account rising faster than the number of accounts. The average value of transactions has, however, fallen in real terms in recent years, suggesting that transactions through the banking system have been replacing the use of cash: this displacement of cash represents a change in personal payment habits.

There has also been a change over the last five years in the pattern of drawing and holding cash; with less being paid out in pay packets more has to be paid out direct to personal customers by banks (and, partly reflecting the growth in unemployment, more is paid out by post offices in the form of various state benefits). Within the growing total of cash withdrawn from banks by individuals, the amount drawn from ATMs has risen rapidly in recent years, to reach about 20 per cent. of the total in 1983. Furthermore, the spread of ATMs has changed the behaviour patterns of bank customers in that they use the machines more frequently than they would cash cheques at bank counters, but on average they withdraw rather less on each occasion from their account.

Whether cash continues to decline as a payment medium over the next few years will depend both on the extent to which consumers are prepared to make a more intensive use of the banks' money transmission facilities and on the success of future efforts to achieve cashless pay. An important factor in the first of these will be developments in bank charges. The major UK banks have moved in recent years towards recovering more of the costs of their money transmission services by imposing more realistic tariffs: further moves in this direction may provide a greater incentive for the public to settle transactions in cash. However, to speed the shift to cashless pay, the Government has announced its intention of repealing the legislation whereby certain categories of workers can still require payment in cash; and it has decided to make it possible for child benefits and state pensions to be paid direct to bank accounts as an alternative to drawing cash from post offices. On the other hand, the spread of ATMs, whilst reducing the need for bank customers to carry large amounts of cash, does encourage the continued use of cash as a major means of payment. It may take some time for the public at large to adjust to the continuous availability of cash and to reduce their average holdings accordingly. After this period of adjustment, during which the total of cash in circulation with the public may continue to fall relative to consumers' expenditure, it could then stabilise at a new, albeit lower, level.

(b) Cashless payments

The predominant cashless medium used for making payments in the United Kingdom remains the cheque. An estimated 61 per cent. by volume of all cashless payments in 1983 were made by cheque, which amounts to almost 10 million items per working day, excluding cheques drawn for cash. Payment by cheque, however, is usually acceptable to a retailer only if the drawer exhibits a cheque guarantee card issued by the bank on which the cheque is drawn. The major retail banks, with the exception of Barclays Bank, have since 1969 participated in a joint Cheque Card Scheme, under which some 16 million cheque guarantee cards had been issued to their customers at

end-1983: cheques drawn under the terms of the scheme against these cards are guaranteed up to an amount of £50. In addition, there were some 9 million VISA cards, issued by Barclays and other banks, which double as a credit card and as a guarantee card for cheques drawn on the issuing bank. Cheque cards cannot be used for any purpose except as backing for a cheque. Until April 1983 cheque cards could also be used outside the United Kingdom as a eurocheque encashment card. However, from May 1983 banks have restricted the use of their cheque cards to the United Kingdom as a fraud prevention measure and, instead, most banks issue separate eurocheque encashment cards to their customers. Barclaycards have never been used as eurocheque encashment cards and Barclays Bank have therefore for many years issued a separate encashment card for use outside the United Kingdom. The Midland Bank Group joined the uniform eurocheque scheme from May 1983, as did the Bank of Ireland and Allied Irish Banks.

By the end of 1983 five building societies were also offering cheque-book facilities to their customers in conjunction, in each case, with a bank on which the cheques were drawn or which provided clearing facilities. Early in 1984 a sixth society announced a similar cheque-book account combined with an interest-bearing deposit account and an automatic transfer facility. Certain cheque-book facilities are also offered by several banks on accounts which pay market rates of interest.

The paper-based bank giro credit clearing accounted for 12 per cent. of cashless payments by volume in 1983. This system is used widely for making consumer payments to large organisations, such as public utilities and mail-order companies.

Electronic direct debits and standing orders and other credits are processed by Bankers' Automated Clearing Services Ltd. (BACS). Direct debits allow recipients of large numbers of payments, such as insurance companies, to collect premiums, subscriptions or other items automatically from bank accounts, after the account holder has signed a mandate authorising his bank to pay specified direct debits for either a regular fixed sum or a variable amount. In 1983, 6 per cent. of the volume of cashless payments were made by direct debit.

Standing orders and electronic credits, which together accounted for 11 per cent. of all cashless payments by volume in 1983, are both initiated by the payer. Standing orders are used largely by individuals for the payment of regular fixed sums; in the past electronic credits tended to be used mainly for the disbursement of bulk payments such as salaries and wages, but they are now increasingly being used for other items, such as corporations' purchase ledger payments.

Cashless payments can be made through the Post Office either by postal order or by National Girobank transfer. Postal orders are a convenient way of making low-value payments, particularly for those not having a bank account. They are of various fixed denominations up to £10, but their value may be increased by affixing up to two postage stamps. Their use has been declining sharply in recent years and during 1983 only some 70 million were issued, compared with 170 million in 1978 and over 400 million in 1971. The average value of each postal order issued in 1983 amounted to £5.

National Girobank, a self-accounting body within the Post Office, operates a full banking service. Paper transfers can be made between account holders or, by use of the Transcash service, a transfer can be made from a non-account holder to an account holder. Some state benefits are paid by means of cash cheques drawn on the National Girobank, which can be cashed at post offices.

The Department of Health and Social Security issues order books containing a number of "foils" (vouchers), which may be used on given dates to draw cash from post offices, in respect of various state benefits such as old-age pensions. In 1983, 860 million foils were issued. It is not usual to count these as cashless payments, although they are paper-based, because they are in effect payments by the Government in cash.

Payable orders, which are another form of debit instrument, are issued by the Paymaster General's Office and by some other government departments; these are treated in the same way as cheques, and are collected through the interbank cheque clearing system.

Travellers' cheques, issued by banks and other bodies, and denominated in sterling or in foreign currencies, are widely used as a safe and convenient method of taking currency abroad, but are very seldom used by UK residents within the United Kingdom.

(c) Card-based payments

(i) At retail outlets

Card-based payments can be effected at many retail outlets in the United Kingdom by means of a credit card or a charge card. At the end of 1983, 15 3/4 million bank credit cards had been issued to 12 1/2 million adults (almost one in three of the adult population): 10 million of these holders made regular use of their cards in 1983, charging 266 million transactions with an estimated total value of almost £6.5 billion.

43 per cent. of all bank credit cards outstanding at the end of 1983 were issued by nine banks under the Access label, affiliated to MasterCard and Eurocard (Lloyds Bank, Midland Bank, National Westminster Bank, Williams & Glyn's Bank, the Bank of Ireland, Clydesdale Bank, Northern Bank, The Royal Bank of Scotland and Ulster Bank). The rest were issued by banks affiliated to VISA: 42 per cent. by Barclays Bank (Barclaycard), 13 per cent. by the Trustee Savings Banks (Trustcard), and 2 per cent. by other banks. Bank credit cards have an automatic credit facility to a pre-set limit ranging upwards from £200; card holders are normally required to repay at least 5 per cent. of the outstanding balance each month, though about one-third of card holders opt to settle their accounts in full every month. The average balance outstanding on bank credit cards in 1983 was about £250, with an average monthly repayment of £50. The average value of each transaction was £24.

In addition to bank-issued credit cards there are just over 1 million travel and entertainment charge cards in issue to UK residents: 0.7 million of these are issued by American Express and 0.3 million by Diners Club. Unlike bank credit cards, these have no pre-set spending limits nor any attached credit facility, so that the amount outstanding has

to be settled in full every month. An enrolment fee and annual subscription fee are also payable. Holders of these cards charged an estimated 40 million transactions in 1983 with a total value of perhaps £1.5 billion: the average purchase being about £34 and the average monthly repayment being just under £100.

Retailers have issued 4.7 million "in-store" cards. These usually only serve one store group and many operate on a "budget" basis, with a monthly subscription and a revolving interest-bearing credit facility of twenty or thirty times this amount. Other retailer cards operate in the same way as travel and entertainment charge cards or bank credit cards. The average amount owed on an "in-store" card in 1983 was just over £100 and the average monthly payment was around £16.

Since 1982 many banks have issued "gold" or premium cards. A subscription is payable on these cards but they have no pre-set spending limits and have an unsecured overdraft facility.

In 1982 one building society introduced a transaction and privilege card. This enables holders to withdraw funds from their accounts through the society's ATMs; in addition, holders are eligible for discounts from participating suppliers of a range of goods and services. Other privilege cards available in the United Kingdom require an initial enrolment fee and an annual subscription.

The UK banks have become increasingly concerned about the growth in the fraudulent use of cheque and credit cards in recent years. The banks participating in the joint Cheque Card Scheme intend to introduce more secure cards over the next two years, but have so far rejected the use of photograph cards, although two small banks have introduced them. American Express, Diners Club, Access and those banks affiliated to VISA are gradually introducing card and credit verification schemes using automated authorisation telephones at the point of sale.

(ii) At point-of-sale terminals

In May 1983 the UK clearing banks announced their intention to develop a national system for electronic funds transfer at the point of sale, and work is currently proceeding on this project. Apart from this scheme the only point-of-sale projects in the United Kingdom at end-1983 involved petrol sales. The "Counterplus" scheme is operated by the Clydesdale Bank at twenty-five BP petrol stations in Scotland. Customers of the Midland Bank/Clydesdale Bank Group can use their ATM cards or a Midland Bank Access card to pay for their purchases and, if they wish, to draw cash from these garages.

In the south of England Barclaycard have a similar scheme at two Amoco garages and, early in 1984, introduced a trial scheme at a Texaco garage. Barclaycard were also involved in a similar experimental scheme from June 1980 to July 1981 with five oil companies in eastern England.

British Telecom have introduced a stored-value card for use in certain public telephone call boxes. The "Phonecard" is pre-loaded with a store of value which is consumed as calls are made; it is not rechargeable.

(iii) At ATMs

At the end of 1983 there were 5,526 bank automated teller machines (ATMs) in service in the United Kingdom. 77 per cent. of these were sited on bank premises but accessible from outside, 20 per cent. were sited inside bank premises, and 3 per cent. were at remote sites. Bank customers had 12.3 million cards specifically for drawing cash from ATMs normally against a charge to their current accounts, in addition to which holders of many bank credit cards can obtain cash advances (charged to their credit card accounts) from the issuing bank's machines. Card holders withdrew £6 1/2 billion from ATMs in 1983 - some 20 per cent. of the total value of cash withdrawn from banks by individuals. Each withdrawal averaged just under £30 and each machine was used about 750 times a week on average.

The hours during which ATMs are available for use vary considerably between banks, and even between each bank's own machines, depending on their location and the range of facilities they offer. Typically, customers can withdraw up to £100 each day from a machine, but several banks allow withdrawals up to a pre-arranged weekly amount. In addition, customers of some banks can order new cheque books and full or interim statements of their accounts, and perhaps make deposits via ATMs, as well as inquiring for the current balance on their account.

At end-1983 there were three shared ATM networks operating in Great Britain (although two of these were between banks in the same group), and one in Northern Ireland. Three further shared networks are planned by banks in Great Britain, all of which should become operational during 1985.

So far, a number of different approaches have been adopted by the building societies towards ATMs. Two societies have introduced their own ATM networks, with a total of 125 machines, giving access to their customers' accounts; several others have installed one or two machines, whilst others are investigating a joint network of ATMs. Most of the societies which have introduced their own cheque-book accounts in co-operation with a bank also offer a bank credit card to their customers enabling them to obtain a cash advance (charged to their credit card account, rather than to their building society account) from the bank's ATMs. This facility is also available to customers of those societies with special accounts linked to bank credit cards.

(d) Payments in a telematics context

(i) Home banking

Only one full home banking project is currently available in the United Kingdom. In June 1983 the "Homelink" home banking service, offered by the Nottingham Building Society and the Bank of Scotland, became available nationwide to all savers with the society having at least £1,000 in their account. Subscribers receive a terminal which plugs into their television set and connects by telephone to British Telecom's "Prestel" viewdata service. Funds can be transferred between accounts with the society and with the bank and arrangements can be made for payments to a limited number of pre-designated third parties. "Homelink" is also a teleshopping and a telemessage system.

No other service available in the United Kingdom is as comprehensive as "Homelink". Two banks make account information available to customers at home, but it is not possible to transfer funds by these services.

"Club 403", a group comprising banks, building societies, a charge card company and retailers, have a pilot project covering some 1,000 homes in the English Midlands for teleshopping, telebooking, access to news and local events, bank and building society account information and electronic mail. Again, no funds transfer is available.

(ii) Corporate cash management

By the end of 1983 the four largest London clearing banks and several foreign banks in London all offered cash-management systems for their corporate customers. The services offered by the various banks vary in their levels of sophistication from balance reporting, at their most simple, to interactive working, allowing the corporate customer to send messages to his bank initiating payments, at their most complex. The corporate treasurer accesses whatever services his bank has to offer through a desk-top terminal linked to the bank's computer.

(iii) Two recent developments which may be referred to as payments in a telematics context are BACSTEL (Bankers' Automated Clearing Services Telecommunications Link) and CHAPS (Clearing House Automated Payment System). These are referred to in Section 2.

(e) Interbank networks accessible to customers

Bank customers in the United Kingdom may input payments direct to BACS but have only indirect access, through the agency of their bank, to S.W.I.F.T. and CHAPS. However, before a customer can submit bulk payments (credits or debits) to BACS for processing he has to be sponsored by one of the fourteen sponsoring banks, with which he must have an account relationship. An account holder with a bank which is not eligible to sponsor customers for BACS can also submit data, provided the bank has itself been sponsored. Once sponsored, a customer can deliver data for processing to BACS on magnetic tape, cassette, diskette or by direct telecommunication link.

Customers of banks in the United Kingdom also benefit from the S.W.I.F.T. network. However, as membership of S.W.I.F.T. is restricted to banks, customers cannot make direct use of it but have to submit their instructions to their bank.

The Clearing House Automated Payment System (CHAPS) became operational on 9th February 1984 as a new system for making guaranteed same-day sterling payments between the thirteen Settlement Banks. Customers of these banks, including non-Settlement Banks, can make use of CHAPS to send and receive eligible payments anywhere in the United Kingdom.

2. EXCHANGE CIRCUITS WITHIN THE BANKING SYSTEM

(a) Introduction

There is no uniform pattern of exchange circuits within different banks in the United Kingdom. Some banks pass to their branches all the effects (cheques, paper credits and other items) relating to customers of each branch, while other banks may choose to truncate some of those effects at, for example, one of their own regional clearing centres. Some banks truncate effects for personal customers, but pass on to their branches all effects for corporate customers.

All the major banks in the United Kingdom are highly computerised: data capture for the updating of accounts in respect of debit and credit clearing items (both paper and electronic) generally takes place in a bank's regional or central clearing office, with the accounts themselves being maintained on computers in those regional or central offices. Transactions at an account holder's own branch - e.g. the encashment of cheques - are, however, generally captured for account updating purposes at that branch: this process is assisted by the growing number of on-line counter and other terminals installed in banks' branches.

(b) Intrabank or intragroup networks

Intrabank items in the paper debit clearings are transported from the bank branch where they are paid in to each clearing bank's regional or head office clearing centre; from there they may be passed on to the account-holding branch, or they may be truncated. Intrabank paper credit items follow the same route via the clearing centre to the beneficiaries' branch.

The limited amount of intragroup processing in the United Kingdom plays an unimportant rôle in the payment system.

(c) Interbank circuits and networks

(i) Paper clearings

The system for clearing cheques in London is thought to have originated around 1770, but it was not until 1895 that a private company, the Bankers' Clearing House Ltd., was formed for the purpose of acquiring and managing the Clearing House. The shares in this company are held by the six members of the Committee of London Clearing Bankers. Apart from these six banks, there are four other functional members of the Clearing House, including the Bank of England. All ten members share the expenses of the Clearing House. Other banks obtain access to the interbank clearing through an agency arrangement with one of its members.

Separate clearings for local paper take place in Edinburgh, amongst the four clearing banks in Scotland, and in Belfast, amongst the five clearing banks operating in Northern Ireland. A small local clearing also takes place in Liverpool to deal with higher-value cheques, resulting from the dealings of the various traders in that city.

The paper passing through the London Clearing House is divided into three categories: Town Clearing and General Clearing for debit items,

such as cheques and bankers' payments, and credit clearing for credit transfers. Town Clearing items are restricted to cheques and certain other items, such as "clean" bills of exchange, of £10,000 or more which have been drawn on and paid into any of the 100 or so offices of the clearing banks within the central area of the City of London. The Town Clearing provides a same-day settlement service for the City's financial institutions: all items passing through the Town Clearing must be paid or returned unpaid on the same day. Although there were only 5.1 million such items in 1983, their total value amounted to £6,260 billion.

The General Clearing operates on a three-day cycle for the clearance of cheques and other debit items not eligible for the Town Clearing. General cheques paid into branches of the clearing banks which are drawn on other banks are exchanged the following day in the Clearing House: settlement takes place on the third day. A cheque which is not acceptable to the paying bank for any reason is returned by post to the branch where it was first paid in and the value of the cheque is reclaimed through BACS or the paper clearing. Cheques in the General Clearing in 1983 totalled 1.7 billion and had a total value of £540 billion. The volume of cheques passing through this Clearing grew by 8 per cent. in 1979 and 11 per cent. in 1980. Annual growth in 1981 and 1982 was only 3 per cent. and 4 per cent. respectively, but was somewhat stronger, at 7 per cent., in 1983.

Cheques drawn on a bank in England or Wales and paid into a bank in Scotland or Northern Ireland are passed, via a local agent, into the General Clearing. Cheques drawn on a bank in Scotland or Northern Ireland and paid into a bank in England or Wales are similarly dealt with by an agent and passed to the drawee banks: a four-day clearing cycle applies to such items drawn on Scottish banks and a five-day cycle to those drawn on banks in Northern Ireland, with the interbank settlement taking place bilaterally rather than through the Clearing House.

The processing of cheques exchanged in the General Clearing has been highly automated for several years. The Town Clearing, with its much smaller volumes (and much higher values), is still largely a manual system; until January 1984 the same was true of the third paper clearing system, the credit clearing, or bank giro. The addition of encoded information along the bottom of all bank giro credit vouchers has now made this paper clearing capable of automated processing. The code is machine-read by magnetic ink character recognition techniques (MICR), sometimes in combination with optical methods (OCR), whereas cheque processing only uses MICR. 178 million items passed through this clearing in 1983. This clearing also operates on a three-day cycle, with items being exchanged in the Clearing House on the second day and the credit to the beneficiary's account and the interbank settlement taking place on the third. It is likely that the new requirements for input to this clearing with their attendant demands on customers to adhere to standards for paper quality, design and encoding have constituted a substantial stimulus towards full automation and paperless transactions. The growing spread of computers has facilitated such a move, which has been encouraged by the banks.

A small paper clearing also takes place in London for all types of US dollar "retail" customer business in the United Kingdom. The London US Dollar Clearing, which was set up by the clearing banks in 1975, does not, however, handle "wholesale" US dollar transactions.

(ii) Automated clearings

BACS

Bankers' Automated Clearing Services Ltd. (BACS), which is owned by five of the London clearing banks, is the successor to the Inter-Bank Computer Bureau which was set up in 1968 to provide an automated money transfer service. All London and Scottish clearing banks and one bank based in Northern Ireland participate in its operations by submitting data themselves or by sponsoring their customers, including non-clearing banks, to do so. At end-1983 there were almost 11,000 users.

The originators of payments submit data to BACS by means of magnetic tape, cassette or diskette or, since mid-1983, by direct telecommunication link. Each submission consists of a number of credit items matched by one debit item for the total, or a number of debit items matched by one credit item. Submissions of standing order credits are prepared by the banks holding the accounts from which the standing orders are to be paid; submissions of automated bank giro payments are prepared by the customers initiating those payments, while submissions of direct debits are prepared by the customers who are to receive those payments.

The BACS processing system sorts all these items by the bank branches to which they are addressed, and prepares detailed tapes (or, in a very small number of cases, paper vouchers) for those banks: the debits and credits are applied to the destination accounts on the third day of the cycle of operations, when the interbank settlement also takes place. In 1983 BACS processed some 600 million items, of which 27 per cent. were bank giro credits, 31 per cent. were standing orders and 42 per cent. were direct debits. Automated payments represented just over 20 per cent. of the total bank clearings. The volume of items processed rose by an average of 12 1/2 per cent. per annum between 1978 and 1983.

CHAPS

An additional clearing system, the Clearing House Automated Payment System (CHAPS), became operational on 9th February 1984. It is an electronic interbank system for sending guaranteed unconditional sterling payments from one Settlement Bank, on behalf of itself or its customers, to another Settlement Bank for same-day settlement. Unlike the paper-based Town Clearing, it is available nationwide, but it is initially restricted to payments of £10,000 or more, although this limit may be lowered in due course.

The CHAPS Settlement Banks (the English and Scottish clearing banks) communicate directly with one another via British Telecom's Packet SwitchStream Service by means of standard computers and software, known as Gateways, which also provide an interface to each bank's own internal database. There is thus no central installation.

The interbank settlement is effected electronically at the end of each day, across the Settlement Banks' accounts held at the Bank of England.

(iii) Clearing settlement

The interbank settlement for all the clearings except CHAPS is prepared at the Clearing House late each working day. Each clearing bank details the amounts due to and due from each other clearing bank for that day's Town Clearing and for items exchanged on the previous day in the General Clearing and the paper credit clearing, and in BACS for the automated items.

Each individual clearing bank's net credit or debit position with all other clearing banks is then settled by a transfer to or from that bank's account held at the Bank of England.

(iv) Other circuits and networks

At end-1983 some 140 banks in the United Kingdom, including the Bank of England, were members of S.W.I.F.T., the worldwide message switching system. The UK regional processors for S.W.I.F.T. are situated in a secure environment on BACS' premises in north London.

Some banks operating in the United Kingdom also make use of private teleprocessing networks for the provision of their corporate cash-management systems and to facilitate other financial transactions.

IV. GENERAL REMARKS

A number of closely interrelated issues are currently apparent within the UK payment system. One concerns the building societies, which in the past twenty years have substantially increased their share of the national market for personal savings, and which now have to consider whether, in order to increase or even to maintain that share, they need to be able to offer their depositors direct access to money transmission facilities. While some societies are strongly of this view, others see less need to depart from their traditional rôle. The Government has noted that the societies should be able to offer a fuller range of personal banking and money transmission services if they so wish; it has set out for discussion, in a recent Green Paper, the question of what legislative changes should be implemented to cover this aspect (among others) of building societies' activities.

Another issue concerns the ownership, membership and control of the various elements of the payment system, including the extent to which the current organisational structure remains appropriate in the light of continuing technological developments and of changes in the market place. This issue was raised publicly in the autumn of 1983 by the National Consumer Council, in a report entitled "Banking Services and the Consumer"; it was also raised when two non-clearing banks in London applied for membership of the Bankers' Clearing House; and more recently it has been suggested that the building societies should be able to participate directly in the clearings, perhaps through a jointly owned "settlement bank". In March 1984 the Committee of London Clearing Bankers announced a major review of the ownership, membership and control of the money transmission system.

A further issue is the continuing growth, and greater acceptability, of electronic payments, partly in substitution for paper-based payments. In recent years there has been a substantial increase in the use of BACS, in terms both of the number of users, which is expanding very rapidly, and the number of debit and credit payments made, which is increasing at the rate of some 14 per cent. a year, while the volume of cheques (in substitution for cash) is increasing at around 6 per cent. a year. Over the next few years the number of payments made through CHAPS (in substitution for paper), and through local or national EFT POS systems and by credit card (both being substitutes for paper or for cash) is also likely to rise sharply, though still small in absolute terms. This changing balance among payment instruments is relevant to the long-term structure of the clearing systems, because it implies that institutions which are not now members of the Clearing House, but which now or in the future want to offer money transmission facilities to their customers, may choose to concentrate on electronic systems, and may be less interested in taking part in the existing paper-based clearing systems.

An important influence on the development of payment systems will be the extent to which their users are prepared to pay, directly or indirectly, the full cost of their transactions; this in turn may be affected, at least in part, by the extent to which they expect to receive a better return on current-account balances. With an increasing number of institutions offering money transmission facilities based on various forms of interest-bearing accounts, matched in many cases by explicit or implicit transaction charges (often at a relatively high rate), the large banks may come under increasing pressure to pay interest on all their retail deposits.

Their customers' response to higher charges and to the payment of interest on retail deposits also has implications for the banks' current efforts to spread the banking habit. Only some 63 per cent. of the adult population in Great Britain have a bank current account (although many of the remainder have accounts with building societies); the banks are working to increase that proportion, but, if they put up their transaction charges to allow for the payment of interest as well as covering rising costs, they are unlikely to be able to attract many of those who are currently un-banked. They are therefore seeking not only to increase the use of less labour-intensive electronic payment systems, but also to reduce the cost of the paper-based systems by further automation of both credit and debit systems, for instance by truncation.

These developments have implications for the continued use of cash in the economy, although some recent trends, such as the growth in the number of ATMs installed by banks and building societies and the prospective establishment of more shared networks of ATMs, seem likely to tend to buttress cash as a major means of payment, especially for smaller transactions. Clearly, despite the pace of developments in non-cash media, cash is likely to retain its present dominant, albeit falling, share of both the volume and value of payment transactions.

11. UNITED STATES

I. INTRODUCTION

The payment system in the United States continued to undergo significant changes between 1978 and 1983, as it had done since the mid-1970s. These changes were primarily due to the removal of statutory and regulatory constraints on competition among depository institutions and between depository and some non-depository institutions, as well as the phasing-out of interest rate ceilings on deposits. Rapid technological developments in data processing and data communications are making possible many changes in the delivery of payment services. The banking structure itself is undergoing many changes as barriers to entering new markets are being removed. Dramatic growth has taken place in the use of electronic payments, including growth of wire funds transfer networks, the ACHs and ATMs.

1. Legislation

Two major laws have moved the US banking system away from closely-regulated interest rates on deposits and towards competitive, market-oriented rates.* These two laws have narrowed and will ultimately close the gap between market rates and rates paid on deposits by depository institutions. Deregulation has affected depository earnings, the type of payment services offered, and the pricing of payment services. The Monetary Control Act of 1980 also required the Federal Reserve to price its payment services and to make them available to all depository institutions. Prices are set to recover costs plus a factor to approximate the cost of capital and taxes that would be paid by a private firm. Federal Reserve pricing has stimulated competition, particularly in cheque, funds transfer and ACH services.

2. Electronic payments

During the past five years the use of electronic payments has continued to grow, although they constitute a small proportion of total US payments. While the paper cheque still dominates the US payment system, pressures on bank earnings, advances in technology and its declining cost, and an increased willingness on the part of the public to use electronic forms of payment are generating growth.

(a) ATMs

The most vigorous promotion of electronic payment services has been in ATMs. By the end of 1983, 48,118 were in use in the United States, with an annual volume of 3.75 billion transactions that included cash withdrawals, account transfers and deposits. While nearly all ATMs are multi-service terminals rather than simply cash dispensers, the use of cash dispensers is growing in some areas. In addition, special-purpose machines are emerging that offer services such as cheque cashing with exact change return.

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* Public Law 96-221, The Depository Institution Deregulation and Monetary Control Act, enacted in March 1980, and Public Law 97-320, the Garn-St Germain Depository Institutions Act, enacted in October 1982.

As ATMs have proliferated and their use has become more common, ATM networks have grown. More than 250 shared ATM networks have been established, including at least six linking ATMs nationwide. These shared networks offer potential for new forms of payment services, such as POS transactions. However, it is not yet clear exactly what services will meet with widespread acceptance.

(b) Wire transfer of funds

Electronic transfer systems for large payments have continued to grow. The FedWire and CHIPS networks together transfer, on average, $500 billion daily, with an average transaction amounting to more than $2 million. New wire transfer systems include the CashWire service started in 1982 by the BankWire network and a few regional networks currently under development.

(c) Automated Clearing Houses

Private-sector use of ACH facilities in 1983 involved 156.5 million transactions valued at $763.6 billion, compared with a government transaction volume of 240.5 million items valued at $124.3 billion. In all, 19,100 companies used ACH services in 1983, compared with only 7,000 in 1979. Recently private volume has been growing by 40 per cent. annually, while government volume has been growing by about 16 per cent. Government volume may grow faster during the next year or two as a result of the Treasury Department's objective of relying more on electronic payment means.

(d) Other electronic payment developments

Other forms of electronic payments now in various stages of development, experimentation or implementation include debit cards, POS systems, home banking and new card technology.

Acceptance and use of debit card technology has been limited in the United States. Less than 6 million debit cards were in circulation in 1983. However, the major issuers of bank cards, VISA and MasterCard, have been increasing their promotional activity. Also, several POS initiatives show potential for increased debit card activity. New POS systems at gasoline stations are intended to replace the use of cash. At least twelve POS systems for gasoline stations were in place or planned by the end of 1983. Several pilot studies are being conducted based on the use of major debit cards, local bank debit cards or proprietary oil company debit cards. Some systems allow for all three options. Since major national oil companies are interested in systems that will enable them to debit a customer's account at any depository institution in the country, both the ACH and shared ATM networks are being considered as delivery systems for transferring these payments. The other setting where POS systems have advanced is in supermarkets and convenience stores. At least five supermarket systems were in operation in 1983 or scheduled to begin in 1984. Typically, these systems accept debit cards issued by local depository institutions.

Generally, POS systems have just begun to develop in the United States. The examples of gasoline stations and supermarkets indicate that promoters of the technology expect it to meet with acceptance in situations where cash is used more frequently than other forms of payment.

While the future for home banking is not yet clear, several pilot programmes have begun and some large corporations active in the communications, retail and computer fields have announced plans to combine home banking with other terminal services. In addition to communications via telephone lines, the cable connections established between homes and local cable television companies in most areas of the country will be tested as a vehicle for home banking. The use of personal computers in the home is expected to be a key factor in the development of home banking. About six million personal computers had been sold for home use by the end of 1983, and this number is expected to grow to 10 million by the end of 1984 and to 60 million by 1990.

Current card technology in the United States includes the VISA Electron Card and the Smart Card developed in France. The Electron Card, introduced in 1983, incorporates three technologies: the magnetic stripe, the universal product identification (bar) code used on supermarket items, and the general merchandise retailers' optical character recognition (OCR) code. The card is intended initially for use in ATMs and, eventually, for POS systems. By the end of 1983 some twenty banks had announced plans to issue the Electron Card; by 1986 it is expected that 30 million cards will be in use worldwide. In addition, in 1983 the Smart Card, with an embedded memory chip, was marketed in the United States for use in banking, health care, food stamp replacement, security and access control, transportation and retail payments.

3. Future developments

Future developments in the US payment system will be in the direction of greater use of electronics through ATMs, the ACH, POS, home banking, direct debit systems and wire transfer of funds, and an associated decline in the use of the paper cheque as a means of effecting payment. The future may also see the further unbundling of financial services, greater emphasis on market-level interest rates on all types of accounts and continued expansion of services provided by non-financial entities.

II. INSTITUTIONAL FRAMEWORK

The constitutional power to control and regulate the quantity and character of all money rests with the US Government. The nation's official money consists of coin and paper currency which are, by constitutional authority, legal tender for all debts, public and private. The Federal Government is the sole issuer of coin and currency, which are warehoused and distributed by the Federal Reserve Banks* to depository institutions that, in turn, make this money available to the public. Unneeded or unfit coin and currency are returned to the Federal Reserve Banks for recirculation or destruction.

Demand deposits in commercial banks held by individuals, partnerships, corporations and state and local governments were used to make payments in December 1983 at an annual rate of $127,300 billion. Another

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* See Appendix for definition of Federal Reserve Banks.

$2,000 billion of deposit transfers were made from NOW, super NOW, ATS and share draft accounts at commercial banks and other depository institutions.[1] Deposit transfers of all types are estimated to have been used for over 98 per cent. of all money payments. Most of these transfers, estimated to be over 40 billion in 1983, were initiated by cheque or draft.[2]

Commercial banks provide most of the processing and accounting services for demand deposit transfers. The Federal Reserve Banks, however, provide interbank clearing facilities for cheque and electronic payments. Non-bank depository institutions, savings banks, savings and loan associations and credit unions (co-operative banks) have in recent years begun to offer money transfer services into and out of savings accounts.

Because neither cash nor cheques are suited to every type of transaction, several intermediate methods for payments have evolved. Credit cards and travellers' cheques, which are issued by banks and non-banks, are used by many consumers because they afford greater protection against loss or theft than cash and because they are more widely accepted for payments made at the point of purchase. Money orders, cashiers' cheques and similar instruments are purchased like travellers' cheques and used as substitutes for cheques by persons who do not have chequing accounts. By contrast with the situation in many European countries, the US postal service plays a small part in providing payment services, its rôle being limited to the sale of money orders.

The following sections briefly describe the various payment media used in the United States today and the organisations that provide the services. However, some quantitative orientation is needed at the outset to summarise essential features of the US payment system in absolute and relative terms. Table 1 shows the importance of money stocks to their holders and to the major providers of money services, i.e. government and depository institutions.

Over the period 1955-83 a trend towards economising the use of both currency and demand deposits has been observed (see Table 2). Currency in circulation relative to gross national product has declined by 34.8 per cent. (from 6.9 to 4.5 per cent. of GNP). Demand deposits have declined even more, by 72.3 per cent.; from 26.7 to 11.3 per cent. of GNP. The decline can be partially attributed to improvements in payment services and to the use of savings and other types of deposit accounts for funds transfer purposes.

Other significant trends are evident in the relative importance of money provided by banks and by the Federal Government. Demand deposits in 1983 were equivalent to less than 11.5 per cent. of commercial-bank assets, whereas in 1955 they amounted to 54 per cent. Table 3 shows the relative magnitudes of demand, savings and time accounts at all types of institutions

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1 See Table 1. The turnover of coin and currency is estimated to be 20 to 30 times per year, giving a transaction volume in 1983 of $2,800 to $4,400 billion, compared with $129,000 billion in debits to demand deposit accounts of individuals, partnerships, corporations and state and local governments.

2 Includes cheques, drafts, wire transfers and interbank transfers.

carrying out depository business in the United States. The use of savings account balances for payment purposes is a fairly recent innovation in US payment practice, but it is apparent that making them eligible for a payment rôle has had a major impact on the monetary aggregates as well as on the competitive environment in which depository institutions operate.

III. RÔLE OF GOVERNMENT

Government participation in supplying payment services is relatively limited. The Department of the Treasury is responsible for the printing of currency and the minting of coin. The Federal Reserve performs a wholesaling rôle, distributing cash to depository institutions and retiring unfit coins and currency. In addition to the Government's primary rôle in meeting the nation's currency requirements, the Federal Reserve provides interbank cheque clearing and electronic funds transfer services.

Regulatory requirements and banking supervision, to which banks and other depository institutions are subject, have both specific and environmental influences on the payment system. Law, regulation and supervision are the means used to prevent payment techniques that may jeopardise the safety and soundness of the banking system or threaten the rights of users. Furthermore, given its significant rôle in the payment system, the presence of the Federal Reserve as an active market participant serves to promote a greater degree of equity and competitive fair play among all participants. However, some state and federal laws constrain the activities of some depository institutions by limiting their office locations or imposing rules on the types of deposit accounts that may be used for payment purposes. Under the Uniform Commercial Code (UCC), state laws set forth rights, liabilities and obligations governing the use of paper transfers. The Electronic Fund Transfer Act of 1978 established similar ground rules at the federal level for electronic funds transfers.

IV. RÔLE OF DEPOSITORY INSTITUTIONS

The US banking system is widely known for its large number of banks. There are 14,759 banks, or 63 per million persons. Some 3,277 of these banks are subsidiaries of 785 multi-bank holding companies. Many of the smaller independent banks use clearing, data-processing, portfolio, credit and other services supplied by large correspondent banks. The majority of the nation's banks, 66.8 per cent., have assets of less than $50 million and, in the aggregate, account for 10.7 per cent. of total assets. At the other extreme, just under 1.7 per cent. of all banks - those with assets in excess of $1 billion - account for 56.6 per cent. of the total assets. The middle-sized group is made up of 31.5 per cent. of the banks with 32.6 per cent. of the assets.*

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* "Assets and liabilities: report of income for commercial and mutual savings banks", Federal Deposit Insurance Corporation, 31st December 1983.

The large number of banks in the United States is a consequence of a dual chartering system in which each state is empowered to charter banks operating within its boundaries. In addition, the Federal Government can charter a bank in any state. The rules regarding the branching activities of banks are also set at both the state and federal level. The cumulative effect of these laws is to restrict the ability of banks to branch. As the Federal Government places the same constraints on branching by nationally chartered banks that state laws impose on state chartered banks, banks are prohibited from having full-service offices in more than one state.[1] Often a state will limit branching to a particular city or county. A few states prohibit all full-service branching.

V. CIRCULATION OF COIN AND PAPER CURRENCY

Currency and coin are supplied to the Federal Reserve System by the Department of the Treasury. Currency is printed by the Bureau of Engraving and Printing and is supplied to the Federal Reserve at cost. Currency in the amount of $45.3 billion was purchased from the Bureau of Engraving and Printing in 1983 at a cost to the Federal Reserve of $113.5 million. Currency in circulation at the end of 1983 amounted to $148.0 billion.

Coin is produced by the United States Mint. In the fiscal year ending 30th September 1983, the Mint produced 18.2 billion coins at a cost of $255.7 million with seigniorage of $477.4 million.[2] Coin is acquired by the Federal Reserve from the Mint at face value. Coin in circulation at the end of 1983 amounted to $14.3 billion.

The flow of currency and coin through Federal Reserve offices is illustrated in Table 4.

Demand for currency and coin

Several factors have affected the demand for coin and currency in recent years. The major factors are inflation, turnover and competition from cheques and credit cards, and the demand for currency outside of the United States (quantity unknown). The so-called "underground economy" - transactions involving the use of currency for tax evasion or illicit operations or out of a desire to maintain financial secrecy - may also have had a significant impact.

The net influence of each of these factors cannot be isolated, but some inferences can be drawn by relating outstanding currency and coin to GNP and by differentiating among denominations.

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1 Some states permit banks located in other states to open full-service branches.

2 Seigniorage, the difference between the face value and production cost, is applied only to coin in the United States. The cost of metal was $135.4 million; the cost of production was $120.3 million.

From 1960 to 1970, prices as measured by the consumer price index rose by 31 per cent., nominal GNP by 94 per cent. and currency in circulation by 65 per cent. The rise in currency in circulation, most of which was in $20, $50, and $100 notes, was insufficient to accommodate the increase in prices and output unless currency turnover increased or currency was displaced by other methods of payment. It also implies little or no growth in the underground economy during that decade. A similar trend is discernible between 1970 and 1980, when nominal GNP increased by 170 per cent. while currency in circulation grew by 134 per cent.

The denominational distribution of the currency in circulation has changed substantially over the past decade. The use of smaller denominations ($1 to 10) has increased at an average nominal rate of 4 per cent. per year. On the basis of 1983 data, judging from the return of unfit notes relative to new notes issued, the smaller currency denominations, $1, 2, 5, 10 and 20, have a much shorter usable life than $50 and $100 notes.

VI. CHEQUES

The paper cheque is the most frequently used means of payment in the United States other than cash, and is likely to remain so for many more years. Businesses, individuals and government wrote approximately 40 billion cheques in 1983. Of these, about 55 per cent., or 22 billion, were written by individuals; 40 per cent., or 16 billion, by businesses; and 5 per cent., or 2 billion, by state and local governments.

Individuals write 87 per cent. of their cheques to businesses, 11 per cent. to other individuals and 2 per cent. to government. Businesses write 57 per cent. of their cheques to other businesses, 41 per cent. to individuals and 2 per cent. to government. Government writes 78 per cent. of its cheques to individuals, 15 per cent. to businesses and 6 per cent. to other government entities.

Government cheques are written by federal, state, and local governmental agencies, primarily to individuals and businesses. In addition to the estimated 2 billion cheques drawn on chequing accounts held by local government, about 600 million cheques a year are issued by the Department of the Treasury. It should be noted, however, that increases in the volume of cheques issued by the Treasury Department have been declining since 1975 owing to its vigorous promotion of electronic funds transfers (see Table 5).

Approximately 30 per cent. of the cheques processed by banks are written on accounts maintained at the banks on which they are drawn or on their affiliates or subsidiaries. The remaining 70 per cent. are drawn on another depository institution and must be collected from the banks on which they are written. Interbank cheques are collected through local clearing houses, correspondent banks, and the Federal Reserve System. Depository institutions participating in local cheque clearing houses present cheques drawn on other participants directly, and typically settle net balances through accounts maintained with the other clearing house members or through the institutions' accounts at the Federal Reserve. Cheques drawn on institutions located outside the region in which a depository institution is

located are deposited with correspondent banks or the Federal Reserve for collection. Air and surface transportation networks have been developed by both correspondent banks and the Federal Reserve to transport cheques to effect deliveries to individual paying banks. Correspondent banks effect settlement for their respondent bank cheques through accounts maintained with them by those banks, while the Federal Reserve effects settlement through the reserve or clearing accounts it maintains. Small depository institutions are not able to collect interbank cheques or to perform their own demand deposit accounting. About 55 per cent. of the cheques deposited with correspondent banks and 10 per cent. of those deposited with the Federal Reserve System are delivered to other correspondent banks or data-processing organisations before being presented to the paying banks. Interbank cheques are handled by an average of three banks and may involve as many as five.[1]

Inherent in the cheque collection system are delays between the time a cheque is written and the time it is paid. The value of the uncollected funds, called "float", is sizable because of the high volume of cheques written. The causes of float include delays in the postal delivery of the cheque to the recipient, delays between the receipt and deposit of the cheque, and delays in its physical processing and transportation before it is delivered to the paying institution. One study has determined that the overall daily average float amounted to about $380 billion in 1983.[2] It was estimated that if one used the daily average interbank funds rate of 9.5 per cent., the "value" or "cost" of the total float for 1983 was approximately $36 billion. Of this amount $11.7 billion was due to the use of mail delivery, $18.7 billion to delays before cheques are deposited, $5.5 billion to banks' collection processes, and $0.12 billion to the Federal Reserve System's collection procedure.[3] Float in such magnitudes presents a substantial disincentive for issuers of cheques, particularly businesses which issue large-value cheques, to use faster electronic payment methods.

The Federal Reserve System, which processes about 35 per cent. of interbank cheques, has recently implemented operational improvements and changed its availability schedules in order to lower its float levels. It has begun to charge for float. The Federal Reserve System's daily average cheque float declined from nearly $5 billion in 1980 to just over $1 billion in 1983. In 1983 it cost the Federal Reserve System $322 million to fund its nationwide cheque clearing system.

Other steps are also being taken to improve the cheque collection system. A pilot programme to test alternative ways to speed the return of dishonoured cheques to the banks where they were first deposited has been undertaken by the Federal Reserve. The industry has also endeavoured to implement endorsement standards which could facilitate the reading of

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1 "A quantitative description of the check collection system", Federal Reserve Bank of Atlanta, 1981.

2 "The tug-of-war over 'Float'", The Morgan Guaranty Survey, Morgan Guaranty Trust Company, New York, December 1983, p.11.

3 Ibid.

endorsements and thereby accelerate the processing and return of dishonoured items. New equipment to improve the processing of "exception" items, which for various reasons cannot be processed through high-speed cheque reader/sorter equipment, is being tested. In addition, depository institutions continue to experiment with truncation (i.e. the capture of cheque payment information in electronic form) to eliminate some of the handling of paper cheques as a means of containing the costs of cheque processing. A standard has been developed to include in the magnetic ink character recognition (MICR) line at the bottom of an encoded cheque a character to identify cheques as eligible for truncation.

As electronic payments take hold in the United States, the growth in the volume of cheques written is expected to decline from the current annual rate of about 4 per cent. to zero, with perhaps a decline in absolute numbers by the end of this decade.* In spite of these trends, the extensive reliance on the paper cheque will continue for the foreseeable future.

VII. ELECTRONIC FUNDS TRANSFERS

Electronic funds transfer systems have been under development in the United States since the late 1960s. Those now in operation involve participation by both the private and the public sectors and make use of a wide range of technology. The most important of these, discussed below, are automated clearing houses, wire funds transfer networks, automated teller machines and cash dispensers, point-of-sale systems and home banking systems.

1. Automated Clearing House

Among the electronic funds transfer services available, the ACH system at present seems to offer the greatest potential for displacing cheques in payment transactions because of its ability to process high transaction volumes and its relatively low cost per item. In 1983 the ACH network processed 397 million credit and debit transfers, of which 156.5 million were commercial payments and 240.5 government payments. Approximately 24,000 depository institutions receive payments, while about 2,000 institutions initiate payments for businesses and state and local governments. The number of corporations, local governments and other entities using the ACH has grown from 7,000 in 1979 to a total of 19,100 in 1983.

Because the ACH is still a relatively new payment mechanism its capabilities are still being explored. At present the private sector uses it primarily for salary and wage credit transfers, cash concentration credit transfers and pre-authorised debit transfers for insurance premiums, mortgage loans and other recurring consumer payments. The US Government uses the ACH mainly for social security and other benefit credit transfers and payroll transactions, although it plans to begin using it in the near

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* "Displacing the Check", Economic Review, (Federal Reserve Bank of Atlanta: Atlanta, Georgia) August 1983.

future to pay corporations that provide services to the Government. The National Automated Clearing House Association (NACHA) continues to encourage customerinitiated entries, including transactions via automated teller machines, telephone bill payment and home banking services and point-of-sale transactions. In 1983 the NACHA introduced a programme that enables corporations to send trade payments through the ACH system. While volume levels are currently very low, the use of the ACH for trade payments could streamline corporations' accounts payable and receivable operations.

A number of trends could lead to further growth in the volume of transactions handled. Firstly, as educational and marketing efforts by depository institutions and ACH associations continue, more corporate entities will consider taking advantage of the ACH process. Secondly, the banking industry has initiated more explicit pricing of cheque services. Thirdly, as the costs connected with ACH processing come down relative to the cheque collection system, banks can be expected to provide incentives to their customers for increasing their use of less costly electronic payment services. Fourthly, there is evidence that participants are investigating new ways to use ACH services, such as the interchange of ATM transactions processed on shared networks or transfers of funds between depository institutions and non-depository financial institutions (such as money-market mutual funds).[1] Finally, the volume of government transactions may grow at faster rates during the next year or two in view of the Treasury Department's objective of relying more on electronic payments and less on paper cheques.

At present the Federal Reserve processes the majority of ACH transactions. However, three privately operated ACH facilities process local transactions for their members: the New York Automated Clearing House Association, and two affiliates of the Cal-Western Automated Clearing House Association[2], Arizona and Hawaii. Furthermore, private-sector interest in ACH processing is increasing, and the Cal-Western Automated Clearing House Association plans to begin operating an ACH facility, initially to serve the states of California and Nevada, in 1985. Along with growing private-sector interest in the ACH there has been emphasis on increasing the use of electronic data transmission for the deposit and delivery of ACH transactions. At the end of 1983, 200 data transmission links connected the Federal Reserve with 2,000 depository institutions. As volume levels continue to rise further growth is expected in the use of electronic transmission, bringing improvements in funds availability.

2. Wire transfer of funds

There are three widely used, specialised wire funds transfer networks available to depository institutions: the Federal Reserve's funds transfer system (FedWire); the Clearing House Interbank Payments System (CHIPS), which is operated by twelve New York City Clearing House banks; and BankWire's CashWire service.

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1 "Report on the payments system", Association of Reserve City Bankers, 1982, p. 131.

2 The Cal-Western Automated Clearing House Association draws its members from the States of Arizona, California, Hawaii and Nevada.

Electronic funds transfer systems for large payments have continued to grow. The FedWire and CHIPS networks together are used to transfer, on average, $500 billion daily, with an average transaction value of more than $2 million.

FedWire - Although the Federal Reserve's wire funds transfer service (FedWire) dates back to 1913, the system was not fully automated until late 1973. In 1982 the Federal Reserve implemented a new packet-switching communications network, called FRCS-80. This network connects the twelve Federal Reserve Banks and has improved the speed and efficiency of funds transfer services. All transactions are credit transfers and on initiation are immediately debited to the account of the payer.

The network handles transfers of reserve account balances (almost exclusively in large dollar amounts) from one depository institution to another and transfers of US Government and federal agency securities. The transfer of reserve account balances is used for the purchase and sale of Federal funds, the movement of correspondent bank balances and credit transfers on behalf of bank customers. Bank customers request transfers on their behalf for a number of purposes, including: the purchase and sale of commercial paper, bonds and other securities; payment and cash management operations affecting corporate demand deposit accounts; and transfers of mutual fund balances. From 1974 to 1980 the volume of transactions handled grew at an average annual rate of 20 per cent. Since 1981, when fees were first assessed for the funds transfer service, volume growth has moderated somewhat, to an average annual rate of 13 per cent. between 1981 and 1983. The Federal Reserve handled 38 million wire funds transfers in 1983, valued at $84,000 billion, and about 5.5 million security transfers valued at approximately $35,000 billion.

Almost 8,000 depository institutions use the Federal Reserve's funds transfer services, and the Treasury Department is also a direct participant. More than 4,000 of these institutions are connected directly to Federal Reserve computers and can send and receive funds transfers using computers, terminals or micro-computers located on their own premises. Approximately 98 per cent. of all funds transfers processed by the Federal Reserve are handled in this manner, with all processing (accounting, editing and so forth) fully automated. It is expected that the number of institutions with electronic connections to the Federal Reserve will continue to grow. Depository institutions without electronic connections utilise the funds transfer service by telephone.

BankWire - BankWire is a private communications system serving 180 commercial banks in seventy-five cities throughout the United States and Canada. In addition to funds transfers, the system is used for a variety of other interbank business communications. Funds transfers over BankWire can be effected on the same day by means of debits or credits to interbank demand deposit balances, and the transmitted information can include instructions to credit third parties' accounts. In 1983 BankWire handled about 7,000 messages a day, resulting in transfers on correspondent accounts of about $7 billion.

In 1978 BankWire installed a new system (BankWire II) with improved payment settlement features as well as facilities for new types of traffic, such as the transmission of ACH batched files. In 1982 it began

offering a funds transfer service, called CashWire, providing for the net settlement of transfers on the books of the Federal Reserve. In 1983 CashWire averaged 625 transfers a day valued at $500 million. However, only twenty or so depository institutions were using the service.

Clearing House Interbank Payments System (CHIPS) - CHIPS is a private facility for international funds transfers operated by the New York Clearing House Association, which has as its controlling members the twelve largest New York City commercial banks. It handles almost 90 per cent. of the daily dollar value of international transactions processed in the United States.

Before CHIPS began operations in 1970, internationally related payments in New York were effected with official cheques that were carried by hand to the Clearing House and transferred to payee banks in one of several daily cheque exchanges. However, the traditional practice of using cheques became too cumbersome and error-prone as the expanding international business of US banks and a growing pool of Euro-dollars resulted in a rapid increase in transaction volumes. The electronic transactions, in contrast to FedWire, still retain the characteristics of the cheque in that the transfer of availability awaits the clearing process.

CHIPS has grown steadily since 1970. In 1972 it provided direct computer access to some New York Edge Act corporations (subsidiaries of US banks with headquarters in states other than New York) and to foreign bank participants, in addition to the member banks of the New York Clearing House Association. The average daily dollar transaction volume in 1972 was about $18.5 billion, involving some 7,000 items. More branches and agencies of foreign banks and Edge Act corporations were brought on-line as CHIPS participants in 1974, and the average daily volume grew to more than $40 billion and 13,000 transactions. By 1979 average daily clearings totalled $100 billion and about 50,000 interbank transactions; CHIPS also handled an average of 15,000 intrabank book transfers daily. By 1983 daily clearings had increased to $225 billion and about 80,000 transactions.

Payment system risk - The large dollar volumes handled on a debit basis by the major wire transfer systems, and their likely future growth, have given rise to concern that a single participant's failure might negatively affect a large number of network participants. Steps have been taken by the Federal Reserve System and the banking industry to contain such risk more effectively. In October 1981 same-day settlement was implemented for CHIPS, a change which removed the risk that an overnight failure of a major CHIPS participant could jeopardise settlement of a day's transactions. The CHIPS network is implementing bilateral net credit limits between each pair of banks executing a transfer as another measure to control the risk of default.

Recently the Federal Reserve agreed to modify CashWire's net settlement agreement to provide for same-day finality. In addition, CashWire participants have established limits on the amount of net debit exposure that each participant may incur at any time and have also implemented bilateral net credit limits. At the end of 1983 a study was initiated by the banking industry and the Federal Reserve to identify methods of controlling risk on large dollar funds transfer networks.

2. Automated teller machines and cash dispensers[1]

The most vigorous promotion of electronic payment services has been in automated teller machines. Both ATMs and cash dispensers are used in the United States. However, almost 99 per cent. of the machines installed are ATMs and offer a full range of services, including cash withdrawal, deposits, transfers between accounts, cash advances from bank credit card accounts, bill payments and balance inquiries.

Most of these machines are installed in the lobbies of depository institutions and through their external walls. In recent years, however, increased emphasis has been placed on installing ATMs in locations such as supermarkets, convenience stores, shopping centres, airports, hospitals and office buildings. On some of these sites ATMs and cash dispensers are being installed by retailers and corporations rather than depository institutions.

In 1976 there were 5,300 machines nationwide; by the end of 1983 there were 48,118 machines in operation with an annual volume, excluding balance inquiries, of 3.75 billion transactions. Average transaction volume per ATM has also increased significantly, from about 4,000 per month in 1978 to an estimated 6,500 per month by end-1983. A number of machines are currently reporting 20,000 to 30,000 transactions per month.[2]

The advent and growth of shared networks has increased interest in ATMs off depository institutions' premises. More than 250 shared ATM networks have been established so far, most with local or regional scope but including at least six which offer or plan to offer nationwide and in some cases international access. At present only about forty-four of these networks link more than 100 ATMs, with the maximum reaching close on 6,000.

3. Point-of-sale systems

During the late 1960s expectations were high that by the end of the 1970s point-of-sale systems capable of instantaneously transferring funds between consumers' and merchants' accounts would be commonplace. These expectations have not materialised and, in fact, few such POS systems are in operation today. POS developments have been stalled by a lack of perceived cost savings, inertia and the deferral of funds transfer accomplished by cheque or credit card payments. Prices charged by merchants, except in the case of gasoline stations, generally do not differentiate between cash, cheques and credit cards.

Because of the lack of a uniformly accepted definition of POS in the United States statistical data on POS systems can be misleading. Some so-called POS systems are only used for cheque authorisation or to authorise credit card purchases; only a few provide full funds transfer systems.

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1 Linda Fenner Zimmer, Payment Services Correspondent (Marlborough, Connecticut), 1984.

2 "ATM 1983: a critical assessment", Linda Fenner Zimmer, The Magazine of Bank Administration, Vol. 60, May 1984, pp. 24-34.

At present there are about thirty POS pilot projects in operation, approximately twelve of them operated by oil companies. Most are using shared ATM networks to transfer payment information to consumers' depository institutions and to debit their accounts. At least one project is using the ACH to debit consumers' accounts for gasoline purchases.[1] While there are over 100,000 POS credit authorisation terminals nationwide, there are only about 800 terminals that can be used to debit a consumer's account directly.[2] Some major retailers, notably Sears, Roebuck & Co. and J.C. Penney Co., have announced plans to provide nationwide credit authorisation and processing.

VIII. CREDIT CARDS

The use of credit cards issued by banks, card companies or retailers has become a well-established financial management practice of households in the United States. About 70 per cent. of the nation's families have cards of some type and more than half of these families make one or more card purchases per month. The total number of credit cards in circulation is over 600 million, over 20 per cent. of which are bank credit cards, primarily VISA and MasterCard, and a further 9 per cent. are American Express, Diners Club and Carte Blanche. The cards issued by department stores, oil companies and other merchants can generally be used only to purchase merchandise or services at outlets owned by or affiliated with the issuing company. National credit cards not affiliated with a particular retailer have in many cases displaced merchants' charge accounts. Such cards may be used to access a line of credit and are therefore more flexible than merchant cards.

The development of credit cards has had an effect on outstanding convenience credit,[3] the pattern of consumer expenditure and the displacement of cash and cheques.

Technically, the credit card is not a payment instrument since it does not transfer funds between the payer and the payee. The card issuer pays the merchant on a discount basis and bills each card holder monthly for

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1 "The revolution in retail payments", Economic Review, Federal Reserve Bank of Atlanta, July/August 1984, p. 14.

2 Helene Duffy, Duffy & Duffy, Inc., New York, 1984.

3 Convenience credit is credit for which there is no overt finance charge. However, the evolution of credit cards has distorted the statistical reporting of convenience credit by combining it with revolving credit. For example, consumer survey data indicate that about 37 per cent. of credit card debt may be convenience credit. (1977 Consumer Credit Survey, Board of Governors of the Federal Reserve System, 1977.) Thus, of the $77.5 billion in revolving credit outstanding at end-1983, $28.7 billion would be convenience credit. (Federal Reserve Bulletin, Vol. 70, March 1984, Table A40.)

his purchases. However, the credit card displaces payment transactions by aggregating them into single daily or weekly payments to merchants and into monthly payments for consumers. Card holders pay by cheque without penalty with a grace period of up to thirty days.

Payments to merchants are discounted at a rate of between 2 and 8 per cent. depending primarily on volume and transaction size. Generally, consumers pay card issuers an annual fee of $15 to $50 for bank cards, which enable them to defer payment by borrowing, in effect from the card issuer. If extended credit is involved, the bank is the supplier of credit and typically charges a finance charge of 18 to 20 per cent. per annum on the outstanding balance.

In 1982 credit card billings amounted to nearly $208 billion. These billings represented 5 billion purchases and 2.9 billion consumer payments. During 1983 consumers made 650 million payments to bank card issuers for 1.6 billion purchases (see Table 6). Comparing the number of credit card payments with that of purchases indicates the extent to which card use displaces cash and cheques.

The technology used to process credit card transactions for the major companies is primarily electronic. A paper sales draft with a copy for the consumer is created at the point of sale. The data on the sales slip are converted to electronic form at the bank of first deposit or data processing centre and are transmitted to the issuing bank. On the basis of these data descriptive statements indicating the date and amount of the transaction and the merchant's name and location are provided to consumers at the end of each monthly billing cycle.

IX. TELEPHONE BILL PAYMENT (TBP)

The payment of bills by telephone is a service that has been offered by depository institutions since 1973. Initially the service was introduced only as a competitive device by thrift institutions to match payment services offered by banks. As telephone bill paying attracted consumer interest in many areas, commercial banks began to offer the service. Recent versions using push-button telephone equipment enable customers to deal directly with a computer that can receive and acknowledge the customer's instructions. In 1983 there were about 350 organisations offering TBP, down from 428 in 1982. The decline is attributed primarily to the consolidation of systems and mergers of organisations. The average number of TBP accounts per institution was 2,913 in 1983, and the annual transaction volume was estimated at 31 million bill payments. The average number of transactions per account was only 6.7 a month, with a value of $103.40 per transaction.*

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* "Telephone bill payment services: statistical compendium", Trans Data Corporation, 1983.

Some organisations expect TBP to become one of the fastest growing EFT systems. One of the nation's largest retailers, Sears, Roebuck & Co., began offering the service on a pilot basis to 1.2 million of its credit card holders and expects to expand the service to all its 25 million card holders nationwide.

Until recently most depository institutions carried out TBP by mailing cheques to payees with a computer listing identifying the payer to the payee. For multiple payments to a single payee, one cheque covers the aggregate amount of the payments and a computer listing identifies the individual payers. Depository institutions have begun to use the ACH to carry out TBP transactions electronically. As this approach is more cost-effective, it is expected to displace the use of cheques to effect payment for TBP transactions.

X. HOME BANKING

Home banking services, which are usually offered as a part of a larger package of videotex services, such as news reports, stock quotations and video games, are only beginning to emerge as a viable payment mechanism. Some banks see it as a possible way of reducing their dependence on branches and paper processing and reducing operating costs. However, there is no consensus as to when home banking will become profitable.

Only three videotex projects were in operation in 1978, while by 1983 seventeen home banking/videotex projects were underway. A further thirty-seven projects are planned or in the course of development, involving about 100 organisations.[1] Home banking could grow rapidly in the near future as the use of personal computers continues its explosive growth. The number of home computers in the United States is expected to increase from 6 million in 1983 to 10 million in 1984. Only about 10 per cent. of personal computers, however, are equipped with communications devices, or modems, necessary for home banking.

About 26,000 households now bank at home through terminals or micro-computers (personal computers). Of this number, 14,000 are customers of the Bank of America and 8,000 do business with Chemical Bank. Some twenty-seven depository institutions operate home banking programmes and twenty-six have announced entry into the market.[2] One major retailer, J.C. Penney Co., plans to establish a national videotex system, which could conceivably encompass home banking in the next three years and expects to reach a million customers within five years.

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1 Trans Data Corporation, A Compendium of Videotex/Home Banking Studies, 1983.

2 David O. Tyson, "Home Banking: Still an Infant But Growing Fast", American Banker, 23rd July 1984.

The average monthly charge for home banking/videotex services, which are available twenty-four hours a day, is $10. The average time that videotex/home banking services are used is ten minutes a day and the average number of banking transactions is six per month.*

* Trans Data Corporation, Test marketing Videotex/Home Banking Services: Pilot Results, 1983.

Table 1

THE US PAYMENT SYSTEM MONEY COMPONENTS
1955-83
(Amounts in billions of dollars)

Items	1983	1978	1975	1970	1965	1960	1955
Population, 1st July (in millions)	235.6	218.4	213.6	204.9	194.3	180.7	165.9
GNP	3,310.5	2,106.9	1,528.8	982.4	688.1	506.0	399.3
M_1 (daily average)	525.3	351.6	289.5	214.5	167.1	143.5	134.4
Percentage of GNP	15.9	16.7	18.9	21.8	24.3	28.4	33.7
Currency in circulation (daily average)	148.0	93.2	71.0	47.7	35.3	29.0	27.6
Percentage of GNP	4.5	4.4	4.6	4.9	5.1	5.7	6.9
Percentage of public debt	15.6	19.5	23.4	22.0	16.5	14.2	13.7
Demand and other chequable deposits (daily average)	272.5	267.0	218.5	166.8	131.8	114.5	106.8
Percentage of GNP	7.4	12.3	14.3	17.0	19.2	22.6	26.7
Percentage of commercial-bank assets	11.3	12.5	23.3	31.2	37.2	47.2	53.6
Public debt of US Treasury held by private investors, 30th June	950.5	477.8	303.2	217.2	213.7	204.5	201.4
Total assets of commercial banks, 30th June	2,003.2	1,354.8	933.4	534.9	354.6	242.5	199.2

Sources: Banking and Monetary Statistics 1941-70 (Board of Governors of the Federal Reserve System, 1976); Annual Statistical Digest, 1971-75, 1972-76, and 1973-83 (Board of Governors of the Federal Reserve System); and Assets and Liabilities: Report of Income for Commercial and Mutual Savings Banks (Assets and Liabilities published annually beginning 31st December 1969, Report of Income added beginning in 1972, Federal Deposit Insurance Corporation); Federal Reserve Bulletin, Tables 1.21, 1.25, 1.41, December 1983.

Table 2

CURRENCY IN CIRCULATION AND DEMAND DEPOSITS
1955-83

	Currency in circulation		Demand and other chequable deposits*		
Years	Billions of dollars	Percentage of GNP	Billions of dollars	Percentage of GNP	Percentage of commercial-bank assets
1983	157.7	4.5	392.5	11.3	11.5
1980	116.7	4.4	302.1	11.5	17.3
1978	93.2	4.4	267.0	12.5	19.1
1975	71.0	4.6	218.5	14.3	23.3
1970	47.7	4.9	166.8	17.0	31.2
1965	35.3	5.1	131.8	19.2	37.2
1960	29.0	5.7	114.5	22.6	47.2
1955	27.6	6.9	106.8	26.7	53.6

* Federal Reserve Bulletin, Table 1.21, December 1983.

Table 3

Sources: From internal Board files, Banking and Monetary Statistics, 1941 to 1970; Annual Statistical Digest, Federal Reserve Bulletin; Annual Reports and Assets and Liabilities: Report of Income for Commercial and Mutual Savings Banks (Assets and Liabilities published annually beginning 31st December 1969, Report of Income added beginning in 1972, Federal Deposit Insurance Corporation).

Table 3

DEMAND, SAVINGS AND TIME DEPOSITS AT DEPOSITORY INSTITUTIONS
1960-83 (30th June)
(Amounts in billions of dollars)

Institution and type of deposit	1983	1978	1975	1970	1965	1960
Commercial banks[1]	1,234.6	849.6	649.4	363.9	264.6	180.7
Demand, adjusted[2]	240.2	222.8	222.8	166.0	131.4	113.8
Other chequable deposits	90.7	.	.	.	.	.
Money-market deposit accounts	215.0	.	.	.	.	.
Savings	141.5	226.0	149.1	92.9	87.4	53.8
Time certificates	547.2	365.0	277.5	105.0	45.8	13.1
Credit unions (co-operatives)	84.6	52.1	31.1	14.6	8.6	4.7
Other chequable deposits[3]	6.7	.	.	.	.	.
Share accounts (savings)[3]	60.4	52.1	31.1	14.6	8.6	4.7
Certificates of deposit (time)	17.5	.	.	.	.	.
Savings and loan associations and mutual savings banks	785.8	547.3	375.1	207.4	156.7	93.6
Other chequable deposits						
Mutual savings banks	3.6	1.8	1.0	0.6	0.4	0.2
Savings and loan associations	20.7	.	.	.	.	.
Savings						
Mutual savings banks[4]	73.7	71.8	69.6	64.9	50.2	35.1
Savings and loan associations[5]	189.4	144.6	117.9	86.0	102.8	58.1
Time certificates						
Mutual savings banks	84.7	59.3	39.6	3.3	.	.
Savings and loan associations	413.7	256.6	150.9	52.6	3.3	.
All depository institutions	2,081.7	1,444.8	1,055.6	585.9	429.9	279.0
Demand deposits	242.1	260.4	233.8	166.6	131.8	114.0
Other chequable deposits	121.1	.	.	.	.	.
Money-market deposit accounts	367.3	.	.	.	.	.
Savings	326.3	500.6	366.6	258.4	249.0	151.9
Time certificates	1,024.9	680.5	465.2	160.9	49.1	13.1

1 Domestic offices only.
2 Demand deposits other than domestic, interbank and US Government less cash items in the process of collection.
3 Credit union share accounts have the characteristics of savings deposits for the period 1959-77. This generalisation may lose validity in the near future if credit unions issue a significant volume of time deposits under authority recently granted in Public Law 95-22 (19th April 1977).
4 Prior to 1966 deposits at mutual savings banks generally had the characteristics of savings deposits. From 1966 to 1972 they represented an estimate of the separation of time and savings deposits made by the staff of the Federal Reserve Board, based on survey and call report data. From 1972 onwards the figures shown are taken directly from data supplied to the Board monthly by the National Council of Savings institutions.
5 Prior to 1965 deposits outstanding at savings and loan associations had the characteristics of savings accounts. From 1965 to 1967 the data represented an estimated separation of certificates and savings deposits by the staff of the Federal Reserve Board, based on survey data. From 1968 onwards, Federal Home Loan Bank Board data on accounts paying regular rates or less at savings and loan associations insured by the Federal Savings and Loan Insurance Corporation are adjusted to include an estimate for uninsured associations.

Sources: see page 307.

Table 4

NOTES AND COIN PAID OUT BY THE FEDERAL RESERVE SYSTEM IN 1983

(Numbers in millions)

Currency		Coin	
Denomination (US dollars)	Outpayments	Denomination (US cents)	Outpayments
1	4,428	1	14,870
5	1,411	10	6,236
10	2,336	25	9,384
20	4,329	50	78
50	278	100	26
100	260		
Total	13,042	Total	34,375

E R R A T U M

Table 4 on page 309 should read as follows:

NOTES AND COIN PAID OUT BY THE FEDERAL RESERVE SYSTEM IN 1983

(Numbers in millions)

Currency		Coin	
Denomination (US dollars)	Outpayments	Denomination (US cents)	Outpayments
1	4,428	1	14,870
5	1,411	5	3,781
10	2,336	10	6,236
20	4,329	25	9,384
50	278	50	78
100	260	100	26
Total	13,042	Total	34,375

Table 5

CHEQUES PROCESSED BY THE FEDERAL RESERVE

Type of cheque	1983	1978	1975	1970	1965	1960	1955
	Number of items (billions)						
Government*	0.61	0.72	0.84	0.62	0.49	0.41	0.50
Commercial	13.70	14.10	11.40	7.20	4.60	3.40	2.60
Total	14.31	14.82	12.24	7.82	5.09	3.81	3.10
Commercial cheques per capita	58	69	53	35	20	18	16
	Amount (billions of dollars)						
Government	552	439	350	208	135	105	123
Commercial	10,695	7,111	4,257	3,332	1,634	1,154	928
Total	11,247	7,550	4,607	3,540	1,769	1,259	1,051
	Average cheque size (dollars)						
Current dollars							
Government	905	610	415	336	274	258	245
Commercial	747	504	373	465	355	338	351
1967 dollars							
Government		312	257	289	290	291	291
Commercial		258	231	399	376	381	438
Memo:							
Value of commercial cheques as a percentage of GNP	323	337	278	339	237	228	232

* Government cheques are written by the Federal Government. Commercial cheques are written by individuals, businesses and local governments.

Sources: Annual Reports and Federal Reserve Bulletins (Board of Governors of the Federal Reserve System, various years).

Table 6

BANK CARD STATISTICS[1]

Items	1970	1975	1978	1983
Accounts (millions)	31.2	39.1	68.0	105.9
Transactions (millions)	330	692	1,500	1,530
Payments (millions)	150	280	500	650
Gross sales (billions of US dollars)	6	20	44	83.7
Credit outstanding at year-end[2] (billions of US dollars)	3	10	19	33.6
Losses as a percentage of gross sales	6.7	3.8	3.7	0.8

1 VISA and MasterCard only.
2 Includes current billings for December.

APPENDIX

Legal authority for the Federal Reserve System's rôle in the payment mechanism

The Federal Reserve Act ("the Act") became law in 1913 and established the Federal Reserve System as the central bank of the United States.[1] By the terms of the Act, the System comprises a Board of Governors located in Washington, DC, and twelve regional Federal Reserve Banks. The Act also provides that commercial banks may become members of the Federal Reserve ("member banks") and stipulates that all depository institutions must maintain reserves with the Federal Reserve. Each Federal Reserve Bank is given general authority under Section 4 of the Act (12 USC §341) to take such actions as are necessary to carry on the business of banking as set forth in other parts of the Act.[2] Since its origin, the Federal Reserve has played a major rôle in the nation's payment mechanism. Under provisions of the Act, the Federal Reserve has become centrally involved in four of the primary methods through which funds are exchanged in the US economy: the clearing and collection of cheques and drafts, wire transfers of funds, the clearing of payment information contained on magnetic tape and the distribution of currency and coin. In addition, the Act specifies that the Federal Reserve Banks shall serve as the fiscal agent of the US Government in transferring funds on its behalf.

At the direction of the Board of Governors, the twelve Federal Reserve Banks function as a nationwide collection system through which cheque and other commercial instruments may be collected. There are several specific provisions of law under which the Federal Reserve Banks exercise cheque collection functions. Paragraph 1 of Section 13 of the Act (12 USC §342) authorises each Federal Reserve Bank to receive cheques and other instruments for the purposes of collection and exchange.[3] Paragraph 13 of Section 16 of the Act (12 USC §360) requires every Federal Reserve Bank to receive on deposit at par cheques and drafts drawn on depository institutions.[4] Paragraph 14 of Section 16 of the Act (12 USC §248(0)) provides that the Board of Governors may require each Federal Reserve Bank to exercise the functions of a clearing house for depository institutions.[5]

Pursuant to Sections 11, 13, and 16 of the Act, the Board of Governors has promulgated Sub-part A of Regulation J (12 CFR §210.1), which is designed to afford the public and the banks of the country a direct, expeditious and economical system for the collection of cheques. This regulation, issued by the Board of Governors, under its statutory responsibilities, has the same force and effect as a statute passed by Congress. Sub-part A of Regulation J details the rights and liabilities of parties using Federal Reserve collection facilities and permits the Federal Reserve Banks to adopt "operating circulars" giving details of the time limits and other procedures established by the Federal Reserve Bank for collecting cheques. The operating circulars are viewed as contracts between the Federal Reserve and depository institutions.

During the late 1960s the banking industry and the Federal Reserve began to initiate procedures to cope with the increasing volume of paper cheques being processed. Automated clearing houses were developed as an alternative to traditional cheque processing. The operations of such

clearing houses essentially parallel cheque clearing operations except that the payment information is exchanged on magnetic tape instead of on paper cheques. The statutory basis for the Federal Reserve's involvement is the same as that discussed above for paper cheques.

Beginning with a private Morse code system in 1918, the Federal Reserve has operated its own communications network for the telegraphic transfer of funds in order to provide the banking system with a more rapid means of transferring funds. The wire network is limited to use by Federal Reserve Banks, depository institutions and certain other financial and international organisations that are authorised in the Act to hold account balances at a Federal Reserve Bank. These authorised users may make credit transfers that provide immediately available funds to the recipient. Wire transfers of both account balances and Federal Government securities are permitted to be sent over the communications network. The statutory basis for transferring account balances is essentially the same as that used in the cheque collection system. In addition, paragraph 14 of Section 16 of the Act authorises the Board of Governors to regulate the transfer of funds among Federal Reserve Banks, and Section 13 authorises Federal Reserve Banks to receive deposits from their members and other depository institutions.

In 1977 the Board of Governors issued Sub-part B of Regulation J (12 CFR §210.50) to govern the rights and responsibilities of depository institutions using the wire communications network. Sub-part B of Regulation J was issued pursuant to Sections 11, 13, 16 and 19 of the Act, and has the same force and effect of law as does Sub-part A. It permits Federal Reserve Banks to adopt operating circulars that set forth the details of funds transfer operations.

In 1980 legislation was enacted requiring the Federal Reserve to establish schedules of fees for payment services.[6] Previously, the Reserve Banks provided these services to members at no charge. One of the purposes of this provision was to enhance the efficiency of the payment system through increased competition. The Federal Reserve Act was also amended to allow all depository institutions access to the priced Federal Reserve services. All payment services provided by Federal Reserve Banks were explicitly priced by 1984.

The issuance and distribution of the nation's currency and coin is handled by the Federal Reserve Banks. New bills (i.e. Federal Reserve notes) are placed in circulation, fit currency is distributed as needed among depository institutions, and old, unfit currency is removed from circulation and destroyed. Paragraphs 1 and 3 of Section 16 of the Federal Reserve Act (12 USC §§411, 413) constitute the statutory authority for the issuance and redemption of Federal Reserve notes. Coin is distributed by the Reserve Banks pursuant to the Subtreasury Act of May 1920 (31 USC §476) and Treasury Department Circular 55 (31 CFR §100).

The twelve Federal Reserve Banks also serve as the Federal Government's principal fiscal agents. The activities performed as fiscal agent are under the general supervision of the US Treasury Department, which reimburses the Federal Reserve Banks for most fiscal agency functions. The statutory basis for this rôle is Section 15 of the Act, which states that, when required by the Secretary of the Treasury, the Federal Reserve Banks "shall act as fiscal agents of the United States; and the revenues of the Government ... may be deposited in such banks, and disbursements may be made by cheques drawn against such deposits".

Footnotes to Appendix

1 Federal Reserve Act, ch. 6, 38 Stat. 251 (1913) (codified at 12 USC §§221 et seq.).

2 The Act does not give the Federal Reserve authority to provide commercial banking services to the public. The banking functions authorised in the Act are related to the Federal Reserve's responsibility to regulate the flow of bank credit and money and to provide cash-balance and payment services to all depository institutions and to the US Government.

3 The first paragraph of Section 13 of the Federal Reserve Act (12 USC §342) provides, inter alia:

Any Federal Reserve Bank may receive from any of its member banks or other depository institutions, and from the US Government, deposits of current funds in lawful money, national-bank notes, Federal Reserve notes, or cheques and drafts, payable upon presentation, or other items, and also, for collection, maturing notes and bills; or, solely for purposes of exchange or of collection, may receive from other Federal Reserve Banks deposits of current funds in lawful money, national-bank notes, or cheques upon other Federal Reserve Banks, and cheques and drafts, payable upon presentation within its district, or other items, and maturing notes and bills payable within its district; or, solely for the purposes of exchange or of collection, may receive from any non-member bank or trust company or other depository institution deposits of current funds in lawful money, national-bank notes, Federal Reserve notes, cheques and drafts payable upon presentation or other items, or maturing notes and bills, provided such non-member bank or trust company or other depository institution maintains with the Federal Reserve Bank of its district a balance in such amount as the Board determines taking into account items in transit, services provided by the Federal Reserve Bank, and other factors as the Board may deem appropriate; ...

4 Paragraph 13 of Section 16 of the Act (12 USC §360) provides, inter alia:

Every Federal Reserve Bank shall receive on deposit at par from depository institutions or from Federal Reserve Banks cheques and other items, including negotiable orders of withdrawal and drafts drawn upon any of its depositors, and when remitted by a Federal Reserve Bank, cheques and other items, including negotiable orders of withdrawal and share drafts and drafts drawn by any depositor in any Federal Reserve Bank or depository institution upon funds to the credit of said depositor in said Reserve Bank or depository institution...

To receive "at par" means the deposit must be accepted at the full face value of the cheque. Federal Reserve Banks are precluded from accepting cheques that are drawn on banks that do not pay their cheques at par.

5 Paragraph 14 of Section 16 (12 USC §248(0)) provides, inter alia:
The Board of Governors of the Federal Reserve System shall make and promulgate from time to time regulations governing the transfer of

funds and charges therefore among Federal Reserve Banks and their branches, and may at its discretion exercise the functions of a clearing house for such Federal Reserve Banks, or may designate a Federal Reserve Bank to exercise such functions, and may also require each such Bank to exercise the functions of a clearing house for its member banks.

6 Monetary Control Act of 1980, §107, 94 Stat. 140 (codified at 12 USC §248a).

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