The Future of Cash

> April 2005

CPR Billets

AGIS CONSULTING

SCAN COIN

EFMA

ACKNOWLEDGEMENTS

Three years after the introduction of the physical euro, the largest ever logistical peacetime operation, cash remains the most widely used payment instrument … and for many financial institutions a logistical nightmare.

The euro has largely contributed to put cash in the limelight – forcing all the constituents to review their processes and reconsider their role in the currency supply chain. As a result, the cash industry is undergoing profound changes.

This report is aimed at understanding the ongoing forces which are driving change. It is not our intention to provide all the answers but rather we hope to inspire innovative thinking and new responses for the various actors in the cash cycle. Given the continued use of cash in the economy, it is essential for the financial industry to plan for its efficient delivery to the consumers as well as for the improvement of the productivity of cash processing.

This report was sponsored by, CPR Billets, SCAN COIN and the European Financial Marketing and Management Association - EFMA. The research was undertaken by AGIS Consulting, a consultancy specialized in retail payments. Input was also provided by Currency Research Ltd as far as the British market is concerned.

The report was written by Guillaume Lepecq, Director of AGIS Consulting. The views expressed here do not necessarily reflect those of CPR Billets, SCANCOIN or EFMA.

A number of interviews were undertaken to support this research. The respondents are listed in appendix 1. The EFMA Cash Processing Conference held in March 2004 in Paris was a further source of information.

We would like to take this opportunity to thank all those who have agreed to share their expertise for the purpose of this research.

Not everything that can be counted counts, and not everything that counts can be counted

Albert Einstein

ABOUT US

CPR Billets

www.cprbillets.com

CPR Billets is a financial institution fully owned by Crédit Agricole. It is the leading wholesale foreign exchange operator for banknotes and travellers cheques on the French Market. It provides the French banking network with foreign banknotes for French tourists preparing their travels abroad or collects foreign banknotes from incoming tourists. Following several acquisitions over the last three years, CPR Billets currently has a 90% market share.

In the context of its diversification strategy, CPR Billets is extending its range of services to the management of euro cash centres, thus bringing its expertise in terms of the rationalisation of workflows and the handling of foreign currency to the processing of euro banknotes.

CPR Billets is completing its range of services thanks to its security Cash-In-Transit subsidiary and is shortly due to announce the implementation of its proprietary system of alternative transport, which is the first device to have been certified according to the new French regulatory standards, applicable as of January 2004.

SCAN COIN

www.scancoin.com

Founded in 1966 in Malmö, Sweden, SCAN COIN became a leading company of cash handling equipment thanks to a unique electronic detection system developed in 1988 which prepared the way for a more exact coin counting method than the world had ever seen before. Vigorous investments in research and development resulted in one successful innovation after the other so that high-speed machines from SCAN COIN processed coins all around the world.

It also made the successful self-service Cash Deposit Systems possible. SCAN COIN has supplied more than 10,000 CDS machines to banks and other customers worldwide.

SCAN COIN always focus on working as closely as possible with the customer and offer integrated solutions that enable them to process cash efficiently all over the world through a network of SCAN COIN companies and distribution partners covering some 120 countries.

www.efma.com

The European Financial Management & Marketing Association is a not-for-profit association with a membership uniquely composed of banking and financial services organizations in Europe.

EFMA seeks to promote innovation in the banking and financial communities by fostering debate and discussion in a setting removed from the pressures of commercial competition. Through meetings and an open exchange of information, EFMA facilitates dialogue and collaboration among its members, creating a forum for the recognition and study of best practice.

EFMA is funded by membership fees and income earned from events and services. The fees paid by members finance an array of services strictly reserved for members. The income earned from supporting activities enables the association to reduce these fees.

This original arrangement maintains EFMA's neutrality, protecting programs and activities from commercial pressures and ensuring a standard of program quality that is highly valued by members. The loyalty of EFMA members, representing over three quarters of the largest banking organizations in Europe, is a testament to its effectiveness in performing this mission.

www.agis-consulting.com

AGIS Consulting is an independent strategy consulting firm, specialised in retail payments, including cash and payment cards. AGIS was founded in 2001 in Paris and has since developed a worldwide network of partners.

The European retail payments market is facing tremendous change, under the combined pressures of the evolving regulatory market and European integration, technological innovation and socio-economic factors. AGIS aims at providing its clients with out-of -the box thinking, in order to anticipate the changes in the market and develop customized value-added solutions.

Clients range from financial institutions, to payment service providers, to soft and hardware vendors.

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Executive Summary

Ever since the launch of the payment card 50 years ago, cash has been declining slowly in relative terms throughout modern economies. However, it remains by far the most popular payment instrument, throughout the world, with around 85% of transactions carried out in cash. The concept of a cashless society appears more and more distant.

Cash is a core element of retail banking. For the vast majority of consumers, money is cash and they would not accept to interact with a bank which would not offer the adequate cash services. Moreover, cash plays a structuring role in the way banks organise their overall payments strategy, their branch architecture, their ATM networks and their customer relationship management. For most customers the ATM withdrawal is the most frequent contact with his / her bank.

The European cash cycle is undergoing fundamental changes:

- Central banks are reconsidering their role in the cash cycle
- Commercial banks are increasingly externalising wholesale cash handling
- The Cash-in-Transit (CIT) industry is consolidating and becoming increasingly the domain of the private sector

These changes are likely to reshape the competitive landscape, as they are transferring additional responsibilities and costs to the banks and the commercial cash handlers.

European monetary integration and the creation of the Eurosystem have led the Central Banks to compare the costs and services they offer. As a result, many Central Banks have been moving away from their traditional sovereign role towards demonstrating a more economically motivated behaviour. This has led the majority of monetary authorities to reduce their involvement in the processing of cash, resulting in the transfer of this activity to the private sector.

The majority of commercial banks have been externalising wholesale processing to Cash In Transit companies or other partners. Cash is generally viewed as a loss-making activity and banks hope to reduce their costs through outsourcing. As a result, CITs have been expanding their role in the cash cycle. They have been consolidating and forced to improve their productivity. From a traditional labour intensive activity, cash processing is becoming a capital intensive business driven by technological innovation and integrated information systems.

Banks have been focusing their efforts towards reducing the cost of cash and promoting other payment instruments, with considerable success. The automation of cash distribution and the outsourcing of the cash supply are well under way and expected to accelerate. However, in this changing environment, banks are increasingly looking at developing the range and quality of their cash related services and use this as factor of differentiation.

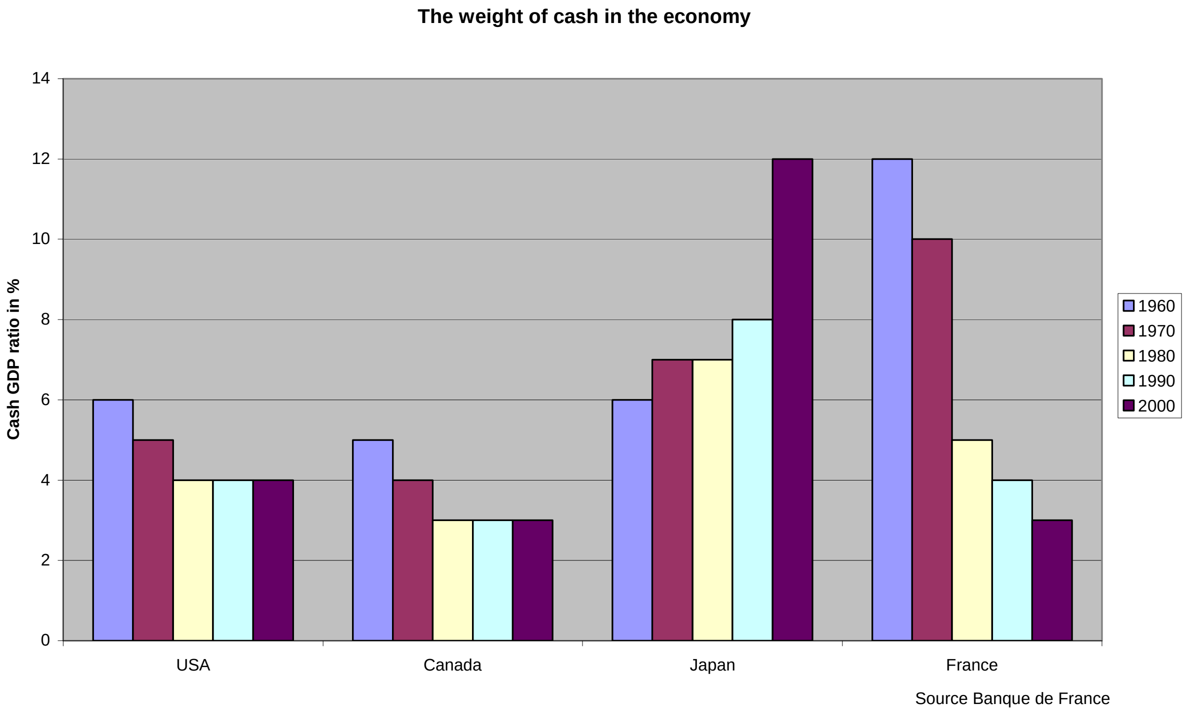
1. Cash in the economy

1.1. The weight of cash in the economy

Over the past 40 years, the weight of cash in modern developed economies has declined steadily as illustrated by figure 1. Notes and coins now represent only a small portion of the overall wealth.

The case of Japan is an exception; it is the only developed country which has seen an increase in the cash/GDP ratio. In this case, the combination of the banking crisis in the late nineties and the very low interest rates has fostered the use of cash. This example illustrates that demand for banknotes is influenced by changes in confidence in financial system stability as perceived by households and other economic agents and by changes in the environment surrounding the financial system. For example, if a bank failure raises concerns about the financial system, economic agents tend to withdraw deposits from banks to increase their banknote holdings. On the other hand, if confidence in financial system stability increases, banknotes held by economic agents will shift back to bank deposits.

Figure 1:



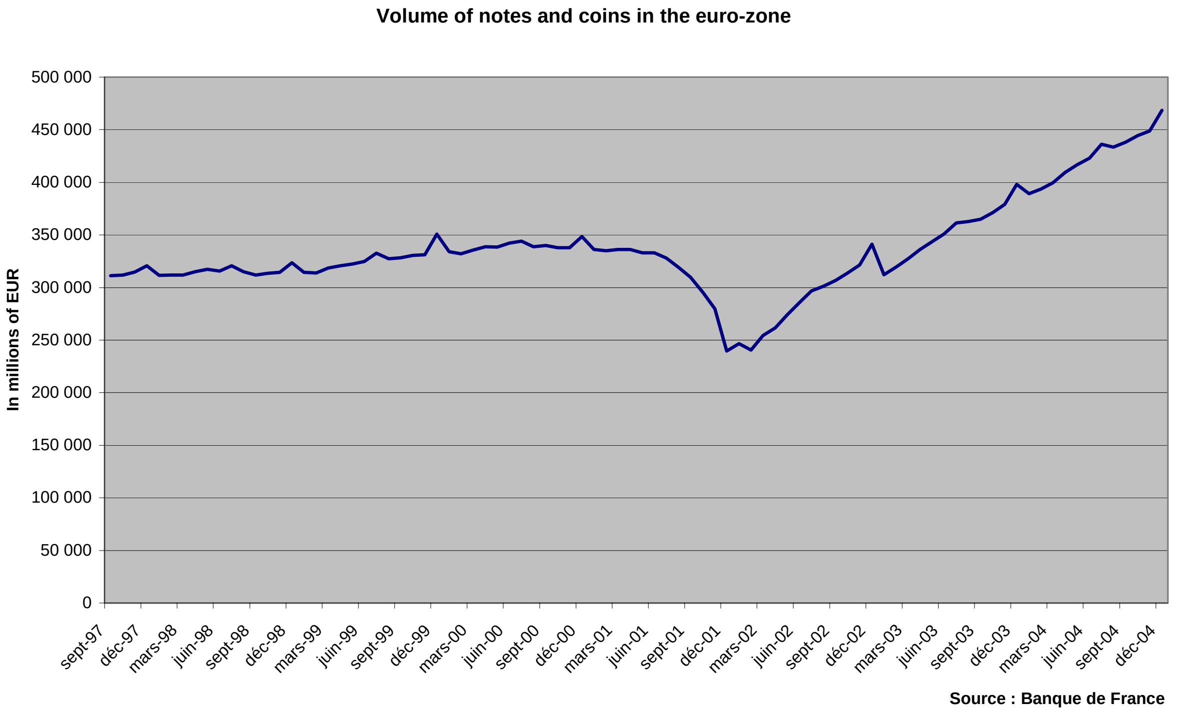
France is another interesting case as it is one of the countries where the use of cash is very low. The national authorities have limited by law the use of cash. For instance, transactions exceeding EUR 3,000 cannot be conducted in cash or wages cannot be paid in cash. As a result, France has seen a strong development first in cheques and more recently in debit cards.

Money in general and cash in particular serves two purposes: a) it is a store of value – in the case of cash, this is represented by hoarding and b) it is a transaction instrument, used for making. day-to-day payments. The precise dividing line between these two needs is thin however.

Hoarded currency is often measured by the volume of high denomination notes. The introduction of the euro in January 2002 has given a clear indication of the importance of hoarded currency as the volume of currency in circulation decreased by nearly a third in the run-up to the currency exchange – see figure 2. Economists[1] have suggested that the weakness of the euro between 1999 and 2002 was partly due to a sharp drop in demand for DEM from Eastern Europe.

Since the euro was launched, the volume of cash in circulation has grown by around 20% per year. The vast majority, of this increase is due to hoarded currency. In 2004, the 500, 200 and 100 euro denominations represent over half the total value of notes in circulation. The total face value of EUR 500 notes in circulation exceeds 30% of the total face value of the entire circulation of euro banknotes.

Figure 2:



In the United Kingdom, the value of notes in circulation has exceeded GBP 36 billion at the end of 2004, a 45% increase since 1999.

The value of US dollars in circulation has increased by 400% between 1980 and 2005, from USD 160 to USD 700 billion. Over the same period, the number of USD 100 notes has risen by 465%.

[1] Sinn and Westermann 2001

1.2. Cash remains the most important payment instrument

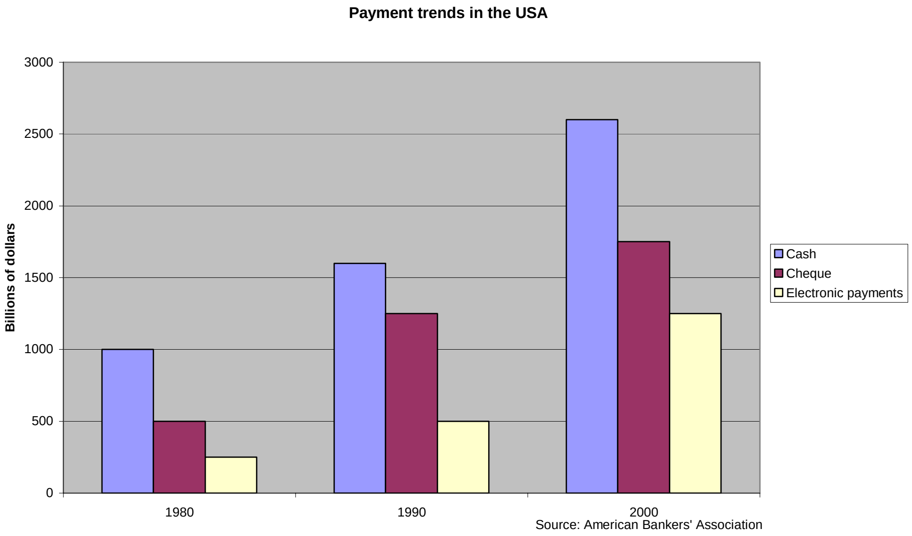
In spite of strong growth in the use of payment cards and the launch of new payment instruments ranging from pre-paid cards, to mobile payments to internet payments, cash remains by far the most popular payment instrument. The European Payments Council estimates that there were approximately 360 billion cash transactions in the European Union in 2003, compared with 60 billion non-cash transactions. In other words, 85% of transactions are made in cash.

In the euro-zone, volumes of low-denomination notes have been increasing by a healthy 5% per annum, i.e. substantially more than inflation. This indicates that transaction demand is growing at a higher rate than GDP. As we head towards a service oriented economy, the number of transactions is continuing to increase. The market share of cash is however declining slowly.

A number of observers, from economists to payment service providers had expected that notes and coins would be replaced sooner by more technologically advanced payment instruments – cards, electronic purses, e-money. In spite of numerous innovations throughout the world, cash transactions have remained remarkably strong. Actually, it appears that in many cases new payment instruments have been competing amongst themselves rather than against cash.

In the USA, the market share of cash has been declining over the past 30 years but the overall volume of transactions has been increasing steadily, as illustrated by figure 3.

Figure 3:

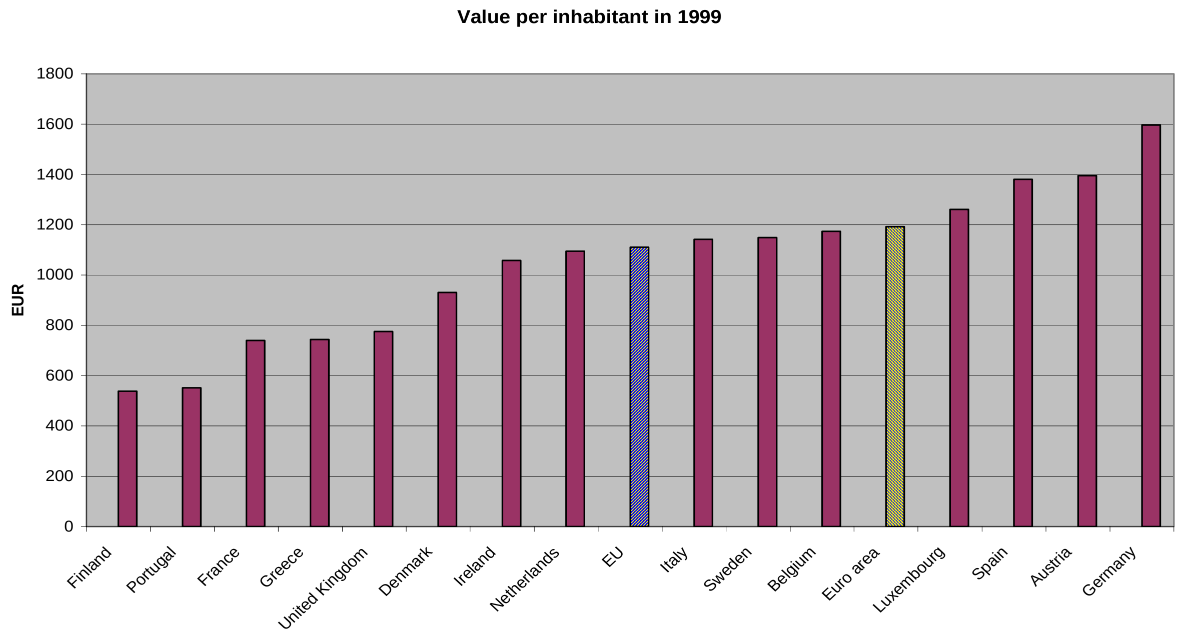


The situation is quite comparable worldwide. In Singapore, the government announced in 1998 that it would make electronic money legal tender by the year 2008. All merchants and service providers would be legally required to accept payments exchanged electronically - via mobile phones, handheld computers and even wristwatches. The Singapore government believed that their move to require merchants and others to accept e-money would help the economy by cutting the high cost of handling cash. At the time of the writing of this report, this project seems to be on hold as consumers perceived need for cash remains strong.

1.3. There are significant variations within the European Union

The usage of cash varies considerably from one country to another. Figure 4 shows that at the end of 1999, the value of cash in circulation varies from EUR 538 per person in Finland to EUR 1,597 in Germany. 1999 figures are used to avoid the distortion effect resulting from the euro cash changeover; during which hoarded currency was progressively returned from early 2000 (see fig. 2).

Figure 4: Banknotes and coins in circulation outside credit institutions

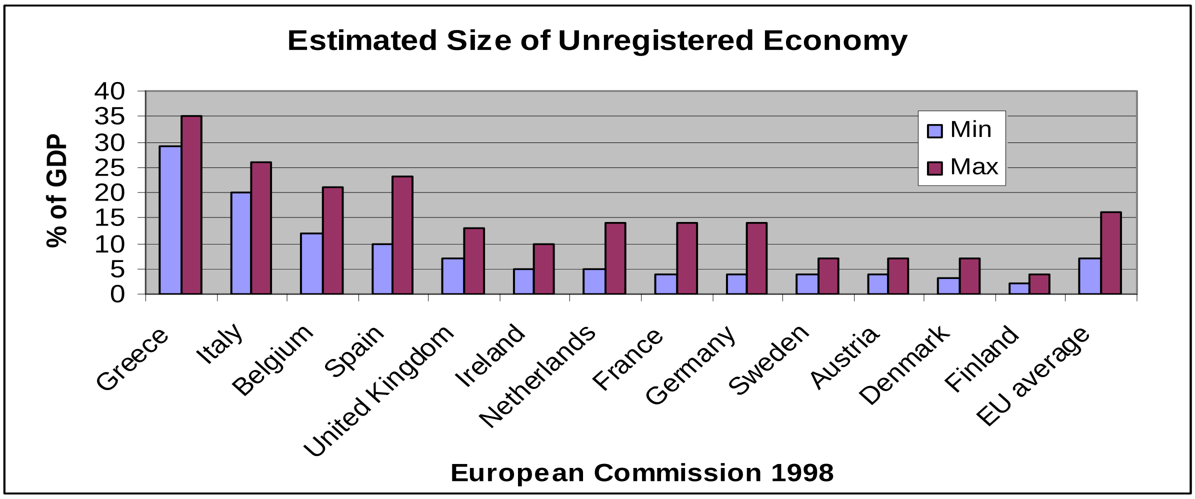


Source : ECB Blue Book 2004

The volume of cash in the economy is influenced by the attitudes towards technology as well as the efficiency of other payment instruments. Finland for instance has developed a very efficient GIRO system while France has amongst the highest card usage in Europe.

At the other end of the spectrum, the level of non-registered, "black market" economy has a positive influence on cash usage, as shown in figure 5.

Figure 5:



1.4. Drivers for the use of cash

The three traditional drivers for the use of cash are anonymity, convenience and cost.

Anonymity is naturally one of the specific features of cash. Unlike any other payment instrument, cash leaves no trace. It is often said that as long as taxes, drugs and sex are around cash use will continue to grow.

However, anonymity also applies to those who are seeking legitimate privacy. This could become an increasingly important factor as banks, retailers and public authorities are developing sophisticated tracking systems for non-cash payment systems. Card issuers are adding loyalty applications to the chip cards; transit companies are looking at storing trip histories for frequent traveller discounts. The prospects appear quite daunting for those concerned about protecting the secrecy of their spending.

Convenience refers to a variety of features which include the universality of cash: cash is accepted – almost – everywhere. Another outstanding feature is transaction speed. Auchan the large French retailer has indicated that cash remains the fastest payment instrument at their tills with an average transaction time of 20 seconds versus 44 seconds for cards and 50 seconds for cheques. The Dutch National Forum[2] on Payment Systems has determined, on the basis of samples the following transaction times: cash 19 seconds, debit card 26 seconds, e-purse 14 seconds and credit card 28 seconds.

The cost of cash naturally depends at which point of the cash cycle you are located. However, for consumers cash is perceived as free. For the majority of retailers cash is also perceived as free since they do not calculate their internal handling costs.

Another driver is that cash has a magical aura for many consumers. The movies have represented this on numerous occasions with bundles of notes glowing in a suitcase or scattered on a bed like some aphrodisiac. According to a survey carried out by Alliance & Leicester in the United Kingdom in 2004, 15% of respondents believe they will use less cash in 5 years but 10% will expect to use more. Surprisingly, the younger people are more likely to think they will be using more cash with 27% of the 16-24 year-olds expecting to increase the amount of cash they use.

According to research carried out by the Central Bank of the Netherlands[3] “There are at least two psychological explanations for this bias regarding banknotes. First of all, according to the *cognitive dissonant theory,* people feel more comfortable when they can feel positive about their own banknotes. A second explanation may be found in the theory of *'ich nahe - ich ferne'* products. Often, people hold a more personal opinion of the products they use close to their body such as clothes, jewellery and mobile telephones: the *ich nahe* products. Bridges, busses and satellites are examples of *ich ferne* products, they are further removed from the human body and people care less about their design. By this theory, coins and banknotes are *ich nahe* products - people carry them on their body! Therefore, people may have strong feelings about the national design of *their* coins and *their* banknotes. “

[2] In *Survey on the Costs Involved in POS Payment Products*, National Forum on the Payments Systems, March 2004.

[3] In *A method for measuring the public's appreciation and knowledge of banknotes*, Hans A.M. de Heij: De Nederlandsche Bank NV, Amsterdam, The Netherlands; 23 - 25 January 2002

1.5. Threats to the continued use of cash

The increase in internet commerce will likely reduce the share of cash as a payment instrument as this is one area where cash payments are impossible or at best unpractical. As consumers increasingly shop online, they are led to use non-cash payment instruments ranging from credit and debit cards to electronic money.

Governments have added new laws making it harder and harder to make large payments in cash. Security, anti-terrorism financing and money-laundering concerns have led public authorities to make it increasingly difficult to deposit a suitcase of cash at a bank.

The continued growth in payment card usage poses a further challenge to cash. Banks and card issuers are aiming at increasing card usage and are naturally targeting cash as their main competitor. This threat is particularly true in countries where card payments are below average, such as Germany and Italy. Further developments such as self check-out and automated vending could further accelerate this trend. Payment cards look like a far more serious challenger to cash than more recent alternatives such as e-purse or mobile phones, as the network externalities required to achieve a critical mass of transactions are a significant barrier to enter the payments market.

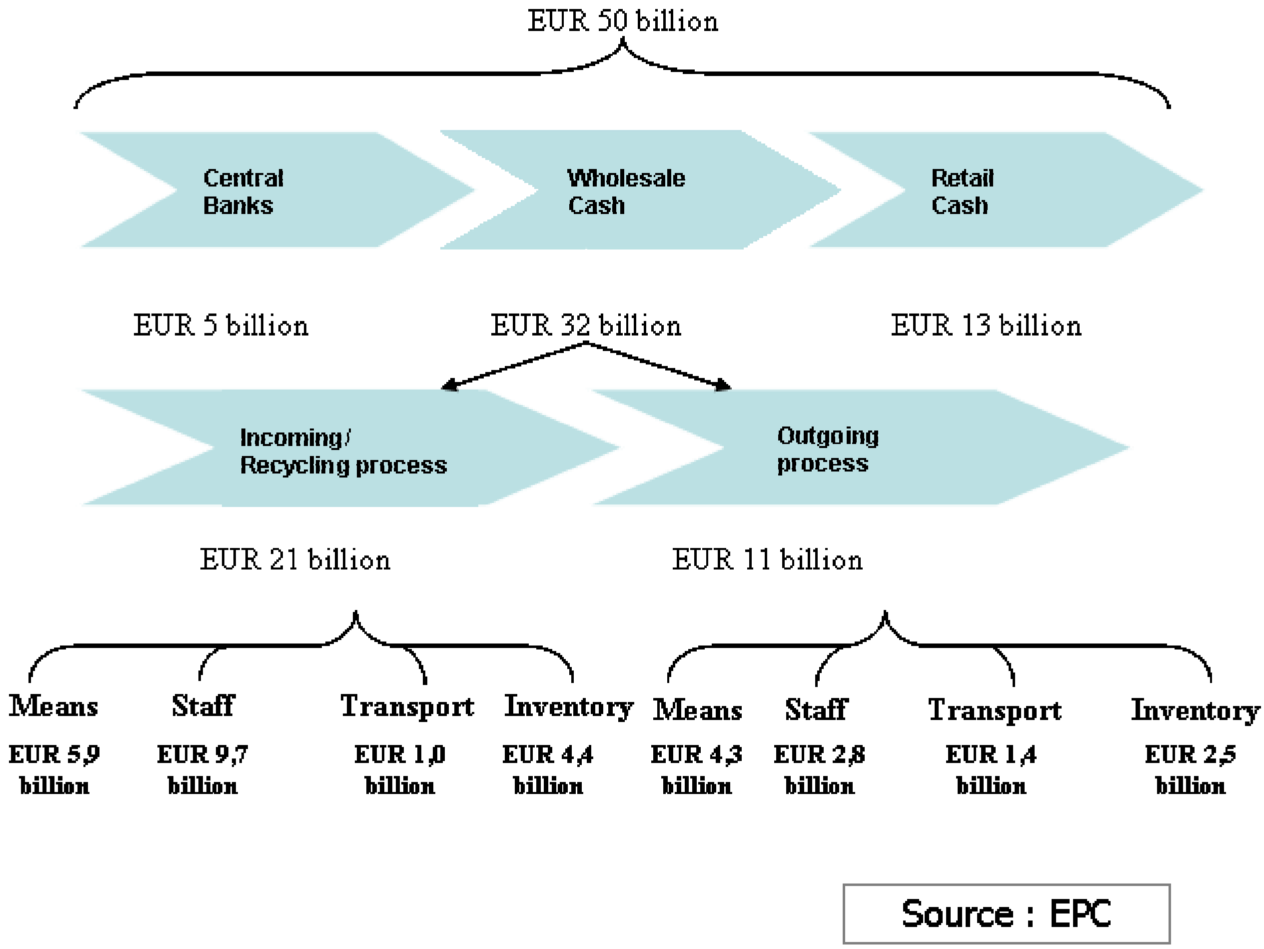
1.6. The cost of cash

The cost of cash is naturally a significant issue for the banking industry. Banks incur sizeable costs because they are both ends of the cash cycle. These costs have largely contributed to the development of the payments industry.

The European Payments Council[4] has estimated the cost of cash at no less than EUR 50 billion for the European Union i.e. 0.4 to 0.6% of GDP. 65% of the total cost, i.e. EUR 32 billion is borne by the banking industry. These figures are in line with the findings of the Dutch National Forum on the Payment Systems, which estimates that the overall social costs involved in making cash payments ran to 0.47% of GDP.

[4] The European Payments Council was founded in 2002 as the platform mandated by the European banking industry to establish the architecture, instruments and processes for the Single European Payments Area. The EPC is structured around 5 working groups including one on cash.

Figure 6: The cost of cash to society



In France, the overall cost of cash for a bank branch is estimated to range from EUR 25,000 to EUR 73,000. This represents a cost of approximately EUR100 million for a large bank.

In Germany, the total costs incurred by the credit industry for the supply supplying cash at some 50,000 bank branches in Germany average EUR 130,000 per branch[5], i.e. a total cost of EUR 6.5 billion per year for the banking industry.

The survey of the Dutch National Forum on the Payments System further concludes that when comparing cash to other payments instruments, the electronic purse is the most economical, whatever the transaction amount; cash is more economical than debit cards for amounts lower than EUR11.63 while debit cards are more economical for higher amounts.

The key aspect however when looking at the cost of cash from a banking perspective, is that in the vast majority of cases banks are unable to generate revenue through the delivery of cash services. For various cultural, regulatory and commercial reasons, banks are unable to pass on the cost of cash to the end users.

This situation is evolving slowly however as banks are increasingly applying cash handling charges, particularly in the United Kingdom.

[5] The National Cash Plan Germany, Zentraler Kreditausschuss, March 2004

2. The evolution of the cash cycle

The cash cycle represents the complex flow of notes and coins – and also of information – from central banks to bank branches and ATM networks, then to retailers and consumers and back again. The European cash cycle is facing significant change, driven by the following factors:

- Central banks are reducing their involvement in the physical processing of currency.
- Commercial banks are increasingly looking at outsourcing their cash-related activities
- The new European framework on recycling is likely to profoundly reshape the cash cycle.

2.1. The withdrawal of Central banks from cash processing

Cash handling by Central Banks has undergone a fundamental transformation over the past few decades. Traditionally, Central Banks are responsible for safeguarding the currency in circulation. This includes providing the economy with cash, ensuring banknotes are counterfeit-free and the withdrawal of notes which are unfit for circulation.

For a long time cash was processed manually. In the eighties, Central Banks moved towards semi-automatic processing systems. In the late nineties, automatic machines with higher throughput speeds were deployed. Increasing automation and reducing the number of processing stages also led to significant staffing economies and therefore cost savings.

The introduction of the euro facilitated the comparison of Central Bank services and costs in the euro zone. Following this Central Banks have been reconsidering their role in cash operations. To what extent does the Central Bank need to be involved in the cash cycle? What tasks are required to maintain a counterfeit-free currency, which is fit for market requirements? In parallel, considerations of cost efficiency have become the focus of attention for almost all Central Banks and it has become increasingly necessary to look at the services provided in terms of cost effectiveness.

Cost savings can essentially be attained through:

- The reduction of the range of services offered
- Concentration on larger processing units
- Avoidance of duplicate operations in the processing chain.

The Bundesbank has adopted the following measures:

- Adoption of cost-free standard services as instructed by the Governing Council of the ECB on 30 November 2000. In the case of banknotes, this includes the inward and outward delivery of packets and bundles and in the case of coins, the cost-free inward and outward delivery in foil packs or containers.

- Coin processing is limited to the issuance of newly minted coins, meeting marginal stock requirements, processing of counterfeit coins and implementing small-scale random quality checks on containers returned to the bank. This amounts to a withdrawal from coin processing but the Bundesbank has no intention of withdrawing from note processing and due to the interest in maintaining a high quality of circulation for banknotes. Additional services will be provided subject to cost-covering fees.

- In parallel, the Bundesbank has reviewed its branch network and has decided to close 34 small branches and reduce the number of large branches from 66 to 47 by 2007. Simultaneously, the larger branches will concentrate on the most efficient processing systems and will extend their operating hours.

On the other hand, the Central Bank of Italy appears to be a counter-example as it has actually opened new branches since the euro has been introduced. This is justified by the fact that by law, the Bank of Italy is required to have one branch per administrative region and new administrative regions have been created.

2.2. New Central Bank models

Some Central Banks such as the Norwegian Central Bank or the Austrian Central Bank have adopted more far-reaching plans and have outsourced significant parts of the processing chain. In the case of Norway, this has included the destruction of notes. The underlying idea is that the banknotes are already processed in private cash centres, where they are checked for authenticity and fitness; when notes are checked again at the Central Bank, this represents a duplication of tasks.

Figure 7: The evolution of Central Bank models

Centralized	Laisser-faire	Delegated	Privatized
Controls the full cash cycle Sets rules & processes Majority of cash recounted	Controls parts of the cash cycle Part of cash recounted	Focus on monetary policy – stays out of the cash cycle except for note issuing & shredding Monitoring functions	Controls parts of the cash cycle Part of cash recounted
Germany France Belgium Italy	Spein Portugal The Netherlands	UK Ireland	Austria Sweden Norway

In 1998 the Austrian National Bank bought 96,4% of the shares of GSA, the balance is now owned by some 42 Austrian commercial banks. GSA is committed to providing efficient currency management services and logistical and technical support using co-sourcing agreements. GSA offers centralized clearing of Austrian banknotes and coins, foreign currency and travel checks for banks as well as cash services for business accounts at high security processing sites.

A study in Austria had shown a savings potential of up to 35%. This would give an estimated saving in 2004 of EUR 14.5 million.

In the United Kingdom, the Bank of England introduced in the early eighties the Notes Held to Order (NHTO) scheme. It enables designated banks to hold stocks of notes on behalf of the Central Bank, in their own cash centres, off balance sheet. The scheme reduces the need or transport between commercial bank and Bank of England cash centres. The main commercial banks started to develop extensive cash handling operations of their own, for their internal requirements but also to offer them to other banks.

In 2001, the NHTO scheme was replaced by the Note Circulation Scheme with a two-year transition period. The new scheme was designed to improve the efficiency of the note issuing and circulation process, thus saving money for the taxpayer. Notes held by the banks are allocated to separate inventories: firstly, the Note Sorting Facility is an allowance given to the commercial banks for their role in maintaining the currency supply chain; secondly, the bond, in which the structural surplus of notes is held by the commercial players, off-balance sheet. Banks are subjected to a penalty for withdrawing or depositing notes from/into the bond within ten days of having deposited or withdrawn them.

In the Netherlands, there is an ongoing debate as to whether to adopt a Notes Held to Order System.

2.3. The recirculation of cash

In January 2005, the European Central Bank adopted a common framework on the recycling of euro banknotes. It enables banks and professional cash handlers to recirculate notes on condition that they have been checked for authenticity and fitness, using machines and processes which have been controlled by the Central Bank. This framework follows the Terms of Reference for the use of Cash Recycling Machines (CRMs) adopted in May 2002.

Recycling is expected to have an impact in the following areas:

- Cash centres will need to deploy the adequate equipment and ensure its maintenance
- Savings are anticipated in terms of transport and insurance
- From the society point of view, recycling should reduce cost of cash by avoiding the duplication of tasks
- For the banking sector, recycling will represent additional work
- For the banking industry, this could modify the competitive landscape;

Recycling will likely act as a catalyst towards existing trends as it will reduce the role of the Central Banks in the cash cycle, increase the automation of processing, and increase the workload for the private sector.

Most Central Banks are still preparing the guidelines according to which they will control the recirculation of cash. The major concern is the impact on the quality of notes in circulation. Therefore, commercial banks and CITs have adopted a wait-and-see attitude.

One of the key questions, however, is whether recycling will take place at the bank branch or at the cash centre. Advocates of branch recycling argue it would contribute to further shorten the cash cycle. However, it would require a balance between incoming and outgoing flows, in value and per denomination. On the other hand, this would require re-insourcing processing at the branch while the majority of banks have been striving to withdraw cash from the branches.

In any case, recycling will require significant investments to acquire new equipment to count and sort the notes and also for the reorganisation of processes. These investments will not happen overnight and these changes are likely to happen gradually.

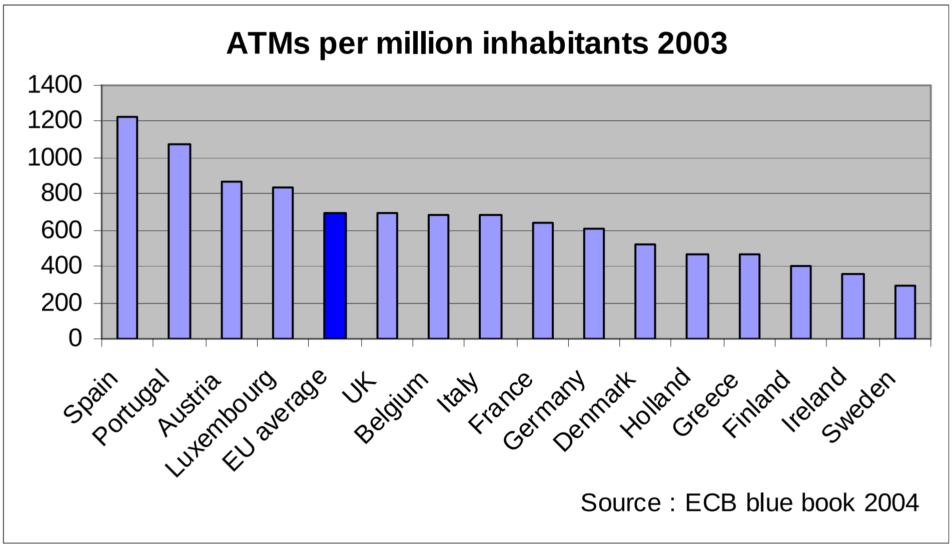
2.4. The automation of retail distribution

Automatic Teller Machines now represent the most important channel for the distribution of banknotes to the general public. In the United Kingdom, the Association for Payment Clearing Services – APACS – estimates that 51% of cash was distributed through ATMs in 2002 and forecasts this figure to grow to 74% in 2012. They have undeniably become the most frequent contact point between the bank and its customers.

ATMs have radically improved the convenience of cash for the customer by offering 24/7 access to cash at a very large number of locations (see fig 6). They have contributed to transform the efficiency and the productivity of the branch bank and have significantly improved security and facilitated the development of a more open environment.

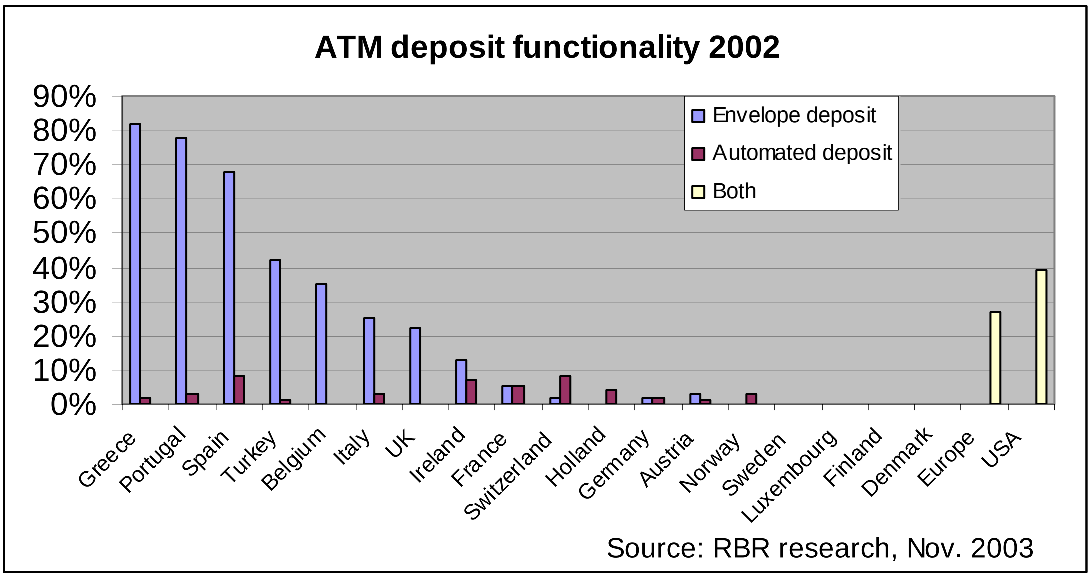
Further, the expansion of ATM networks has enhanced the convenience of cash and reduced potential interest rate losses by increasing accessibility to cash closer to point of sale. This has historically for the first time reduced the costs of cash use in payments.

Figure 9:



While ATMs have established themselves as the primary source of cash, branches are still mostly used for deposits. In Japan, 80% of the ATMs incorporate a deposit facility, versus 39% in the USA and 29% in Europe. The European Payments Council estimates that the overall cost of deposits amounts to EUR 21 billion.

Figure 10:



In 2002, the European Central Bank issued terms of reference for the use of cash recycling machines within the euro zone. Many banks are currently testing recycling ATMs at pilot locations.

2.5. The Single European Cash Area

Traditionally, Central Banks were the sole guardian of their own currency. The euro has led to a crucial change for the 12 countries of the euro-zone. Article 105 of the Treaty on the European Union assigns the Eurosystem the mandate to promote the smooth operation of payment systems. However, neither the Treaty nor the European Central Bank statutes contain specific provisions for the role of Central Banks in the cash cycle.

Significant differences remain in the way the various countries of the European Union handle cash. This makes it impossible to render cash services under the same conditions in different countries. The European Payments Council is calling for a harmonisation of these rules and the establishment of a level playing field. One major obstacle however are the security-related regulations which remain a national prerogative.

The Eurosystem is entrusted with the mission of circulating banknotes. It is currently reviewing its responsibilities and role in the cash cycle. These harmonisation efforts do not aim at establishing a single “one-size-fits-all” policy for cash operations. National Central Banks will have to decide how they position themselves within the cash cycle. Sovereignty regarding the organisation lies with the national central banks.

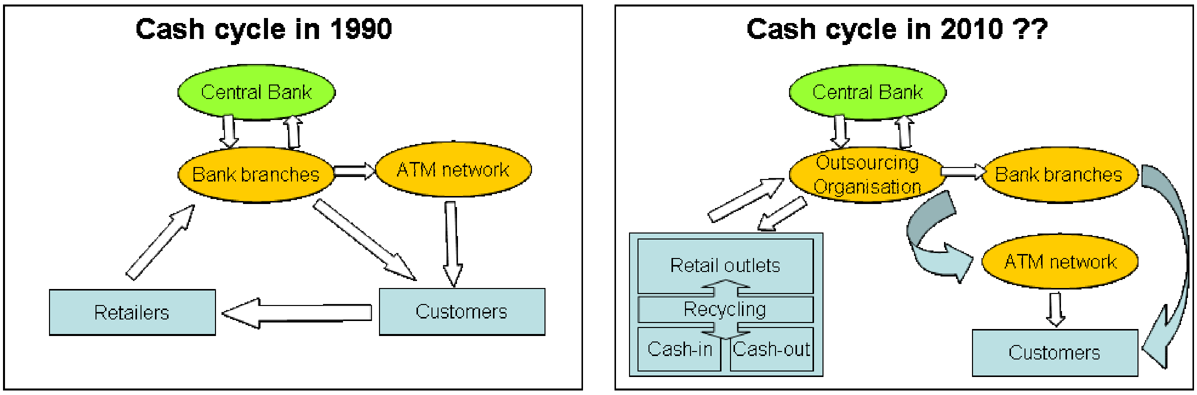
It is obvious that National Central Banks are adopting different organisational models, including within the euro-zone. Time will tell which is the most efficient; however the Eurosystem does facilitate the comparison of cost and services.

3. The organisation of cash within the bank

Banks have deployed different models for managing cash, some of which are quite complex particularly in the large financial institutions. Responsibility for the management of cash within commercial banks covers many areas. None of the banks interviewed for this research mentioned having appointed a Head of Cash to co-ordinate and oversee cash-related activities throughout the organisation. This poses significant challenges to the banks, both for the running of cash as a business as well as for the precise identification of the costs and revenue associated to cash.

3.1. The trend towards outsourced processing

Figure 11 : The evolution of the cash cycle



Throughout Europe, the vast majority of banks are opting for the outsourcing of wholesale cash processing. One notable exception in Europe is the Royal Bank of Scotland, which has maintained its own cash centres.

- Société Générale

For ten years now, Société Générale has been gradually externalising cash handling activities. Today, the bank no longer owns cash centres; the maintenance of its ATM network is fully externalised; cash deposits at the branches are no longer counted. This strategy aimed at withdrawing from an activity which has a low added-value and to improve the security of bank branches. The main issue for the bank is the dependency on its external providers. The bank is required to prepare contingency plans to insure continuity of services

- SCM – Securitas Cash Management

Securitas Cash Management (SCM) was founded in July 2001 as the result of a joint venture between the cash processing businesses of Securitas UK, HSBC and Barclays Banks. It now processes approx. 40% of all the UK's cash deposits and have plans to increase its share. SCM own 11 Cash Centres and 6 Coin Centres across the UK.
Securitas speeds up the process of counting and verifying deposits, allowing swift and secure bank account crediting. SCM have invested in a network of large rapid and highly accurate counting machines. All SCM cash centres operate fully integrated IT systems to ensure the total security and control of all customer deposits, as well as detailed management reporting.

According to HSBC costs have been reduced by around 15-20% annually, with the added benefit to the bank that it no longer needs to invest in capital equipment for this job – Prior to outsourcing HSBC had spent over USD12 million in a five year period, when they had introduced high speed processing.

- HypoVereinsbank

HypoVereinsbank (HVB Group) entered an agreement with Giesecke and Devrient which covers the operation of an automated cash centre, control of ATM management processes and strategic consulting on the future development of cash management operations at HVB.

G&D has undertaken to operate the strategically important cash centre in Munich for HVB. In future, all currency from this area will be processed at the G&D Munich cash centre. "We expect the alliance with Giesecke & Devrient to deliver enhanced quality and reduced costs in cash service processes, in particular through deployment of specialist knowledge and innovative technologies", said Rainer Zorbach, Vice-President for Group Shared Services in the HVB Group, stressing the importance of up-to-date cash management for his organization.

The agreement covers complete cash management for ATMs, cash processing, and supplying branches with banknotes and coins in multiple currencies; For HypoVereinsvank, this arrangement has resulted in cost savings of approximately 15% as well as improvements in the quality and speed of processing. The aim is to achieve same-day counting within the centre.

3.2. Cash processing is becoming increasingly capital intensive

Traditionally, cash processing is a labour intensive activity. The development of automatic processing systems has made it possible to achieve a significant rationalisation effect. Central Banks are now implementing multi-denomination processing. These systems are being increasingly used by private cash handlers. As banks have been outsourcing the processing to CITs they have been increasingly improving the productivity through automation and economies of scale.

In spite of all the improvements made over the last ten years, the overall level of automation in cash processing still compares rather unfavourably with other industries; this is the case for instance for CIT companies where the tracking systems for valuables is still far from the level of information currently supplied by special delivery companies such as DHL or UPS in the handling of small parcels.

Explanations might be found in some deep rooted reluctance to see cash processing from a strictly industrial point of view and be ready to handle cash as efficiently as one does with books, automobile spare parts, or any other kind of goods which need to be delivered in small quantities to a large number of locations. In particular the information streams have not evolved and it appears that there are significant opportunities for efficiency improvements and savings to be achieved through the reconfiguration of information systems. Most cash handlers are still far away from a seamless integration with the banks' information systems.

The frontier is then mostly psychological and one may expect that significant improvements will come when the overall cash processing cycle is analysed and organized from a purely industrial point of view. One major incentive to do so might actually come from the ever increasing responsibility placed upon banks in the implementation of anti money laundering procedures.

The design and implementation of large scale industrial cash processing systems do imply large investments which will probably both increase the outsourcing process and accelerate the consolidation of the cash processing sector around a limited number of key players.

3.3. Consolidation of the CIT industry

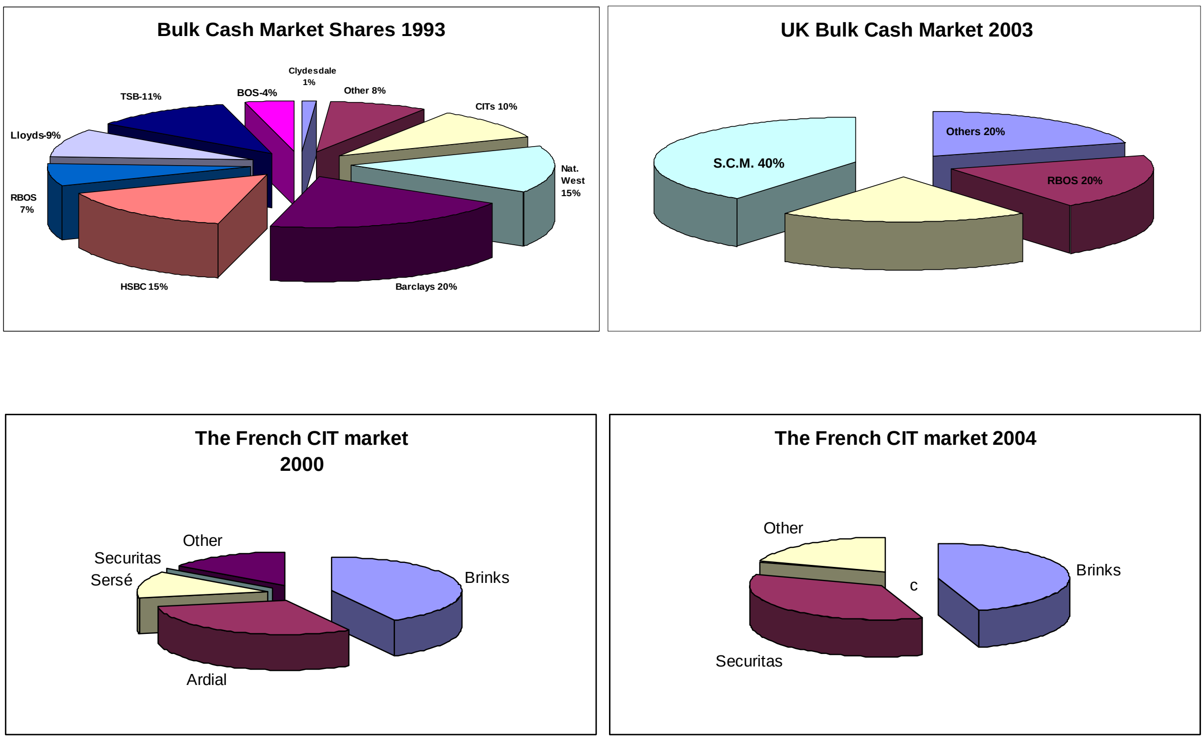
The Cash-in Transit industry includes three key segments:

- Transport: transportation of notes and coins either by armoured truck or using alternative transport systems
- Processing : sorting, counting, authentication and packaging as well as the corresponding reporting
- Management of ATM networks: replenishment of ATMs and first level maintenance.

The major European CITs are offering the full range of these services, and sometimes beyond. In France, Brink's has entered a partnership with Diebold and are in a position to offer full ATM maintenance.

There is an opposition between countries which have undergone consolidation, such as in the United Kingdom or France and those which remain fragmented, such as Germany and Italy and where CITs have only started processing recently.

Figure 12 : the consolidation of the British and French CIT markets



In Germany the federal structure of the government and the Bundesbank has been replicated at the CIT level which explains the high number of local companies with approximately 100 companies offering transport and processing services. Also, the number of banks in Germany is higher than the European average. However, the move towards consolidation has been initiated.

Italy seems again to be an exception as there are over 600 CIT companies, most of which operate on a regional basis and are only marginally involved in cash processing.

Currently the majority of commercial banks have outsourced their cash processing activities to C.I.T. organisations. There has been some consolidation which has reduced some costs. The profitability of this business is only known to these organisations and when the contracts are due for renewal, all parties will need to review the benefits of continuing the contracts further.

The banks may wish to introduce productivity targets into contracts, whereas the cash processors may want to improve profitability to finance future capital investment.
Unless margins are improved, it is difficult to see the cash processors being able to invest sufficiently in new technology to significantly improve efficiency and ultimately drive down costs.

It would seem unlikely that the banks will want to take back this cash processing as they no longer see this as their core activity and have seen significant savings to date.

Consolidation has also resulted in the reduction of the number of cash centres, as processors have been concentrating on larger and more efficient centres. This raises logistical issues as it increases transport distances. The situation becomes more worrying as traffic congestion worsens.

3.4. Cash is central to retail banking

There is a consensus according to which banks cannot abandon the distribution of cash. For the majority of consumers, access to their money in form of cash is a core element of the banking relationship. However, banks have been focusing their attention towards reducing the cost of cash; little attention has been paid to using cash to improve the overall delivery of banking services and as a factor of differentiation.

Cash justifies the existence of ATM networks. Banks have invested heavily in these networks over the past decade. While some machines offer new functionalities such as mobile telephone top-ups, ticketing, advertising… cash withdrawals continue to represent the bulk of the revenue derived from ATMs. ATMs have now become an important distribution channel for the banks and in many cases a profit centre.

In the United Kingdom, there are 20,000 fee-charging ATMs which have collected £ 140 million in fee revenue in 2003, an increase of 133% on the previous year according to data compiled by Nationwide

Typically, banks draw a third of their revenue and a significant share of their profits from payments. And notes and coins remain the most prominent payment instrument. Currency is often regarded as competition to other payment instruments but actually it is a natural complement. The average consumer does not use cash or a card but uses cash and a card, and possibly cheques, transfers, etc…In many cases, the card is actually used to withdraw cash.

Cash offers the unique opportunity for banks to meet their clients. In the eighties, with the development of branch automation a number of banks moved towards a “cashless branch” concept by separating the sales area from the ATMs. Some banks however are reconsidering their position, as moving cash out of the branch has led to fewer customers visiting the branches.

In the USA, the New-Jersey based Commerce Bank has invested USD 10 million to install “Penny Arcades” in each of its 270 bank branches. These machines are free-to-use coin deposit machines for both customers and non-customers. For Commerce Chairman and President Vernon W Hill. “Unlike most banks, we view Commerce as a retail business and we are constantly looking for new ways to enhance our customers’ retail experience. The tremendous response to the Penny Arcade machines is definitely helping us accomplish that goal”. In 2003, the Penny Arcades handled 750,000 transactions which totalled USD 72 million

Appendix A : List of interviewees

- **M. Aguilera** . . . . *Responsable Coordination Caisses*, Auchan Italie
- **Dick Barbier** . . . . *Vice-President Commercial Payments Cash & POS*, ABN AMRO
- **Paul Bègue** . . . . *Senior Executive Risk Management,* Crédit Agricole
- **Alain Blanchot** . . . . . . *Responsable Produit Espèces,* Société Générale
- **Sebastien de Brouwer** *Advisor*, Febelfin
- **Jeff Carr** . . . . *Managing Director*, SCAN COIN UK
- **Christian Deleume** . . . *Directeur Filière Service Clients*, BRED Banques Populaires
- **Jean Giraud** . . . . *Directeur Technique*, Group 4 Falck Securicor
- **Didier Girona** . . . . *Responsible Organisation Secteurs Caisses*, Auchan
- **Antti Heinonen** . . . . . . *Director Banknotes*, European Central Bank
- **Manfred Köckhuber** . . *Vice-President*, HypoVereinsbank
- **Ralph Krause** . . . . *Head of Cost Management Division*, DSGV Association of German Savings Banks)
- **Patrick Lagarde** . . . . . *Directeur Général Adjoint*, Brink's
- **Frank Lambe** . . . . *Head of Cash Development*, Alliance & Leicester
- **Gilles Lardy** . . . . *Director Banknote & Coin Issuance & Circulation*, Banque de France
- **Torsten Lüdemann** . . . *Geschäftsführer*, SCAN COIN – PERCONTA
- **Carolien Martens** . . . . *Payments Advisor*, Platform Detailhandel
- **Alberto Mezzetto** . . . . *Responsable Normative di Sicurezza*, Global Banking Services Sicurezza Procedure e Vigilanza, Unicredit
- **Michel Morin-Favrot** . . *Expert Fiduciaire près la Direction générale*, La Poste
- **Francis Ravez** . . . . . . *Secretary General*, European Security Transport Association
- **Phil White** . . . . *Leeds Cash Centre Manager*, Bank of England
- **Leonardo Zia** . . . . *Managing Director*, SCAN COIN Italia

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