
COMMITTEE ON PAYMENT AND SETTLEMENT SYSTEMS

September 1999

**RETAIL PAYMENTS IN SELECTED COUNTRIES:
A COMPARATIVE STUDY**

BANK FOR INTERNATIONAL SETTLEMENTS
Basel, Switzerland

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Foreword

This report has been produced by the Working Group on Retail Payment Systems on behalf of the Committee on Payment and Settlement Systems (CPSS) of the central banks of the Group of Ten countries. The aim of the report is to contribute to a better understanding of retail payment systems across the G10 countries and Australia. It focuses on end-user markets and discusses the technological and economic aspects of retail payment instruments.

A fundamental finding of the report is that retail payment instruments are diverse, both within and between the countries studied. The diverse nature of the transaction types, counterparties and payment volumes and values has given rise to several different payment instruments. While all the countries selected use all the non-cash retail payment instruments to some extent, they fall into one of two groups that rely heavily on a particular class of non-cash instrument: many European countries and Japan rely mostly on credit transfers, while Australia, the United States, Canada and a few European countries depend heavily on cheque payments.

The most significant trends in retail payments common to the selected countries are: the continued primacy of cash (in volume terms) for face-to-face payments, despite a long-standing movement towards non-cash payments; growth in payment cards, primarily for face-to-face payments, and increased use of direct funds transfers, especially direct debit transfers, for remote payments; and substantial changes in the market arrangements for providing and pricing the retail payment instruments and services delivered to end-users.

Retail payments in the selected countries are experiencing an increased pace of experimentation and innovation. Although the most recently emerging payment technology and its specific applications have not yet been adopted as core payment methods, research, development and market experimentation continue. At the same time more traditional forms of payment instruments, technology and banking arrangements are evolving. Over the long term some of these market developments may well alter traditional payment practices and contribute to increased efficiency and convenience in retail payment systems.

Mr Lo Faso and the members of the Working Group are to be commended for the analysis which they have carried out. Valuable assistance was provided by the BIS in editing and publishing the report.

Wendelin Hartmann, Chairman

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1. Summary and introduction

The Committee on Payment and Settlement Systems (CPSS) commissioned a working group to examine payment systems in selected countries to understand better the trends and developments in the market for retail (small-value) payment services. Many central banks have specific policy objectives with respect to the safe and efficient provision of retail payments. All central banks provide settlement services for retail payments, and some provide clearing services as well. Central banks also have, to a greater or lesser degree, responsibilities for the oversight of payment systems. Over the past few years there have been significant developments in retail payment systems that could affect central bank policy objectives and roles in this area. To perform their oversight and service provider functions, central banks therefore need a comprehensive understanding of market developments, payment risks and technological issues in retail payment systems.

This report aims to contribute to a better understanding of retail payment systems across the G10 countries and Australia. It represents a first step in the study of retail payment systems. The report focuses on end-user markets, leaving the analysis of clearing and settlement systems and of policy issues for retail payments to subsequent work. It discusses the technological and economic aspects of retail payment systems and is structured as follows:

- the next section outlines and compares the basic retail payment instruments with regard to their fundamental properties, provider arrangements, and risks and costs to users;
- the third section provides a cross-country comparison of the use of the different payment instruments in the G10 countries and Australia;
- the fourth section describes trends in the use of these payment instruments across countries and presents, in a basic demand/supply framework, some of the factors that might help explain these trends; and
- the final section outlines recent innovations in electronic retail payment technology.

The analysis uses the statistical data available and associated anecdotal evidence to assess the impact of possible factors influencing the observed trends for the various instruments in different regions. Unfortunately, in many countries no or only limited official statistics are available. In this respect improved statistics would be desirable. The statistical data used in this description and analysis should therefore be interpreted cautiously. There are, for example, no standard definitions for various payment instruments used across all countries. As a result, data are classified under each country's interpretation of generic instrument classes so that the use of instruments with similar characteristics may be reported under different headings. Thus, the report also uses anecdotal evidence, where available, to interpret market developments.

A fundamental finding of the report is that retail payment instruments are diverse, both within and between the countries studied. The diverse nature of the transaction types, counterparties, and payment volumes and values has given rise to several different payment instruments (Section 2). In addition, the pricing schemes for retail payments can differ substantially across countries and depending on the type of payment instrument and client. All the countries selected for comparison continue to use cash. However, while all the countries use all the non-cash retail payment instruments to some extent, they fall into one of two groups that rely heavily on a particular class of non-cash instrument (Section 3): many European countries and Japan rely most on credit transfers, while Australia, the United States, Canada and a few European countries depend heavily on cheque payments.

The data, supported by anecdotal evidence, suggest that several recent trends in retail payments are common to the selected countries (Section 4), of which the most significant are:

- continued primacy of cash (in volume terms) for face-to-face payments, despite a long-standing movement towards non-cash payments;
- growth in payment cards, primarily for face-to-face payments, and in direct funds transfers, especially direct debit transfers, for remote payments; and

- substantial changes in the market arrangements for providing and pricing the retail payment instruments and services delivered to end-users.

Recent trends reflect changes in key supply and demand factors for retail payments. For end-users, the principal demand factors have included changes in relative prices, risk and convenience for existing instruments and increases in the general acceptability of newer instruments. The development of new information technology (IT) is probably the most fundamental supply factor. This, together with regulatory changes in some countries, has supported the emergence of a broader range of instruments, such as payment cards, and significant changes in the delivery, pricing and processing arrangements for retail payments. A further important factor in some countries has been the increased cooperation by payment service providers in developing and operating shared retail payment networks. These developments, along with market entry by non-financial institutions in some countries, have contributed to increased competition and an increased pace of change in payment services markets.

Retail payments in the selected countries are experiencing an increased pace of experimentation and innovation (Section 5). Although the most recently emerging payment technology and its specific applications (electronic money and internet payments) have not as yet been adopted as core payment methods, research, development and market experimentation continue. At the same time more traditional forms of payment instruments, technology and banking arrangements are evolving. Over the long term some of these market developments may well alter traditional payment practices and contribute to increased efficiency and convenience in retail payment systems.

2. Retail payment instruments and markets

Commercial relationships encompass a wide variety of counterparties, transactions and payments, which can be classified in terms of the value and characteristics of the transaction. Retail payments usually involve an individual as one counterparty and an individual, firm or government agency as the other.¹ The counterparties can be engaged either in a transaction-by-transaction relationship involving one-time payments or in a contractual relationship involving recurring payments. The payments can be face-to-face or remote. As a result, there are several retail payment instruments, each with different characteristics that accommodate particular types of counterparty relationships and transactions. Different classes of vendors and customers may prefer different types of payment arrangements and accept or use only particular types of payment instruments. Thus, only some payment instruments are effective substitutes for others.

Retail payments have higher volumes – that is, numbers – and lower average values than wholesale payments and are usually not cleared and settled in the same manner, although in some countries retail payments are sometimes settled across systems designed for both retail and wholesale payments. Retail payments are mostly bilaterally or multilaterally netted and settled on a deferred basis without a definite guarantee of payment finality, but are also batched and settled on a deferred gross basis in some countries. Because of the different characteristics of retail payment instruments and their payment delivery and acquisition systems, clearing processes and settlement arrangements can differ across national retail payment systems and even within a national system.

2.1 Overview of retail payment instruments

There are a large number of retail payment instruments and services in the market today. Payment services from financial service providers include provision of payment instruments and the underlying payment accounts, acquisition and collection of payments, clearing of the various payment instruments and settlement of the payment obligation. Infrastructure services from other service providers for the

¹ Some frequent, small-value, business-to-business payments might also be characterised as retail payments.

delivery, acquisition, clearing and settlement of retail payments are also included in these payment services.

Retail payments are generally classified as cash payments or non-cash payments, with the latter generally categorised as paper-based or electronic. Unlike cash payments, non-cash payments usually involve a transfer of value between financial institutions and require the counterparties and one or both of their financial institutions to be specified. Non-cash payment instruments can be subclassified generically into cheque payments, direct funds transfers and card payments, all of which involve a complex array of rules and procedures. Each class may also involve more than one specific type of instrument, payment delivery mechanism or market arrangement for providing the payment services to end-users.

Cash

Cash payments are usually associated with face-to-face transactions of low value between individuals or between an individual and a retail firm. In most countries legislation or regulation requires currency to be accepted as payment for all types of transactions, subject possibly to minimum denomination limits.² The transactions do not usually require further identification. Cash payment is an immediate and final transfer of value and the currency received in the payment can be reused by the recipient immediately for further payments.

Cheques

A cheque essentially instructs the payer's financial institution to debit the payer's account for a specified amount and either to transfer that value to the payee's financial institution for credit to the payee's account or to pay out cash.³ Cheques may be used for remote or face-to-face payments, single transactions and recurring payments, as well as for any sizes of payments. The acceptance of a cheque in a face-to-face transaction usually depends on valid identification and evidence of the payer's creditworthiness, such as a credit card. The payee may also require some form of payment guarantee from a reputable third party, especially in a non-recurring face-to-face transaction.⁴

Direct funds transfers

Retail funds transfers include credit and debit transfers, both of which are used for remote payments. They start with instructions from either the payer or the payee directly to its payment service provider to transfer funds from the payer's account at its financial institution to the payee's account at its financial institution. These transfers are often used by individuals for recurring payments to firms or government agencies.

Payments initiated by the payer, such as giro payments, are termed *credit transfers* and may be processed in either paper or electronic form. For individuals, these are often initiated through standing orders with a financial institution. Recurring credit transfers are used by firms and government agencies for scheduled payments to individuals: these are often payments to different individuals that have been grouped together in a file of electronic payment messages to the payer's service provider. Direct credit transfers are also used frequently for non-recurring payments.

² Although currency may be defined as legal tender, in some countries this might only compel the government to accept currency for payment or all government and private parties to accept currency for the discharge of debts, but may not compel private vendors to accept currency as payment for all transactions.

³ The collection of cheque payments can become complex where correspondent banking arrangements are involved.

⁴ A guarantee, up to a maximum limit on a personal cheque, may be provided to the payee by the payer's bank. For example, in Europe cheque guarantee cards are issued by the Eurocheque and Girocheque systems.

On the other hand, *direct debit transfers* are initiated by the payee, usually through a preauthorised agreement with the payer, and are generally processed in electronic form. In some countries direct debit transfers are occasionally used for non-recurring remote payments.

Credit cards⁵

Credit cards include charge cards, which involve a short-term fixed-period credit arrangement, and cards with revolving credit arrangements. With charge cards, the accumulated credits must be fully paid at the end of the charge or billing period, generally around one month. Cards with revolving credit arrangements allow a minimum partial payment at the end of the billing period, with the balance of the accumulated credits charged to the cardholder's revolving credit line. In some systems the credit charges accumulated through the initial billing period may even be interest-free if the charges are fully paid at the end of the billing period. Interest is charged only on the unpaid credit balances and on subsequent charges.⁶ Although available, the revolving credit line arrangement is not widely used in some parts of Europe. Credit cards are most frequently used for non-recurring face-to-face payments but can also be used for:

- a series of preauthorised payments to meet a contractual obligation;
- mail and telephone order (MO/TO) payments to vendors;
- payments in electronic commerce systems using the internet; and
- automated teller machine (ATM) cash withdrawals against the cardholder's unused credit line.

Credit cards are used in both online and offline systems to initiate and authorise payment. Online payments, which are usually face-to-face payments, involve a direct communications link through a network switch for real-time authorisation of the payment. At the point of sale the payer signs the merchant's credit card voucher to authorise the payment. Initiating the payment through to its clearing and settlement is fully electronic.

Offline credit card payments are different from online payments with respect to authorisation and the posting of debits and credits to the payer's and payee's accounts. They are generally used by merchants that receive few credit card payments or for remote payments. With offline payments, the merchant usually contacts the card issuer through the switch for real-time authorisation of transactions above a minimum value. Debits and credits in offline systems are often not posted until the merchant's signed payment vouchers are deposited with its financial institution and processing in the clearing and settlement arrangements of the credit card network begins.

Debit cards

Debit cards are usually used for non-recurring electronic funds transfers at the point of sale (EFTPOS) to initiate payment to the vendor with an immediate debit to the cardholder's account.^{7,8} In some countries debit cards perform other services, such as ATM withdrawals or the personal cheque

⁵ While many retail merchants provide single-purpose credit or charge cards to their customers for use in their stores, only general-purpose cards are considered.

⁶ In some countries cash advances obtained through credit card transactions, whether from vendors directly or from ATMs, have no interest-free period. Interest is charged from the date of the advance. In some countries there is even a surcharge for cash advances.

⁷ Payment cards with a deferred debit arrangement are classified as credit cards in most countries and as debit cards in France.

⁸ So-called memo-posting systems may be used to record debits until a financial institution's accounts can be updated.

guarantee function with Eurocheque and Girocheque. In some countries some debit cards can be used for remote payments.

As with card payments in general, debit card transactions usually require the payment to be initiated by the rightful cardholder (authentication) and authorised by the card issuer. Authentication may occur online or offline. Online cardholder authentication is done through the entry of the cardholder's personal identification number (PIN) directly into the merchant's online terminal. Authentication for offline debit card payments usually takes place by means of the cardholder's written signature or other actions.⁹ Regardless of the type of cardholder authentication (online or offline), debit card payments are most often initiated online, as part of the card issuer authorisation process. In some systems only payments above a predetermined authorisation limit or cardholder's payment limit require online authorisation by the card issuer.

Other retail payment instruments

In most countries there are other instruments available for some types of retail payments. The most common are *money orders*, *wire transfers* and *travellers' cheques*.¹⁰ A money order is essentially a direct credit transfer instrument involving a payment to a specified recipient. It may be used for both domestic and foreign currency remote payments.¹¹ In some systems a money order is a paper-based instrument; in others it is transmitted and processed as an electronic credit transfer, similar to a wire transfer. Retail wire transfers are electronic credit transfers sent through a proprietary communications system. Travellers' cheques are essentially paper-based instruments issued in specific denominations for general-purpose use in business and personal travel.¹² They do not specify any particular payee, are non-transferable, can be converted into cash only by their specified owner, and are generally accepted only by other issuers, large retailers, hotels and restaurants.

2.2 Availability of instruments

Although banknotes are issued by central banks, there are several distribution channels. Financial institutions are the primary distributors of *currency* through withdrawals by deposit-holders using branch facilities or ATMs. Cashback features of debit cards and cash advance features of credit cards also allow holders to obtain currency through terminal-based transactions. To lower the cost of distributing and obtaining currency, ATMs are usually linked through shared network arrangements, not all of which are limited to national markets.¹³ Cross-border arrangements, such as Plus (Visa International) and Cirrus (MasterCard International/EuroPay), allow travellers to obtain local currency

⁹ In the POZ system in Germany the customer is required to present a Eurocheque card to initiate the transfer. In this case the cardholder's signature also authorises the card issuing institution to release to the merchant any cardholder information necessary to pursue a credit claim in the event of non-payment.

¹⁰ Some countries may have other low-volume retail payment instruments that are specific to their systems. For example, non-bank financial institutions in Australia issue "payment orders" – similar to cheques, until 1998 these could only be issued by banks. Amended legislation now allows selected non-bank financial institutions to offer cheques to accountholders.

¹¹ In some countries money orders are occasionally used for one-time face-to-face payments where the retail transaction value is exceptionally large.

¹² Travellers' cheques are available in domestic currency and selected major foreign currencies.

¹³ ATMs are not always owned and operated by deposit-taking institutions, although they usually participate in the same shared network arrangements. This report includes automated cash dispensers in its definition of ATMs.

abroad in a convenient manner. In some countries secondary channels for currency distribution, such as postal branches and non-bank cheque cashing firms, have emerged.¹⁴

Cheque payment services are available from financial institutions or from non-financial institutions that have a clearing and settlement arrangement with financial institutions. Users are usually required to have a deposit account with the service provider, although in some countries cheques may also be drawn on credit lines or investment accounts.

Similarly, *direct funds transfers* are available from financial institutions, as well as from postal giro systems in Japan and most European countries. For debit transfers, the payer is required to maintain an account with the paying institution but, for credit transfers through most giro systems, individuals can initiate the transfer by means of inpayments to the giro agent. Debit and credit transfers from individuals that are infrequent or involve variable amounts can be initiated through online banking systems. These systems are generally proprietary systems operated by service providers for the exclusive use of their customers. The network arrangements and communications devices include telebanking networks, home computer networks loaded with the appropriate software and proprietary ATM networks. All are similar in that they require the payer to enter a personal account number for identification and some form of PIN as a security measure.

Credit card payment services are available from a financial institution, usually through its association with a credit card network.¹⁵ The cardholder is required to have some type of credit arrangement with either the institution or an affiliate that it sponsors.¹⁶ A financial institution, or its affiliate, issues credit cards and acquires payments for merchants. Visa and MasterCard are the largest credit card networks worldwide. In addition to the general-purpose credit cards, there are speciality cards, such as Diners Club, which are directed at the business travel market and issued under different regional brand names.

Debit cards usually require users to have a deposit account with a financial institution that issues cards or acquires payments. In countries such as Belgium, Canada, France, Italy and the Netherlands there is a single national shared EFTPOS network. In others, notably the United States, there are a number of different regional and nationwide EFTPOS networks, although some are interoperable, enabling member institutions to offer customers access to more than one. Some major EFTPOS networks, many of them in the European Union, have cross-border affiliations.

Although *money orders*, *travellers' cheques* and *wire transfers* are available from financial institutions in most countries, they are often also available from non-bank providers. In most countries, particularly those with postal giro systems, the postal system is the largest issuer of money orders, usually against inpayments. Some non-bank providers operate transnationally, acting through foreign subsidiaries or affiliates in some countries or through agency arrangements with other money order providers.¹⁷ Travellers' cheques are branded instruments issued by financial institutions participating in the American Express, Thomas Cook/MasterCard, EuroTravellers Cheque International or Visa networks. Some large institutions, such as Citicorp in the United States, market their own travellers'

¹⁴ Secondary arrangements for currency distribution have developed in some, but not all, national systems. Non-bank cheque cashing firms are common in North America, and in some systems retailers exchange currency for a customer's non-cash payment obligation.

¹⁵ Not all credit card issuers are financial institutions. In some countries, including Japan, banks were not allowed until recently to issue credit cards directly but could issue them through affiliated non-financial institutions. In other countries the only limitations on the institutional class of credit card issuers are imposed by the card associations, which often allow fairly broad membership.

¹⁶ A credit card issued by an affiliate of a credit card network member is usually co-branded with the name of the issuing agent and the sponsoring financial institution. Co-branded cards include both affinity and loyalty cards. Affinity cards are marketed by a card issuer through an association, often a non-profit organisation, that obtains a share of the fees charged to the cardholder by the issuer. Loyalty cards provide the cardholder with value points or discounts when used for payments to participating vendors.

¹⁷ Examples are Western Union in Australia (which provides foreign currency money orders for Australia Post) and Money Mart in Canada.

cheques. Retail wire transfers are usually provided by financial institutions for cross-border payments through correspondent banking arrangements. Although bank-operated systems are the largest, there are also a number of large third-party providers, such as Western Union in the United States, which also operates a large proprietary transfer network internationally.¹⁸

2.3 Risks

Credit risks

As a liability of central banks or treasury departments, currency imposes no credit risk on holders. There is also no settlement risk, since cash payment provides an immediate and final transfer of value. However, non-cash retail payments, including the inter-institution settlement of cash withdrawals through shared ATMs, are usually settled on a deferred basis and thus involve the risk that the paying institution will fail before inter-institution settlement occurs.¹⁹ Even if settled quickly, an individual payment is not irrevocable or final until verified and authorised by the payer's institution. With credit transfers, a payment is usually not submitted for settlement unless the availability of funds in the payer's account has been verified by its financial institution. Cheques and direct debit transfers can, however, be reversed if the payer's institution chooses to dishonour the instrument because of insufficient funds in the payer's account, forgery, fraud or other payment irregularities.²⁰ In some systems and for some payments, this may occur well after the initial settlement between the payment intermediaries. The funds provisionally credited to the payee's account may not therefore be available to the payee until after clearing and settlement is completed.²¹

Beyond institutional failure, settlement risks on card payments are generally low for vendors that follow prescribed procedures.²² The payment is authorised by the card issuer and, in online transactions, is debited to the cardholder's available balance before the point-of-sale transaction is completed. In any event, the card associations or issuers usually guarantee all authorised payments, and in some cases these guarantees are backed by collateral or reserves required by the association.

Operational risks

All types of retail payment instruments are subject to varying degrees of operational, security and fraud risks. Some, like currency and cheques, are perhaps more vulnerable to loss and theft than others. However, with card payments, security risks are the primary concern. Thus, credit card payments for mail and telephone orders involve even stricter security standards than face-to-face payments. For example, retailers may be obliged to honour charge-back provisions that require them to refund immediately in the event of a repudiated payment. The introduction of integrated circuit (IC) chips into payment cards could help reinforce the PIN as a security device.²³ In addition, secure

¹⁸ Western Union operates either directly or through affiliates such as Western Union Money Transfer in Canada and Australia and agents such as GWK Bank in the Netherlands and Money Mart in Canada.

¹⁹ Shared ATM networks limit daily cash withdrawals to restrict inter-institution settlement exposures. Maximum limits are also frequently set on the value of money orders to limit settlement and security risks.

²⁰ Except for the possible failure of the guarantor, there is no risk of reversal for guaranteed cheques as long as security features are followed by the receiver. In this case, any losses are borne by the institution issuing the guaranteed cheque.

²¹ Availability schedules for funds are usually based on clearing and settlement agreements, but may also be set by law. The schedule can range from immediate availability of funds to as long as 10 days.

²² A card issuing institution may, of course, be at risk for non-payment of credit charges accumulated by the cardholder.

²³ In France the latest experience from fraud with chip cards is around 10% of the level recorded a decade ago on debit cards using other security technology.

transmission standards have been developed for remote payments in which card numbers are transmitted electronically.

In the event of unauthorised use of a payment card, the cardholder's liability is limited in most countries if the card organisation is notified of the theft or loss within a set time limit. To limit their own losses from card fraud, credit card organisations require the vendor to match the cardholder's signature on the card with that on the payment voucher at the point of sale and publish a list of the numbers of cancelled cards that vendors can consult. They have also begun experimenting with additional cardholder identification features, such as the holder's photograph on the card.

2.4 Pricing

There are no explicit payment fees for using *currency* in transactions, but there are frequently fees to obtain it as providers pass on the cost of currency distribution to end-users.²⁴ The charges may be part of an account-based pricing scheme, in which the costs of packages of account services – debit, credit and other account activities – are bundled into a single periodic payment.²⁵ ATM transactions are generally included in an account-based pricing scheme, although in several countries – for example, Australia, Belgium, Canada, Germany, Italy, Japan and the United States – the cardholder's bank imposes per transaction fees for the use of ATMs owned by other network members to cover its own network switch and interchange fees.²⁶ Users also generally pay a fee to obtain cash from secondary distributors.²⁷ Currency also earns no nominal return and users are usually required to handle and store a range of denominations to meet variably sized payment obligations in different transactions. These create handling and opportunity costs for users.

Non-cash retail payments are priced in different ways, usually depending on the type of payment instrument and user. In most countries the price of writing a *cheque* or initiating a *direct funds transfer* from a personal account is either account-based as part of an overall service package or a hybrid scheme combining account-based and transaction-based pricing.²⁸ Retail firms and government agencies are usually charged a per transaction fee or, as in most direct funds transfers, a per file fee.

Payments using *credit cards and debit cards* are usually priced differently from other retail payment instruments, at least for cardholders. As with some other retail payments, merchants usually pay a per transaction fee for both debit and credit card transactions. However, while the fee on debit card payments is in some instances a fixed fee per transaction and in others a set percentage of the transaction value, credit card transactions generally involve a turnover fee. The pricing arrangements for cardholders are also notably different between debit and credit cards. There are usually no transaction fees imposed on holders of credit cards;²⁹ instead the cardholder usually pays an annual fee, which differs according to the type of credit card agreement.³⁰ With debit cards, fees are generally

²⁴ As with all banking services, if there are no explicit fees, wider interest rate spreads and general charges for account management services cover these costs.

²⁵ The fees charged in service packages may depend on the type of currency delivery mechanism used, the frequency of withdrawals and the average balances in the user's deposit account.

²⁶ In Switzerland only the post office explicitly passes on interchange fees to users, and in the United States some ATM owners impose surcharges on individuals using a card issued by another network member.

²⁷ For example, a non-bank cheque cashing firm or a retailer providing cash advances on payment cards usually charges either an explicit fee or a discount on the value of the cash advance. However, while secondary distribution sources for currency involve transaction charges, they can also be convenient for meeting urgent currency needs.

²⁸ For example, banks in Belgium and Sweden recently introduced user fees and those in Australia have also moved towards transaction-based pricing.

²⁹ Where credit cards are associated with loyalty schemes, cardholders may even perceive transaction fees to be negative.

³⁰ Average annual fees vary substantially across countries.

charged on a per transaction basis; in some countries cardholders may also pay an annual fee. These fees may, however, be combined into an account-based scheme. An example is a scheme that limits the number of “free” payments each month from a low-interest account, but charges a per transaction fee for the rest unless the account balance remains sufficiently high.

3. Cross-country comparisons³¹

3.1 General observations

Anecdotal and survey evidence on the use of *currency* for payments indicates that currency may still be the single most important retail payment instrument for face-to-face payments. In Japan it is by far the primary payment instrument used by individuals. However, because the average retail transaction involving cash payment is generally low in value, cash payments account for a much smaller share of the value of retail payments than of the volume. Even though the currency-to-GDP ratios in Chart 1 are weak measures of the use of cash for payments, they nonetheless provide some support for the anecdotal and survey evidence.³² At nearly 12%, Japan has the highest currency-to-GDP ratio among all the major countries. Based on this measure, Switzerland at around 8% is also among the countries with high cash usage, while Australia, Canada, France, Sweden and the United Kingdom are the relatively low-use countries with ratios in the 3 to 5% range.

The volume and value of retail payments involving *money orders*, *travellers’ cheques* and *wire transfers* are often so small compared with the widely used payment instruments that most countries have few or no aggregate public data available on their use.

Australia, Canada, France, the United Kingdom and the United States rely most heavily on *cheques* for retail payments, both on a per capita basis (Chart 3) and as a percentage of total non-cash payments (Chart 9). Again in terms of non-cash payments, Australia, Canada and the United States are among the lowest users of *direct funds transfers*, which are used extensively in Japan and most of continental Europe (Chart 9). Furthermore, credit transfers are used more than debit transfers in most countries, although in Germany, Japan and the Netherlands debit transfers are used extensively.

As a percentage of the number of non-cash payments, card payment shares are the greatest in Australia, Canada and the United Kingdom (Chart 9). In continental Europe payment cards are used most extensively in Belgium, France, the Netherlands and Switzerland. In percentage terms, the United States is second only to Canada with respect to the importance of *credit cards* in its total non-cash payments. Credit cards are also widely used in Australia, Japan and the United Kingdom. However, only in Canada, Japan and the United States are credit card payments still a significantly greater percentage of non-cash payments than *debit cards*. In some European countries – Belgium, France, Germany and Sweden in particular – EFTPOS has been in use for some time, while in others, such as Italy, the Netherlands, Switzerland and the United Kingdom, their development has been more recent. Australia and Canada also use EFTPOS payments extensively.

³¹ Not all countries collect data on the same set of instruments in a particular class, especially in countries where some instruments are less widely used than others. For example, data from some countries for particular payment instruments, cheques or direct credit transfers exclude wholesale payments or intra-institution (on-us) payments, while data from others do not.

³² Measures relying on currency outstanding as a proxy for currency use are weak, not only because they are “stock” and not “flow” measures, but also because there are usually insufficient data to decompose the aggregate into the amount of national currency held abroad as opposed to domestically and held as a store of value as opposed to a medium of exchange. For example, around two-thirds of outstanding US dollars and one-third of outstanding Deutsche marks are reportedly held abroad.

3.2 Cheque countries and giro countries

Possibly the most notable divergence is a division between countries that have relied primarily on cheques for remote non-cash payments and countries that have relied primarily on direct funds transfers, particularly credit transfers. Charts 3, 4 and 5 show the relative use of different classes of non-cash payments in terms of payment volume per capita. Two of the top four countries with the highest non-cash payments per capita – the United States and France – are the greatest users of cheque payments. Australia, Canada and the United Kingdom also rely heavily on cheque payments. Most European countries, as well as Japan, rely on direct credit funds transfers as their primary remote payment instrument. Chart 9, which measures the use of cheques and direct funds transfers as a percentage of total non-cash payments, confirms this division among countries. It further shows that direct credit transfers are the primary retail payment instrument in the countries that rely the least on cheques.

Use of different retail payment instruments in the so-called cheque countries and giro countries can be explained by the differences in:

- concentration of market supply among traditional providers of retail payment services;
- financial incentives for providers with respect to debit and credit transfers;
- nature of the risks in the value transfer processes for the two types of payments; and
- legal framework and regulatory environment.

When the first types of remote non-cash payment instruments emerged, few countries had banking systems that were as highly concentrated as they are now. Remote payments were transferred within a country between institutions in correspondent banking networks or through branches of government savings and postal organisations, private cashiers³³ or even central banks. The subsequent transformation of decentralised banking systems into the nationwide systems now found in many countries, some with only a few dominant institutions, was sporadic and in most cases highly regulated. In the absence of a concentrated banking system or an efficient correspondent banking arrangement, payers in most European countries turned to national institutions, such as the postal service, which offered credit transfers (so-called giro payments) through a nationwide network of branches. Indeed, in many of these countries giro payments even enjoyed significant tax and regulatory advantages over cheques. In other countries, notably some cheque countries, correspondent banking networks were supported by regional payment transfer arrangements operated through private banking arrangements that provided efficient cheque collection. The respective remote payment regimes subsequently developed into established processes in the two groups of countries with innovative, efficient and effective processing, transfer and risk control procedures for the two types of remote payment instruments.

However, even in the cheque countries, credit transfer payments emerged as electronic data processing technology and network communications technology improved. The development of direct credit transfers as a percentage of non-cash payments was relatively strong in the cheque countries with more concentrated nationwide banking systems, such as Australia, Canada and the United Kingdom. In more concentrated banking systems a larger part of the settlement float may be internalised as the ratio of intra-institution transfers rises relative to inter-institution payments. While this can reduce the float earnings that arise through debit transfers, it may also reduce clearing and settlement costs for retail payment service providers. Thus, the financial incentive for providers to limit the use of credit transfers relative to debit transfers may have declined as the banking systems became more concentrated.

³³ Cashiers are institutions with branches in numerous locations that usually issue bearer instruments drawn on themselves at one branch for redemption at another branch at a distant location.

The preferences expressed in the historical use of these two types of payments by users and providers may also reflect the different nature of the settlement risks between credit and debit transfers. Credit transfer payments are initiated by the payer's financial institution and are not entered into the clearing process until the payer's account has been debited for value or the payment has been authorised. The primary settlement risk arises from the fact that the payer's financial institution may fail before the value transfer to the payee's institution is completed.³⁴ In this event, depending on the contractual arrangement, either the payee or its financial institution bears this risk. With debit transfers such as those by cheque, in addition to the institutional credit risk, there is the risk that the payer may have insufficient funds in its account to cover the value of the cheque on presentment. If the cheque is not guaranteed in some form, the payer's financial institution may dishonour it and the payment may be reversed. The cost of payment reversal, as well as the related differences in settlement risk, could favour the use of credit relative to debit transfers for some institutions.

Finally, the legal framework and regulatory environment may play an important role. In some countries the legal context has been one of the most important factors in explaining the distinction in the use of both instruments. For example, in France numerous legislative measures introduced since 1900, some of which are still in force, have contributed to the development of the cheque. Such measures included making payment by cheque compulsory for certain transactions, reinforcing the safety of cheques by introducing legal penalties on the issuing of cheques that are not honoured, and giving tax advantages to merchants for accepting cheques. French law also provides that the use of cheques is free of charge for the payer.

4. Recent trends and developments

While there are signs that the patterns of use for some types of retail payments may be starting to converge among the selected countries, there is still substantial divergence in the use of some instruments. A closer look at trends in the use of instruments and in the development of their end-user markets helps explain the similarities and differences across countries. Developments in retail payment services and markets reflect the interaction of various supply and demand factors within a particular market environment. The market environment is in turn defined by the organisation of the market and the legislation and regulation governing market activities and relationships. The conduct of a market's participants – those making payments, those receiving them and their payment service providers – corresponds to factors that shape supply and demand in various retail payment instruments and services.

A number of recent trends and developments that affect the use of various established retail payment instruments are apparent from the data and anecdotal evidence on the selected countries. These include:

- continuing use of currency as a primary retail payment instrument for point-of-sale transactions in terms of volume;
- movement away from cash towards electronic non-cash payments;
- growth in card payments;
- trend towards greater use of direct debit transfers; and
- changes in market arrangements for retail payment instruments and services, particularly with respect to service providers and pricing.

³⁴ With cheques that are settled before the payer's bank has verified the availability of sufficient funds in the payer's account, the possible reversal of the payment entails additional inter-institution credit risk arising from the fact that the payee's bank may fail to reverse the payment.

The supply and demand factors likely to have influenced these developments are more specific than those associated with cross-country differences in the use of cheques and credit transfers. While these factors may not affect retail payment developments uniformly across all countries, particular factors help explain some of the specific developments in many.

Supply factors that are most significant include:

- IT developments;
- competition and cooperation between providers of some retail payment services; and
- globalisation of payment services offered by individual institutions in international retail payment networks.

Demand factors that are most relevant are:

- risk preferences of both payers and payees for specific instruments and services;
- relative user cost and convenience of various instruments;
- general acceptance and availability of alternative payment instruments; and
- long-term economic growth, in particular the rise in the level of private consumption.

The liberalisation and broad harmonisation of financial sector regulation reflects these and other market factors and possibly facilitates their interaction.

4.1 Currency as a retail payment instrument

While there may have been a long-term decline in the use of currency as a retail payment instrument in most countries, the various measures used as indicators of the trends in cash payments indicate that since 1990 this trend has been less apparent and not universal (Chart 1). For instance, even though the data in Chart 2 indicate that the per capita use of non-cash payment instruments has increased in all the countries since 1990, the changes in the currency-to-GDP ratios for most countries have been moderate (Chart 1). Nevertheless, there are some notable divergences among the different countries. Since 1990 the currency-to-GDP ratios have risen noticeably in the low-ratio countries of Canada and the United States as well as in Japan, and more moderately in Australia, Germany, Italy and the United Kingdom.³⁵ In the other countries the currency-to-GDP ratio has been stable or declining.

The persistent demand for currency compared with alternative retail payment instruments may reflect the fact that cash payments have relatively low values. The vast majority of cash payments are below 10 US dollars or their equivalent and account for less than 5% of the total value of payments. For low-value payments, the user costs of alternative instruments such as cheques and payment cards are in many systems relatively high compared with cash. The low value of most cash payments, even if they are frequent, suggests that average currency holdings for transaction purposes may not be large relative to income and consumer spending in some countries. Further, lower inflation and interest rates may have led to lower opportunity costs for holding and using cash for such purposes. The continuing role of cash in retail payments may also be attributed to the absence of credit risk, the anonymity associated with many of these transactions, and its immediacy and finality in transactions. Yet another contributing factor is legislation imposing an obligation to accept legal tender as payment.

The existence and further growth of ATM networks in some countries may have also contributed to lower costs and greater convenience in obtaining cash, as well as lower costs of supplying cash at traditional banking locations. Canada and Japan had a substantial number of ATMs in place by 1990 (Chart 7). Since 1990 the size of ATM networks has grown substantially in other countries, such as

³⁵ The rise in the currency-to-GDP ratios in Germany, the United States and some other countries since 1990 may also have been influenced by the accumulation of their currencies as a transaction medium and store of value in third countries.

Belgium, Germany and Italy. Improvements in technology, changes in network agreements and new pricing arrangements have contributed to these developments. The services available from ATMs have also continued to expand.³⁶

4.2 Information technology and the shift to electronic non-cash payment instruments

To understand the development of non-cash payment instruments, it is necessary to look beyond the recent past and consider instead the longer-term trend away from cash payments. Possibly the most fundamental element has been the development of new IT for executing and processing payments electronically. New technology and its specific applications to payment services have facilitated innovation in retail payment instruments and services. The IT that was widely adopted lowered the costs of supplying payment services or increased revenue opportunities for the service providers. The result has been a movement away from cash and in most cases cheques towards direct funds transfers and card payments.

Until a payment innovation's viability has been tested by trial, further development and maturation, service providers may be reluctant to adopt it, especially if it substitutes for proven payment technology, instruments or services already in place. Much of the new payment technology involves, at least initially, substantial fixed costs for individual payment service providers that may already have significant investments in their established payment technology and marketing systems. Moreover, there is little guarantee that the payment instruments and services associated with new technology will sustain sufficient demand over the long term. On the other hand, the overall operating costs of providing high-volume non-cash payments electronically through direct funds transfers and card payments may well be lower than paper-based payments such as cheques. Even so, in the transition period, as payment volume shifts from established technology and retail payment instruments to technology and instruments that may ultimately be more cost-effective, overall operating costs for payments may temporarily rise. The initial savings from economies of scale in new technology could be insufficient for some time to cover the loss of such economies in the previously established technology. Investments in new technology are, therefore, usually more attractive if they can be integrated into, and are synergistic with, the established infrastructure.

The formation of alliances or other cooperative arrangements is one approach adopted by service providers to help limit costs and increase the return on new infrastructure investments. With payment cards, a broad-based network is the most common form of cooperative arrangement. A key requirement for such an arrangement is interoperability among the proprietary systems of each network member. Just as proprietary payment systems require the payment service provider to set technical standards for system design, equipment, operations and legal standards for contracts with end-users and input providers, cooperative network arrangements often require members to agree a common set of standards to achieve interoperability among individual systems.

While technological applications may create new payment instruments and services, it is the demand from a body of users, stimulating competition among providers, that drives the development of markets. As users embrace new payment technology and instruments, other users become attracted. This has been particularly evident in credit and debit cards. Existing cardholders benefit from the participation of new merchants, since they can use the card more broadly for transactions, attracting new cardholders to the system. Merchants benefit from the participation of new cardholders, since sales increase, encouraging more merchants into the payment card network, especially if devices

³⁶ ATMs belonging to a proprietary network and offering a broader range of financial services other than just cash withdrawal are increasingly common in branch locations. As a result, these ATM networks are beginning to process a rising volume of cash withdrawals compared with shared networks in countries such as Belgium.

required by different networks are interoperable.³⁷ These “network economies” are often cited as critical to the success of new payment technology.

However, much of the new payment technology and many of the new payment instruments may also impose startup costs on users that tend to limit demand, at least initially. These costs include equipment for individual computer banking and payments, vendor terminals, and dedicated communications hookups and installation fees charged by payment and communications providers, which can be substantial if an individual has few other uses for this equipment. There may also be learning costs associated with new technology (young, affluent, educated individuals tend to be quickest to take up new payment technology and instruments). Furthermore, there may be legal and security concerns affecting the demand for new technology.

4.3 The growth in card payments

Card payment growth is attributed to several factors, which include the substitution of cards for both cheques and cash at the point of sale and to some extent the development in many countries of catalogue, telephone and online shopping opportunities, where cards are the primary payment instrument. Since 1990 all the G10 countries and Australia have experienced declines in the relative use of cheques for non-cash transactions. Except in the United States and Australia, payments by cheque have also declined in absolute terms. The largest drops occurred in Belgium, Sweden, Switzerland and the Netherlands, though cheque use in these countries, especially for face-to-face payments, has always been comparatively low.

In nearly all countries debit card use increased faster than any other instrument class between 1990 and 1997. Although most countries have experienced strong growth in EFTPOS payments since 1990, particularly rapid growth in Canada and the Netherlands has meant that these countries now rank among those, including Australia, Belgium and the United Kingdom, with the greatest share of debit card usage in relation to total non-cash payments. With credit cards, the payment volume has increased in all countries since 1990 and the share of total non-cash payments has risen in most. The increases have been relatively modest in those countries that have relied significantly on credit card payments for some time, such as Australia, Canada, the United Kingdom and the United States. In some of the other countries the share of credit cards in terms of non-cash payments has as much as doubled, although they still remain the least used payment instrument in many continental European countries.

The growth of card payments in all countries (Chart 5) also reflects the development of network payment technology. New network arrangements have enabled providers to share the initial costs of payment card infrastructures and given them a platform for developing new procedures and instruments. For example, some EFTPOS card systems have evolved from ATM card systems.

One of the most critical supply factors in the trend towards card payments has been the development of interoperability standards among different card networks. Interoperability encourages participation in card networks by vendors and service providers, which attracts even more users to the card issuers in the network. With credit card systems, the development of interoperability standards began in earnest in the early 1980s, possibly motivated in many countries by the formation of alliances and mergers among separate systems from the mid-1970s onward. The development of the EuroCard system is a significant example. In addition, Visa and MasterCard, which were already well established in North America, were beginning to negotiate global alliances with networks in other countries and regions by the early 1970s. Notable in this regard are the links between MasterCard and EuroCard, and Carta Si in Italy with both Visa and MasterCard.

³⁷ The threshold at which use of a new payment technology or instrument begins to attract even broader acceptance often takes time and effort to develop. Initially, existing users and service providers in payment networks may even subsidise new entry.

The demand for card payments may have responded in the systems of some countries to changes in relative user charges and in the systems of other countries to more liberal non-price standards. With credit card payments, turnover fees charged to merchants declined in most countries during the early 1990s for some types of cards. Furthermore, a number of features, such as credit limits, annual fees, interest rates and loyalty programmes, were used to stimulate demand for credit cards. With debit cards, transaction fees in Australia declined relative to those on other retail payment instruments in the mid-1990s. In addition, because of lower relative transaction charges on merchants and relatively high interest rates on credit cards compared with overdrafts on deposit accounts, many cardholders and merchants in Germany have indicated a preference for debit cards over credit cards in face-to-face payments. Similar changes in relative user costs have been reported in other countries. Increased advertising may also have affected the shift to card payments in some countries.

The pace and direction in which markets for card payments have developed may also have been influenced by the regulatory environment. In the card networks of some countries the regulatory authorities have found it necessary to address consumer protection issues, pricing problems, and questions of network exclusivity and access restrictions. With regard to consumer protection in the use of debit cards, payment service providers and communications providers are generally governed by regulations or codes of practice.³⁸ Some of these codes were developed in the 1990s explicitly for the use of debit cards, which have perhaps contributed to the general growth of EFTPOS payments in the past decade. These codes have set limits on cardholder liability in the event of unauthorised payments, contributed to the development of new payment procedures and in some cases provided basic guidelines for payment security and interoperability.

The regulatory authorities in some countries have also had to consider pricing issues in some network arrangements. Although networks are generally cooperative arrangements, their membership consists of payment service providers that compete in end-user markets. As network membership broadens, or as networks merge, the incentives to use service pricing as a competitive tool sometimes diminish and in some instances corrective regulatory action has been required. In the United Kingdom, for instance, an investigation by the Monopolies and Mergers Commission of credit card networks in the late 1980s resulted in an order prohibiting particular pricing practices by payment acquirers.³⁹ The regulatory authorities have also dealt with network exclusivity and access restrictions that could affect competition between rival networks or among service providers within networks. Anti-duality rules imposed by a network require its members to exclusively issue its branded cards, which some service providers consider a restriction on their ability to penetrate card payment markets. With credit cards, the anti-duality rules were struck down in some countries relatively early in network formation. As a result, service providers can issue cards and acquire payments for more than one brand. In other countries credit card systems were able to preserve anti-duality clauses in their membership agreements on the proposition that these rules might enhance competition.

With debit card networks, regulators in some countries discouraged the development of jointly owned, nationwide EFTPOS networks. In other countries, particularly relatively small ones, the regulatory authorities chose not to challenge the organisation of single nationwide networks on efficiency

³⁸ The Netherlands relies on the Banking Industry Code of Best Practices for consumer protection. In the United States the Electronic Funds Transfer Act and the Federal Reserve Board's Regulation E provide statute-based protection for users of debit cards and other access devices for consumer asset accounts. Holders of credit cards are also protected from unlimited liability in the event of unauthorised payments by the Federal Reserve Board's Regulation Z. Other codes covering debit cards include the EFT Code of Conduct (1991) in Australia, the Code of Banking Practice (1992) in the United Kingdom and the Canadian Code of Practice for Consumer Debit Card Services (1992).

³⁹ At the same time the "non-discrimination rule" prohibiting merchants from incentive-pricing transactions to encourage consumers to use particular payment instruments was abandoned.

grounds. However, in some cases subsequent regulatory action was needed to liberalise network membership criteria and pricing policies to promote network entry and competition.⁴⁰

4.4 The growth in direct debit transfers

Though the volume of funds transfers has increased throughout the G10 countries and Australia, in most countries the relative share of direct debits in non-cash payments has risen while giro transfers have declined. The biggest increase in direct debits has occurred in those countries where the instrument comprised a small portion of non-cash payments, including Italy, Sweden, Switzerland, Canada and the United States. Direct debits, however, still remain a small portion of payments in these countries. Nevertheless, the growing importance of direct debits has also been observed in countries such as Germany, France and the Netherlands, where usage was already more significant. An exception to this was Japan, the only country in which direct debits were already the leading non-cash instrument. In countries such as Italy preauthorised debits (PADs) were a relatively recent addition to their set of retail payment instruments. In other countries where a form of PADs had been used for some time, a reduction in the number of restrictions on their functional use has contributed to the recent growth in demand.

The growth of direct debit transfers (Chart 4) seems to reflect the rising awareness by users and providers of their convenience and relatively low cost. For payers, the convenience and attraction of direct debit transfers for recurring payments has been enhanced with the introduction of overdraft lines on deposit accounts. Acceptability of the instrument by payers had previously been slow to develop, particularly in some European countries, due to concern over the loss of control on the timing of payments and the substantial penalties on deposit overdrafts. Some countries now require payers to be prenotified of the date and amount of the transfer. In many countries direct debit transfers are now the preferred instrument for paying credit and charge card balances at the end of the billing period, with the cardholder preauthorising the debits initiated by the card issuer.

Vendors receiving payments often find direct debit transfers to be convenient and useful in their cash management programmes, since they provide greater control over the timing of cash inflows. In the United Kingdom, for example, some companies have been encouraging their customers, sometimes with payment discounts, to shift from standing order credit transfers to PADs as the means of payment. In Germany and the Netherlands companies and service providers have been adopting more efficient electronic processing technology to facilitate the growth in direct debit transfers.

The cost to service providers of processing recurring payments using direct debit transfers is sometimes lower than for other debit instruments, such as cheques. In addition, there may still be potential for float earnings in some direct debit transfer systems. To encourage greater use of these instruments, some of these savings may be passed on in lower user costs. In Italy some banks have been offering direct debit transfers to payers at no cost. Service providers in many other countries also directly or indirectly cross-subsidise the use of debit transfers by individuals.

4.5 Changing market arrangements for retail payments

Payment service providers involved in non-cash payments compete directly in the provision of retail payment instruments and services to end-users. They also cooperate in developing and operating the network arrangements required for clearing all types of non-cash payment instruments and for settling payment obligations. In addition, card payment services and cash distribution via ATMs are often delivered through shared network arrangements. In shared network arrangements, member financial institutions compete in the direct provision of payment services to cardholders and merchants.

⁴⁰ In Canada, for example, an order from its competition authorities in 1996 required its only nationwide shared network association for EFTPOS and ATM transactions to open membership for some functions to institutions other than financial institutions and to revise its network pricing policies.

However, for their mutual benefit, they also cooperate as members of the card association in developing standards for the interoperability of their individually owned payment delivery systems with those of other association members and in marketing the network brand on payment products and services. Members are usually responsible individually for issuing cards to clients, providing equipment to vendors, and distributing the branded network products and services to cardholders and vendors. The card association is usually responsible for organising and operating the shared network facilities, developing new products and services, and devising marketing strategies and programmes to enhance brand recognition and reputation.⁴¹

While banking institutions remain the core providers to end-users for most retail payment instruments and services, IT and payment applications that had once been their exclusive preserve are now available from a wider range of service providers. Declining hardware and software costs and the greater expertise in developing related payment applications have resulted in non-traditional financial institutions and even non-financial institutions becoming providers in some countries.⁴² In end-user markets for instruments and services, these providers range from credit transfer agents to ATM providers operating in off-hours or in locations such as convenience stores. Others, such as those supplying communications software and equipment or data processing services, provide speciality input services to payment service providers. In some cases these input service providers have even begun to enter downstream end-user markets as providers of retail payment instruments and services, particularly for the newly emerging retail payment instruments and services discussed in the next section.

IT has also enabled service providers to customise their payment instruments and services and to package them with other complementary financial management products, resulting in a greater diversity of services available to users. These include personal cheques, guaranteed cheques and even cheques drawn on consumer credit lines; non-recurring direct funds transfers and recurring transfers for variable or fixed amounts and with or without standing orders or preauthorisations; and identically branded credit cards with various pricing and credit features as well as debit cards involving either immediate or deferred debits, some through preauthorisation agreements. Moreover, this financial engineering of payment services does not simply reflect cross-country differences in similar payment instruments and services – it also occurs within individual systems.

The trend towards a broader range of service providers and to greater networking in end-user markets has raised some regulatory questions. The regulatory approaches taken by different countries to the overall efficiency, risk and consumer concerns associated with new payment instruments, providers and market arrangements have differed somewhat. In some European countries a response to the challenge has been to limit the provision of some payment services to financial institutions. In other countries the provision of payment instruments and services has not been restricted to a specific group of institutions. As a result, some new payment service providers may be regulated somewhat differently from traditional providers.

As for networking arrangements, the regulatory policies in countries such as Australia, Belgium, Canada, Italy and the Netherlands have been tolerant of single nationwide networks for EFTPOS and shared ATM systems. With a relatively narrow range of service providers, they can generally rely on close monitoring and consultation to preserve effective competition and appropriate risk control policies. In other countries regulatory policies usually support interoperability among network arrangements. Some have been less tolerant, however, of network alliances that might have resulted in a dominant system, thereby dulling incentives to compete and control risk.

⁴¹ Furthermore, the card association usually sets general contract terms on payment irrevocability and finality as well as general user pricing methodologies, although actual price levels are left to the discretion of individual members.

⁴² Payment services providers are institutions that offer one or more specific types of payment instrument or service either to payment intermediaries as part of their payment infrastructure needs or directly to end-users. In the latter case providers arrange inter-institution transfers through a financial institution.

With respect to market pricing, new IT – and possibly a broader and more specialised set of competitive payment service providers – has led to changes in user pricing schemes in some countries for most retail banking services, including payments. Process and product innovation in retail payments and falling interest rates have led to a reduction in revenues associated with float and may create an incentive for providers to apply explicit fees to payment services. Furthermore, technology used in payment card systems allows the networks to charge per transaction switch fees and to charge interchange fees to the payment intermediaries that are members. In most cases the intermediaries have passed these costs on to end-users. These pricing schemes are different from the single charge account-based pricing schemes that had traditionally been used. In some countries account-based pricing schemes have begun to incorporate per transaction fees for all types of payments from personal accounts. Similar fee arrangements had been established for most payments from business accounts.

5. Innovations in retail payments

New retail payment technology that has emerged over the past few years signifies the potential for developing alternatives to existing instruments and technology. Some involve entirely new instruments such as electronic money; others involve new electronic payment delivery and processing technology.

5.1 Features of the emerging payments

Electronic money, or *e-money*, is essentially value stored electronically in a device such as an IC chip or a computer's hard drive.⁴³ E-money instruments are general-purpose vehicles for making payments to different vendors. Value is transferred electronically from one e-money storage vehicle to another, either at the point of sale or remotely. E-money is designed primarily for individuals to make small-value payments. As a retail payment instrument, e-money is easily divisible into smaller units of currency value that are portable and potentially receivable (or deliverable) through different electronic devices. Hybrid products are also emerging that can be used in both card-based and network-based systems.

Internet payment methods, most of which are essentially new distribution channels for traditional payment instruments, are designed for remote, computer-based online payments. They are modelled on existing banking arrangements and modified for application to open networks such as the internet.⁴⁴ *Internet credit transfers* are usually transmitted online from the buyer's payment service provider to the merchant's payment service provider in a fashion similar to electronic data interchange (EDI) payments used by business.⁴⁵ *Internet debit transfers* are designed for remote transactions of variable amounts where the merchant obtains online authorisation for the payment directly from the buyer's financial institution. *Electronic cheques* are payment instruments which are prepared by either the purchaser or the merchant for the purchaser's payment authorisation. Once authorised, the purchaser may route the payment online through its own financial institution to the merchant (as with a credit transfer) or transmit the authorisation back to the merchant for collection through its financial institution (as with a debit transfer).

⁴³ Stored-value cards rely on tamper-resistant IC chips for storing and transferring value and information securely, while software (or network-based) money depends on encryption technology.

⁴⁴ Open networks involve direct links among the buyer, the vendor, their payment intermediaries and the internet service providers that each may use. In closed networks direct links are usually bilateral: between the buyer and its intermediary, between the vendor and its intermediary, and between the two payment intermediaries, and often through proprietary network arrangements. Despite distinctly different architectures that require different security standards, payments through both types of arrangement are often defined as "internet payments".

⁴⁵ For example, banks in the Netherlands introduced I-Pay in 1996, an internet credit transfer scheme.

5.2 Availability

Card-based *e-money* schemes were first developed in the mid-1990s in Belgium and the United Kingdom. Since then, a large number of domestic e-money schemes have been introduced, mostly by groups of financial institutions.⁴⁶ In some cases the schemes were national implementations of early e-money schemes and in others a new domestic scheme was developed. In several cases international organisations have been established specifically to promote the development of e-money systems. However, the use of e-money is still moderate.

With *internet payments*, financial institutions are centrally involved as payment service providers. However, in some countries the use of an open network delivery system involves other service providers, such as software licensors and internet service providers that work jointly with financial institutions. Some may also be certification authorities – organisations that act as trusted third parties to certify the identity of the counterparties in an e-commerce transaction; for example, by authenticating their digital signatures. Since most internet payment schemes are under preliminary development, the organisation of markets and arrangements for payment and communications services has yet to be firmly established.

E-money chip card schemes appear, however, to be developing more broadly than software systems, although both types of e-money products have been operating only on a limited pilot basis in most countries. Even though development has been difficult and volumes remain low, Belgium, Germany, the Netherlands, Sweden and Switzerland already have card-based systems that operate nationwide. Software money systems are still generally embryonic, with various pilot projects under way in Australia, France, Germany, Japan, Switzerland, the United Kingdom and the United States. As for internet payment schemes, pilot projects are under way in a number of countries, although few results have been reported.

5.3 Risks

The immediacy and finality of *e-money* payments differ depending on the type of system and the laws and regulations applicable in different jurisdictions. Other payment risks depend on the technical design of an e-money system, its procedural rules and risk guidelines, the host country's laws regarding consumer protection and risk allocation, and the incentives for e-money issuers and distributors to comply with these rules.⁴⁷

With *internet payments*, the early stage of development and the cross-border aspects of e-commerce payments mean that the focus of attention has been on operational risks, legal risks, security risks and the risk of circumventing anti-money laundering legislation. In most schemes the allocation of liability would depend on the specific contractual arrangements of the particular system and the liability laws of the home and host countries. A number of steps have thus been taken to address these issues. The various systems use, or are developing, procedural standards and protocols for authentication and security (message encryption, digital signatures, counterparty certification and payment confidentiality). Several jurisdictions have established, have introduced or are reviewing legislation and rules for the legal treatment of electronic documents, transactions and means of authentication.

5.4 Pricing

Because of the pioneering and test nature of the various e-money and internet payment schemes, few have set definitive pricing schemes, even though some arrangements have been tested. *E-money* may

⁴⁶ There are also a number of proprietary or closed network e-money systems operating in a few major industrial countries. Some of these systems are operated by non-financial institutions, but have limited payment use.

⁴⁷ *Security of electronic money*, CPSS, August 1996; *Risk management for electronic banking and electronic money activities*, Basel Committee on Banking Supervision, March 1998.

involve relatively low storage, handling and opportunity costs for end-users, but, depending on the scheme, users may pay fees for chip cards, wallets and card readers. There might also be consumer charges for obtaining e-money from distributors and vendor charges for depositing e-money. As for *internet payment* schemes, most are only emerging and, while there are likely to be overhead user costs for software and network connection, little information is available on explicit payment fees for users.

5.5 Factors affecting market development

Many of the supply and demand issues that have affected the development of today's set of payment instruments may well have an impact on the success or failure of new payment products. On the demand side, acceptability for both the consumer and the merchant depends on the ability of a new instrument or service to satisfy specific retail payment needs. In this context the introduction of the euro may significantly boost the use of new payment products such as e-money instruments. Competition from traditional instruments will also affect the development of new payment products. Relative pricing of new instruments and services, compared with more established ones, may be important, as well as additional user costs for equipment such as terminals.

Supply factors influencing the development of new payment products include rapidly changing technology. This might open up new possibilities, but also carries the risk that a specific technology in which considerable investments were made could be rapidly rendered obsolete by new developments. Linked to this are the sometimes large investments needed for a large-scale rollout, whether at national or regional level. At the same time the current rapid innovation of new payment products and quickly evolving technology has delayed an industry consensus in many countries on standards or interoperability. Underlying these complex investment decisions is the uncertainty regarding consumer demand for new payment products.

As noted in earlier sections, network economies may play a role in influencing both supply and demand decisions for new technology. Nonetheless, it is unclear at this time whether the slow rates of acceptance for many payment innovations are the result of such "network effects" or other fundamental factors or both.

6. Conclusion

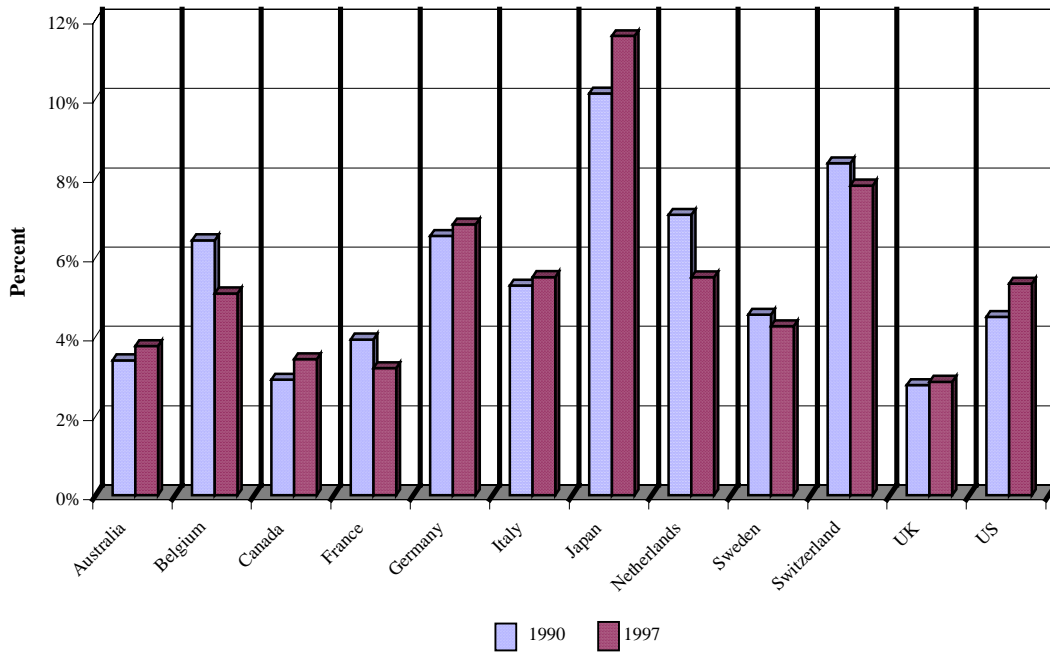
While broad end-user acceptability of emerging payment instruments is yet to be determined, continued innovation and experimentation in this area illustrate the dynamic nature of retail payment systems more generally. The range of payment instruments available today reflects the legal, business and technological environments found within and across the G10 countries and Australia. While the current mix of instruments often depends on historical developments within domestic systems, the recent trends discussed in this report highlight the brisk pace of change throughout all the countries concerned.

By providing a descriptive and analytical assessment of retail payment instruments in the G10 countries and Australia, it is hoped that this report will contribute to a greater understanding of retail payment systems and lead to further progress in developing safe and efficient payment arrangements around the world.

Charts

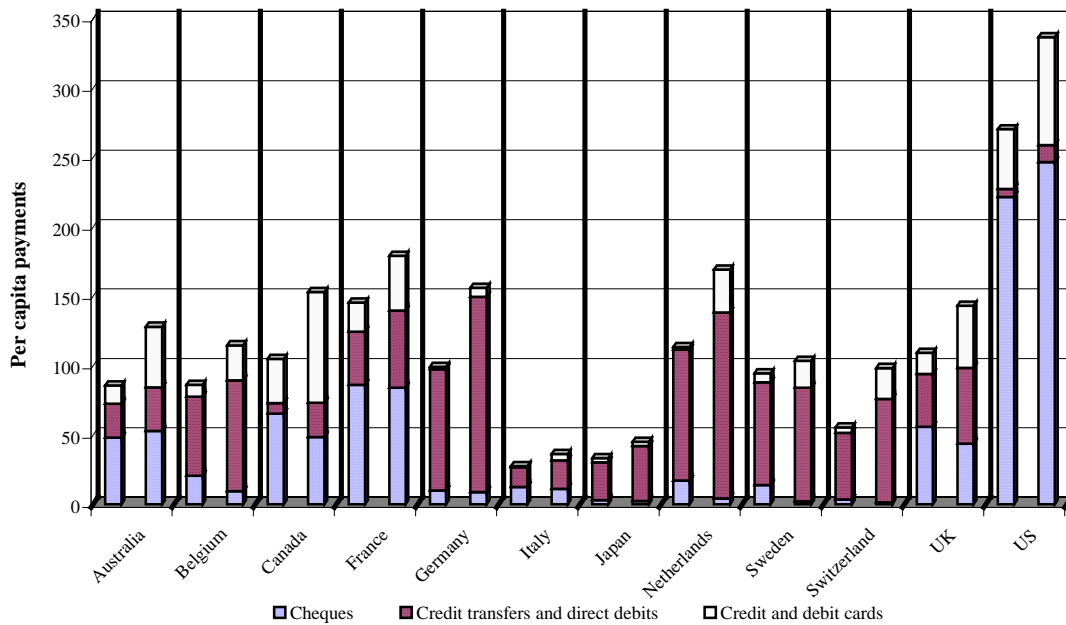
**Notes and coin as a share of GDP
1990 and 1997**

Chart 1



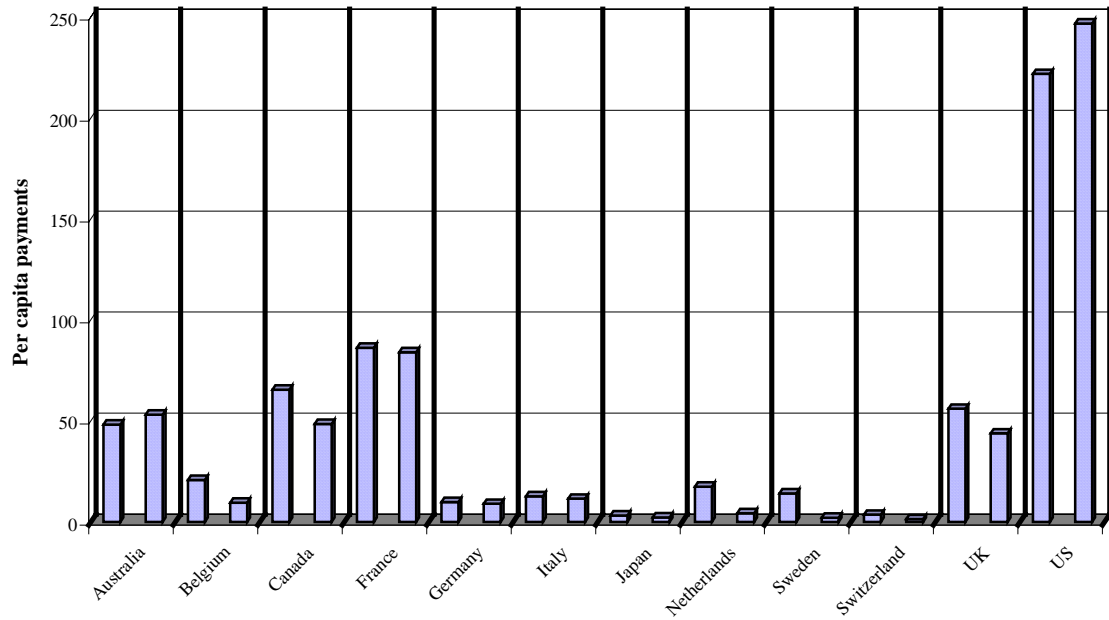
**Volume of all non-cash payments
1990 and 1997**

Chart 2



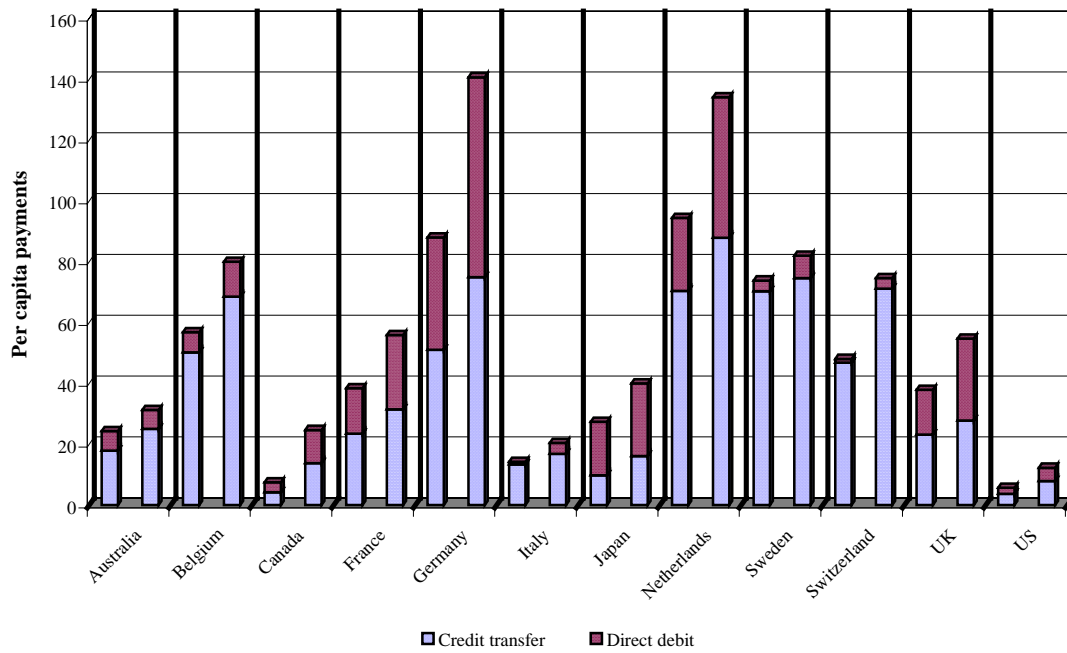
**Volume of cheque payments
1990 and 1997**

Chart 3



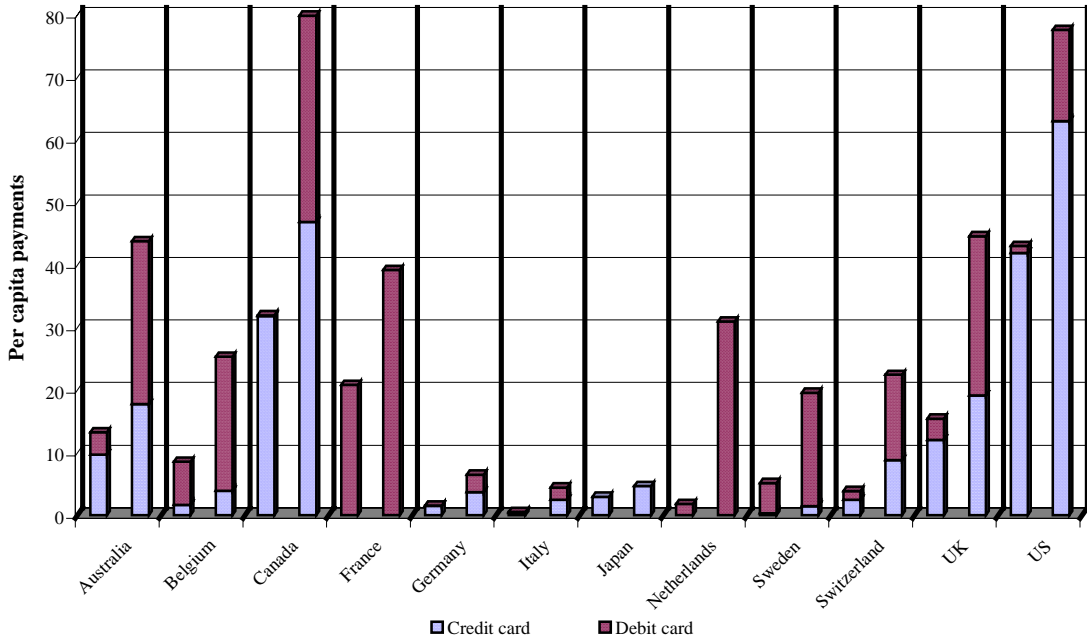
**Volume of funds transfer payments
1990 and 1997**

Chart 4



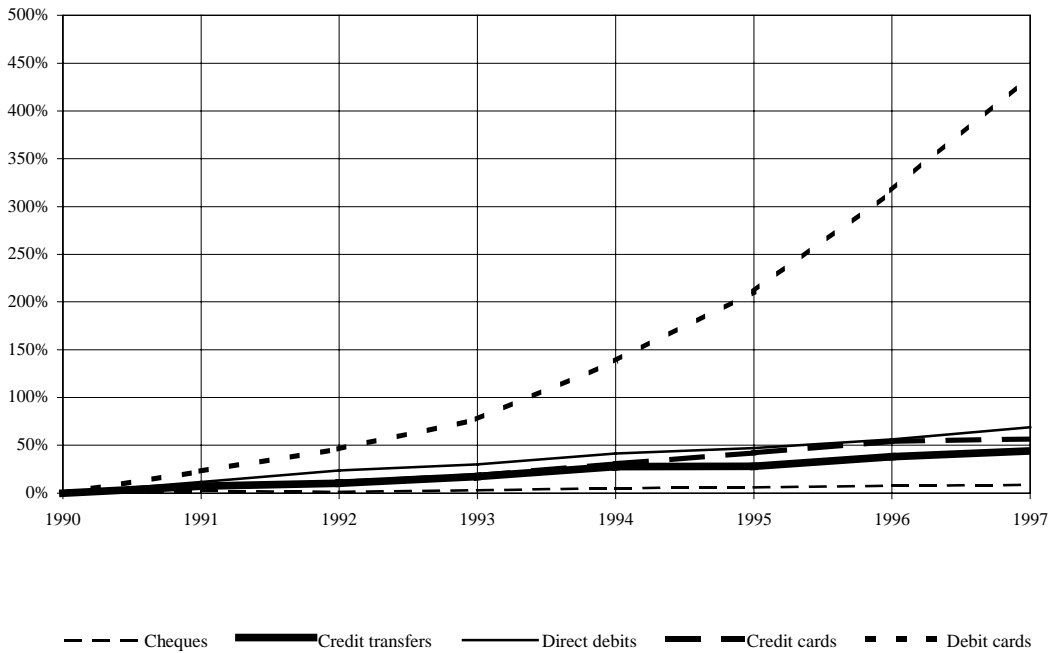
**Volume of card payments
1990 and 1997**

Chart 5



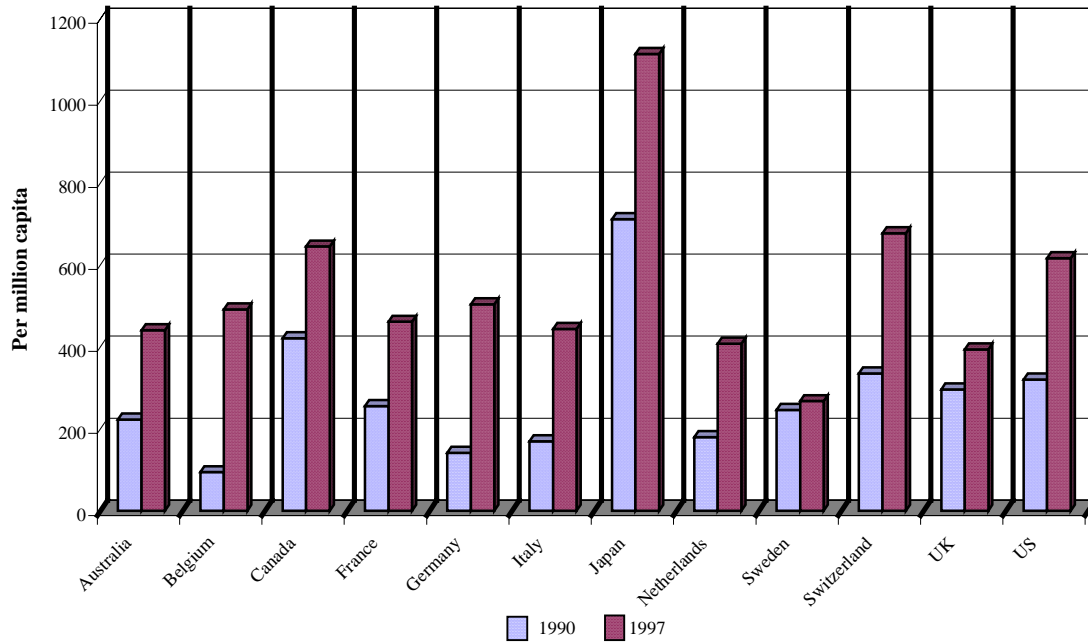
**Aggregate growth rate of non-cash payment volume
G10 and Australia**

Chart 6



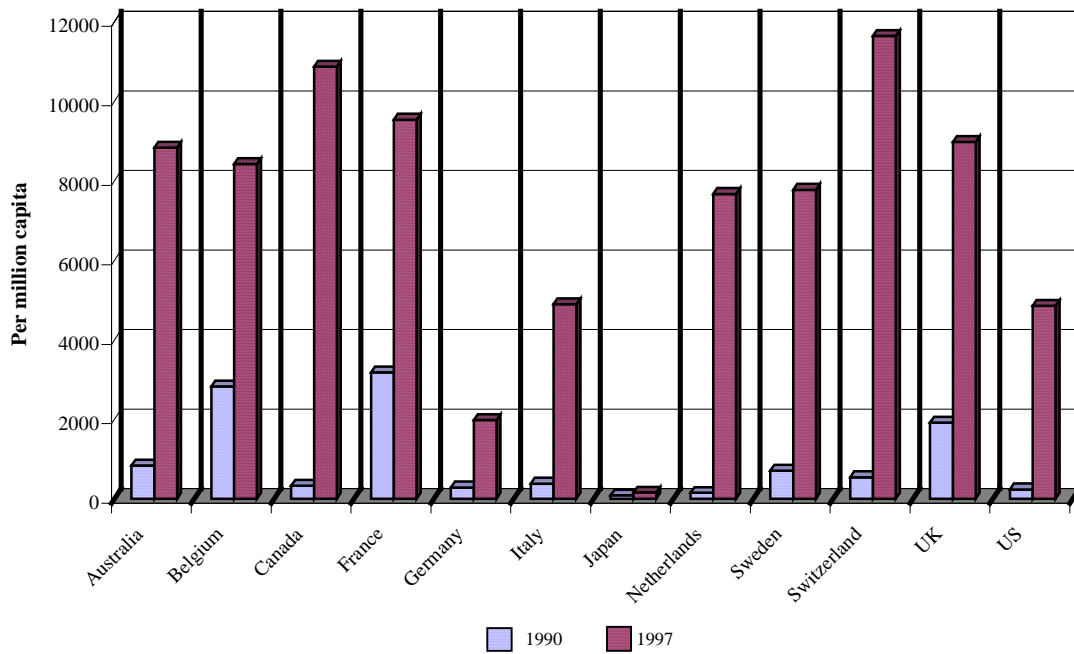
**Number of ATM terminals
1990 and 1997**

Chart 7



**Number of EFTPOS terminals
1990 and 1997**

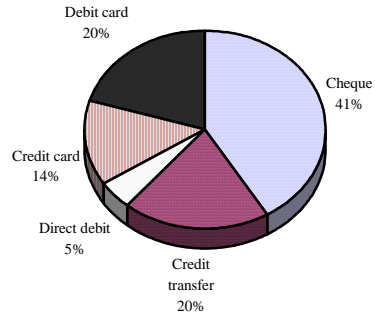
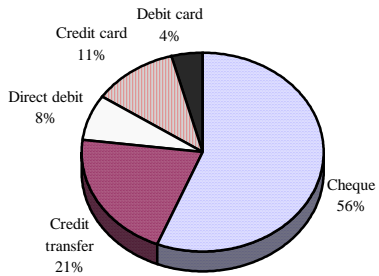
Chart 8



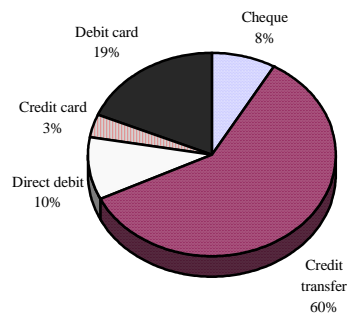
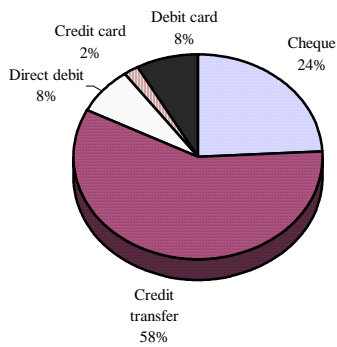
Share of non-cash payments, 1990 and 1997

Chart 9

Australia

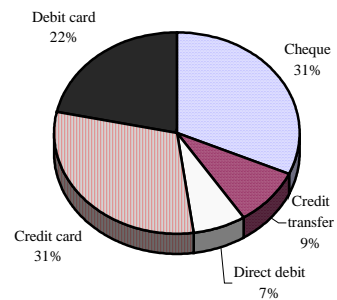
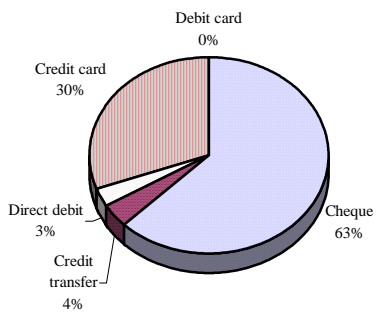


Belgium



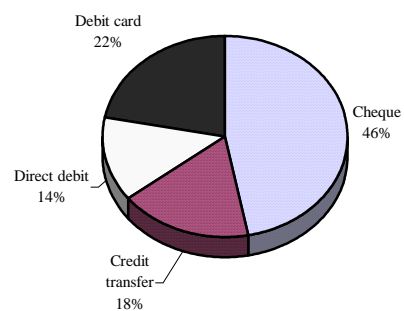
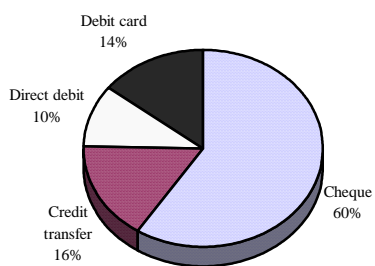
1990

Canada



1997

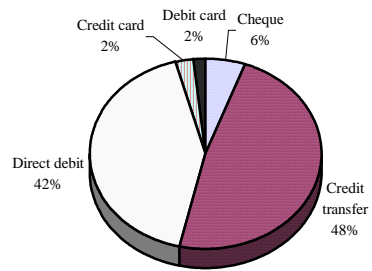
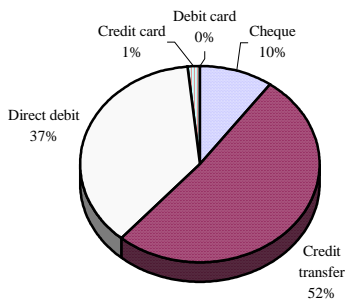
France



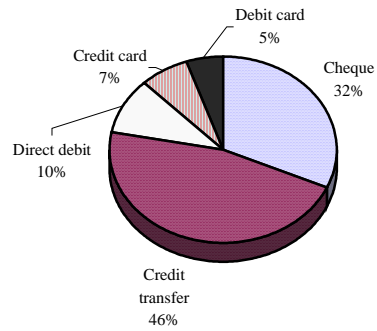
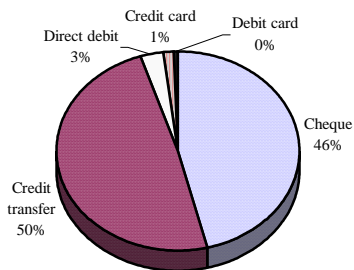
Share of non-cash payments, 1990 and 1997

Chart 9

Germany

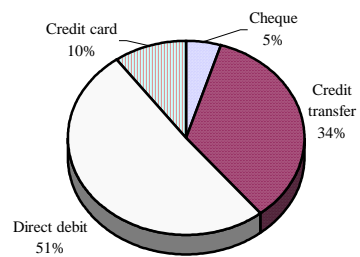
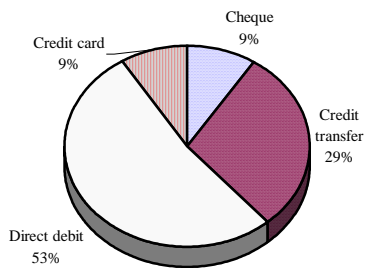


Italy



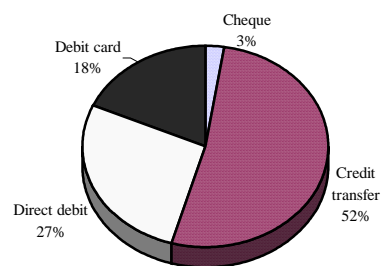
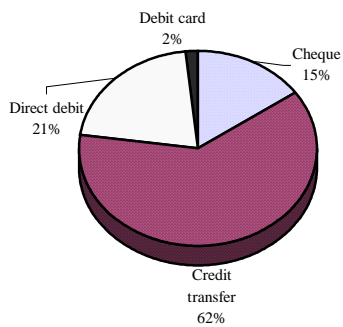
1990

Japan



1997

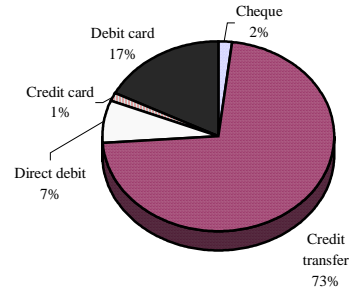
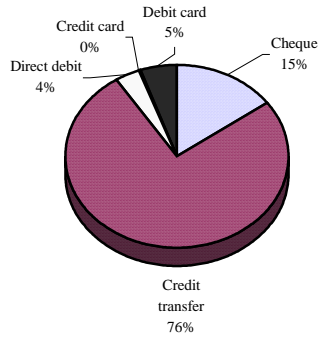
Netherlands



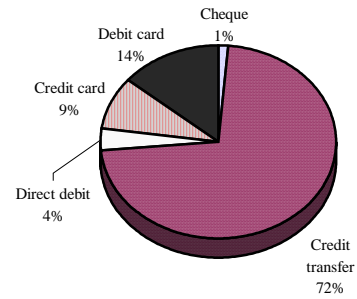
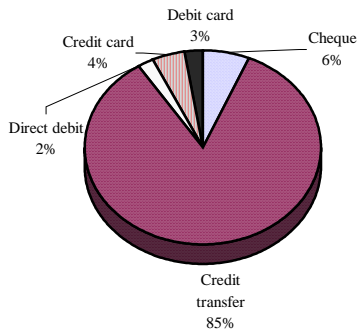
Share of non-cash payments, 1990 and 1997

Chart 9

Sweden

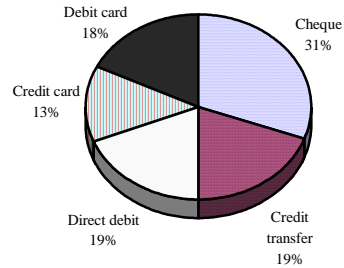
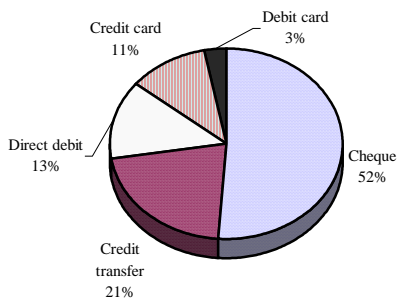


Switzerland



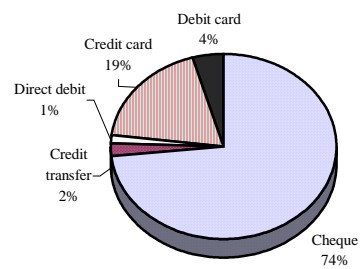
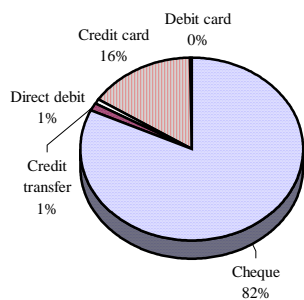
1990

UK



1997

US



Notes to Charts

The data for the material for G10 countries for the preceding charts comes from the BIS publication, *Statistics on payment systems in the Group of Ten countries*.

France

No credit card data are provided.

Japan

Non-cash payment volumes are estimated.

Cheques are not generally used by individuals.

Credit card data begin in 1992 and end in 1996.

No debit card data are provided.

Netherlands

No credit card data are provided.

Sweden

Credit card data begin in 1992.

Glossary

automated teller machine (ATM)	electromechanical device that permits authorised users, often using machine-readable plastic cards, to withdraw cash from their accounts and/or access other services, such as balance enquiries, transfer of funds or acceptance of deposits; ATMs may be operated either online with real-time access to an authorisation database or offline
batch	the transmission or processing of a group of payment orders as a set at discrete intervals of time
card	see <i>cash card, cheque guarantee card, chip card, credit card, debit card, delayed debit card, prepaid card, retailer's card, travel and entertainment card</i>
cash card	card for use only in ATMs or cash dispensers (other cards often have a cash function that permits the holder to withdraw cash)
cash dispenser	electromechanical device that permits consumers, often using machine-readable plastic cards, to withdraw banknotes (currency) and, in some cases, coins; see <i>automated teller machine (ATM)</i>
charge card	see <i>travel and entertainment card</i>
cheque	written order from one party (the drawer) to another (the drawee, normally a bank) requiring the drawee to pay a specified sum on demand to the drawer or to a third party specified by the drawer; widely used for settling debts and withdrawing money from banks
cheque guarantee card	card issued as part of a cheque guarantee system; this function may be combined with other functions in the same card: for example, those of a cash card or debit card; see <i>cheque guarantee system</i>
cheque guarantee system	system to guarantee cheques, usually up to a specified amount, that have been validated by the merchant either on the basis of a card issued to the cheque drawer or through a central database accessible to merchants; validated cheques are guaranteed by the issuer of the guarantee card, the drawee bank or the system operator
chip card	card containing one or more computer chips or integrated circuits for identification, data storage or special-purpose processing used to validate personal identification numbers (PINs), authorise purchases, verify account balances and store personal records; in some cases the memory in the card is updated every time the card is used: for example, when an account balance is updated; also known as IC card or smart card
closed network	telecommunications network used for a specific purpose, such as a payment system, and to which access is restricted
correspondent banking	arrangement under which one bank (correspondent) holds deposits of other banks (respondents) and provides payment and other services to those respondent banks; such arrangements may also be known as agency relationships in some domestic contexts
counterparty	the opposite party in a financial transaction

credit card	card whose holder has been granted a credit line, enabling the holder to make purchases and/or draw cash up to a prearranged limit; the credit granted can be settled in full by the end of a specified period or in part, with the balance taken as extended credit; interest is charged on the amount of any extended credit and the holder is sometimes charged an annual fee
credit card company	company which owns the trademark of a particular credit card, possibly providing a number of marketing, processing or other services to the members using the card services
credit transfer	payment order or possibly a sequence of payment orders made for the purpose of placing funds at the disposal of the beneficiary; both the payment instructions and the funds described therein move from the bank of the payer/originator to the bank of the beneficiary, possibly via other banks as intermediaries and/or more than one credit transfer system
debit card	card enabling the holder to have its purchases directly charged to funds on its account at a deposit-taking institution (sometimes combined with another function: for example, that of a cash card or cheque guarantee card)
direct debit	preauthorised debit on the payer's bank account initiated by the payee
electronic data interchange (EDI)	the electronic exchange between commercial entities (in some cases also public administrations), in a standard format, of data relating to a number of message categories, such as orders, invoices, customs documents, remittance advices and payments; EDI messages are sent through public data transmission networks or banking system channels; any movement of funds initiated by EDI is reflected in payment instructions flowing through the banking system; EDIFACT, a United Nations body, has established standards for EDI
electronic money	value stored electronically in a device such as a chip card or a hard drive in a personal computer
face-to-face payment	payment carried out by the exchange of instruments between the payer and the payee in the same physical location
final transfer	irrevocable and unconditional transfer which effects a discharge of the obligation to make the transfer; delivery and payment are defined to include a final transfer
home banking	banking services that a financial institution's retail customer can access by telephone, television, terminal or personal computer as a telecommunication link to its computer centre
inpayment	payment instruction, sent together with the bill for the delivery of goods and/or services, which is prepared by the payee; the payer can either pay through its designated bank account or by means of a cash payment at a designated agent (bank or non-bank)
interchange fee	transaction fee set by the network organisation and paid by the card issuing institution to the acquiring institution for the cost of deploying and maintaining ATMs and EFTPOS terminals

money order	instrument used to remit money to a named payee, often used by individuals who do not have a current account relationship with a financial institution, to pay bills or to transfer money to another individual or a company; there are three parties to a money order: the remitter (payer), the payee and the drawee; drawees are usually financial institutions or post offices; payees can either cash their money orders or present them to their bank for collection
obligation	(i) duty imposed by contract or law; (ii) security or other financial instrument, such as a bond or promissory note, which contains the issuer's undertaking to pay the owner
offline	(i) in payment and settlement systems the transmission of transfer instructions by users, by such means as voice, written or faxed instructions, that must subsequently be input into a transfer processing system; (ii) the storage of data by the transfer processing system on media such as magnetic tape or disk such that the user may not have direct and immediate access to the data
online	(i) in payment and settlement systems the transmission of transfer instructions by users, by such electronic means as computer-to-computer interfaces or electronic terminals, that are entered into a transfer processing system by automated means; (ii) the storage of data by the transfer processing system on a computer database such that the user has direct access to the data (frequently real-time) through input/output devices such as terminals
open network	telecommunications network to which access is not restricted
paperless credit transfers	credit transfers not involving the exchange of paper documents between banks; other credit transfers are paper-based
payment	the payer's transfer of a monetary claim on a party acceptable to the payee; claims often take the form of banknotes or deposit balances held at a financial institution or a central bank
payment order (payment instruction)	order or message requesting the transfer of funds (in the form of a monetary claim on a party) to the order of the payee; the order may relate either to a credit transfer or to a debit transfer
payment system	set of instruments, banking procedures and interbank funds transfer systems that ensures the circulation of money
personal identification number (PIN)	numeric code which the cardholder may need to quote for verification of identity; seen in electronic transactions as the equivalent of a signature
point of sale (POS)	use of payment cards at a retail location (point of sale); the payment information is captured either by paper vouchers or by electronic terminals, which are in some cases also designed to transmit the information, in which case the arrangement may be referred to as electronic funds transfer at the point of sale (EFTPOS)
prepaid card (payment card)	card loaded with a given value, paid for in advance
remote payment	payment made by sending payment orders or payment instruments (for example, by mail); contrast with <i>face-to-face payment</i>

retailer's card	card issued by a non-bank for use in specified stores; the holder has usually been granted a credit line
retail transfer system	interbank funds transfer system which handles a large volume of payments of relatively low value in such forms as cheques, credit transfers, direct debits, and ATM and EFTPOS transactions
settlement	act that discharges obligations in respect of funds transfers between two or more parties
settlement risk	the risk that settlement in a transfer system will not take place as expected; this risk may comprise both credit and liquidity risk
standing order	instruction from a customer to its bank to make a regular payment of a fixed amount to a named creditor
switch fee	transaction fee set by the network organisation and paid by the card issuing institution to the organisation for the cost of routing transaction information
surcharge fee	transaction fee set by an ATM owner and paid directly by the cardholder to the ATM owner for the cost of deploying and maintaining the ATM
transfer	the sending (or movement) of funds or of a right relating to funds from one party to another party by (i) conveyance of physical instruments/money, (ii) accounting entries on the books of a financial intermediary and (iii) accounting entries processed through a funds transfer system; the act of transfer affects the legal rights of the transferor, the transferee and possibly third parties in relation to the money balance or other financial instrument being transferred
travel and entertainment (charge) card	card issued by a non-bank indicating that the holder has been granted a credit line; it enables the holder to make purchases but does not offer extended credit, the full amount of the debt incurred having to be settled at the end of a specified period; the holder is usually charged an annual fee
user fee	transaction fee set by the card issuer and paid by the cardholder to the issuing institution for card payments or ATM cash withdrawals; other user fees, sometimes called foreign fees, are paid by the cardholder to the issuing institution for the use of ATMs not owned by the issuing institution

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