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Payments Remain Fundamental for Banks and Central Banks

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Abstract

Is commercial banking in the traditional sense obsolete? Are we in fact witnessing the emergence of a fundamentally new era of finance and payments intermediation? These questions are raised in this paper. Instead of a formal analysis, an attempt is made here to approach these questions from a historical perspective and a practitioner's standpoint. Which factors have in the course of time shaped the role of commercial banks and are present trends in the market eroding the foundation of traditional commercial bank functions to the extent that we are actually entering upon something that is new in a fundamental way.

Of course, we will not get definitive answers. The conclusion arrived at in the paper is that banks will remain important intermediators of financing and payments, and that these functions will constitute the core of banking also in the foreseeable future. This however does not exclude structural changes in the banking sector as a whole and in the activities of individual banks. On the contrary, these are essential to the survival of banks.

The paper analyses prospects for new media of exchange replacing deposit money. It is concluded that, as regards asset transfers in the capital market becoming a dominant medium of exchange (in the spirit of the New Monetary Economics), there are serious impediments.

Payment flows have increased sharply at the same time as the whole banking sector has been making the adjustment to a more competitive situation. This has accentuated the role of the central bank as a payments service provider to the banks and particularly as an overseer of payment systems. The central bank's role as payment systems overseer is likely to receive even greater emphasis in the future. The central bank's oversight mandate requires further specification as regards the payment systems to be overseen and how oversight relates to banking supervision.

Our analysis demonstrates also that current trends in the market are not weakening but rather are strengthening the traditional interrelationship between banks and the central bank in the field of payments. The roles of the banks and the central bank still need fine tuning. It is concluded that payment systems can best serve the rest of the economy if the prime responsibility to develop the systems is left to the private sector, while the central bank has a recognized position as a public policy entity that will do what is necessary to achieve a sufficient level of safety and efficiency.

Key words: payments, oversight, medium of exchange, bank, central bank

Maksujenvälitys säilyy tärkeänä pankeille ja keskuspankille

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Tiivistelmä

Onko aika kulkemassa perinteisen pankkitoiminnan ohi? Onko rahoituksen ja maksujen välityksessä tapahtumassa perustavia muutoksia, jotka merkitsisivät siirtymistä aivan uuteen aikakauteen? Yritän tässä selvityksessä löytää vastauksia näihin kysymyksiin. Tarkastelen pankkitoimintaa historiallisen kehityksen valossa ja keskuspankin politiikan suunnittelussa – viimeisten kymmenen vuoden aikana maksujärjestelmien alueella – pitkään toimineen näkökulmasta.

Päädyn arvioon, että pankit säilyttävät asemansa rahoituksen ja maksujen keskeisinä välittäjinä. Rahoituksen ja maksujen välitys muodostaa vastaisuudessakin pankkitoiminnan ytimen. Tämä ei tietenkään sulje pois rakenteellisia muutoksia pankkisektorissa ja yksittäisten pankkien toiminnassa. Päinvastoin pankkien selviytyminen edellyttää tällaisia muutoksia.

Uusi informaatiotekniikka ja pääomamarkkinoiden kehitys eivät ole kokonaan poistaneet pankkien informaatioedun merkitystä rahoituksen välityksessä, eikä ole näköpiirissä, että niin tulisi käymään.

Pankkitalletuksiin perustuvia maksuvälineitä korvaavien uusien maksuvälineiden läpimurrolle on huomattavia esteitä. Sijoitusrahasto-osuuksiin tai muuntotyypisen sijoitusvarallisuuden siirtoihin perustuvan maksuvälineen arvo voi vaihdella voimakkaastikin, mikä on huomattava este välineen yleistymisen kannalta. Lisäksi verkko vaikutukset (network effects) suojaavat nykyistä pankkitalletuksiin perustuvaa maksujärjestelmää.

Selvityksessä kiinnitän huomiota myös siihen, että sama informaatiotekniikan kehitys, joka uhkaa kaventaa pankkien toimintaedellytyksiä, antaa pankeille mahdollisuuksia puolustaa ja vahvistaa asemaansa maksujen välittäjänä. Valmiit yhteydet sekä kuluttajiin että yrityksiin antavat pankeille hyvät edellytykset kehittää maksu- ja rahoituspalveluita tukemaan Internet-kauppaa ja siten luoda tavaroitten ja palveluiden kaupan, maksuliikenteen ja rahoituksen tehokas ja luotettava kokonaisuus.

Päädyn myös siihen, että pankkien ja keskuspankin toiminnallinen riippuvuus säilyy vahvana. Tämä perustuu siihen, että tarjoamalla tili- ja likviditeettipalveluita keskuspankki täydentää pankkien toimintaa, samoin kuin siihen, että keskuspankin tehtävänä on yleisvalvonnallaan osaltaan edistää maksujärjestelmien moitteetonta toimintaa.

Asiasanat: maksut, yleisvalvonta, oversight, maksuväline, pankki, keskuspankki

Contents

Abstract	3
Tiivistelmä	4
1 Introduction	7
2 Evolution rather than authoritative steering has shaped the payment systems	8
2.1 Payments: an integral part of deposit banking	8
2.2 Private cooperative arrangements: the emergence of quasi central banks	10
2.3 Central banks as service providers to banks	11
2.4 Conclusion	15
3 Oversight: an integral part of central banking	16
3.1 Financial stability	16
3.2 The role of the central bank	18
3.3 Oversight and macroprudential supervision	20
3.4 Conflict of interest/distortion of competition?	22
3.5 Monetary stability	25
3.6 Conclusions	25
4 Challenges to banks' financing operations and payment intermediation	26
4.1 Less scope for maturity transformation	26
4.2 Erosion of the banks' position in payment intermediation?	27
4.2.1 Alternatives to deposit money	27
4.2.2 Mutual funds	28
4.3 Factors favouring the banks' position in payment intermediation	30
4.3.1 Network effects – a barrier to innovations	31
4.3.2 A common medium of exchange lowers transaction costs	31
4.4 Conclusion	32
5 The role of the central bank in respect of payments is growing, not diminishing	34
5.1 Policy choices	34
5.2 Environmental factors	35
5.3 Conclusions	36
6 Conclusions	37
References	39

1 Introduction

The origin of commercial banking, and central banking as well, can be traced to the payment function. What we now call commercial banking started to develop as a response to the needs of commerce for a vehicle to execute payments in an efficient and safe way. Central banks developed gradually as a complement and service provider to commercial banks in the field of payment transmission and liquidity management. The provision of payment services constitutes an integral part of the functions of commercial banks as well as central banks.

Later on, other functions gained in importance for banks and perhaps even more so for central banks. Developments in payment media and transmission of payments have certainly been rapid, particularly in the post-war period. But, this was long considered a concern for technicians and marketing people. However, the situation began to change some ten years ago. For a number of years now, payments have been a policy issue, on the agendas of commercial banks as well as central banks.

There are two main reasons why payments started to attract the attention of policy makers. On the one hand, rapid growth in payments traffic had increased the importance of payments as a source of revenue, payment-related risk exposure and risk awareness, not least with regard to cross-border payments. On the other hand, structural changes in the financial sector, along with technical innovations, posed the threat of disintermediation of payments. Does this mean that just when payments - after long remaining in the background - have again risen to the forefront of banking, the provision of these services is slipping out of the hands of the banks?

In this paper, I will raise this question and bring together the arguments that have been presented in the ongoing debate on the question. I will do this by first analysing the fundamentals underlying the emergence of banks, which have up till now guided the activities of banks.

In light of the historical development, there is a functional link between payment services provided by banks and the operations of the central bank. In recent years, however, much attention has been given to two new aspects of central bank activities that relate to payments. In addition to the traditional net settlement services, central banks have begun to provide transmission services for customer payments to banks on a gross basis. Beyond these operational functions, recent years have seen increasing emphasis on the central bank's activities as overseer of payment systems. Both of these new aspects have elicited harsh words from the banks. The central banks have been accused of unjustified competition with the banks and of pursuing conflicting goals.

These accusations have caused some confusion in many central banks. Although the central banks view these activities as logical and well founded responses to current developments in the field of payments, the central banks have not, perhaps, been able to present convincing arguments for their case. This question, I believe, leads us to an analysis of the very bases for central banking. Only after such an analysis will it be possible to evaluate the possible implications of changes in the environment on the role of central banks in the field of payments.

Also the involvement of some central banks in the transmission of retail payments has been called in question.

2 Evolution rather than authoritative steering has shaped the payment systems

2.1 Payments: an integral part of deposit banking

The trinity of deposit taking, lending and payment intermediation has comprised the core of banking for at least 500 years. There are different views as to the initial driving force behind this constellation. One can at least think of deposits as the starting point. With a higher degree of specialization in production and accumulation of wealth, there arose a need for safekeeping of precious metals and coins to match future consumption demand. This laid the foundation for the use of claims as a medium of exchange and granting credit to borrowers. In this context, reference¹ usually made to goldsmiths who issued receipts for gold that was left with them for safekeeping. These receipts later circulated from hand to hand as a medium of exchange. Noting this type of circulation, goldsmiths proceeded to issue receipts without previous deposit, ie to extend credit. According to this view, lending activity and payment services developed as corollaries to deposit taking.

Warehouse receipts provide another example of paper claims in circulation in place of commodity money itself. Also in this connection, one can talk about co-production of deposit, lending and payment services linked together by efficiency gains.

However, goldsmiths did not evolve into bankers until the middle of the seventeenth century in England, and banking-type services started to emerge in warehouses around the same time. As we know, banking developed much earlier and was closely associated with trade. Medieval banking can be traced to money-changers who provided payment services to merchants and other wealthy people. A merchant deposited coins with a moneychanger and in return obtained a claim on the moneychanger. The merchant could then use the claim to make cashless payments by instructing the moneychanger to transfer funds to the payee's account. The payment order had to be made 'on the spot'. The payer and payee simply went to the payer's bank where the payer gave an oral order of transfer. Over time, depositors were allowed to overdraw from their accounts, which further facilitated trade. Merchants were willing to accept payment in bank funds, since the incoming funds could then be used to repay the merchant's own overdraft loan or to pay for his future purchases.

This story of the origin of banking emphasizes the role of payments as the initial driving force. Funds were deposited with the banks to enable cashless payments, and lending evolved in response to payment needs. Gradually banks expanded their lending activities from trade-related overdrafts to investment lending.

This development reflected market forces calling for more efficient and safer means of making payments. Transferring of balances over accounts was a more efficient and safe way to execute payments, provided the bank was robust and reliable. The liquidity service in the form of overdrafts, which enabled the buyer to settle his payment obligation to the seller with finality at the moment of trade, was an arrangement for overcoming uncertainties deriving from the undeveloped state of contract enforcement in the private market. It was soon under-

¹ See eg Kindleberger (1987).

stood that a necessary prerequisite for these gains in efficiency was confidence in the bank providing the services and confidence in the system as a whole. As a consequence, already in very early times there were in many cities legal restrictions on the right to conduct business as moneychangers.

With deposits being repayable at par and part of their asset holdings in illiquid form, the banks were subject to the risk of runs. In medieval times the banks had no alternative sources of liquidity other than drawing down reserves. Compared with the situation to day, reserve ratios were high in those days, ie a large share of deposits received was not lent out. The ratio of reserves (coins) to deposits varied widely from 30 per cent up to roughly 50 per cent. A strategy of holding too much of the bank's portfolio in reserves could on the other hand erode depositors' belief in the bank's profitability and limit the bank's ability to create liquidity through overdrafts. In Bruges, the authorities sought to resolve this dilemma through a system of partial deposit insurance. Under this scheme, banks were required to employ the services of private insurers. These were typically wealthy merchants of longstanding reputation in the community, who promised to make good on a bank's obligations in case of bankruptcy, up to a pre-specified limit.

At an early stage of banking, market needs lead to development of means to handle situations in which payee and payer have accounts in different banks. This was of particular importance for trade in international fairs attended by merchants from different cities. Banks transferred balances among themselves by holding deposits in each other and accepting payment by book-entry transfers. Settlement of banks' net positions occurred only occasionally.

The initial force behind banking may well have been different in different financial centres and at different times. Different interpretations of the origin of banking elucidate different aspects of banking. Regardless of how they got started, the core banking activities very early on came to be comprised of three basic functions: deposit taking, lending and payments intermediation. In spite of the fact that banks today provide many other services as well and that banks are no longer the sole financial intermediators between depositors and investors or the sole payments intermediators between buyers and sellers, these activities have continued to form the core of banking up until the present day, and banks have retained a strong position in these areas.²

The reason for banks' success in respect of this constellation of basic functions lies in the complementary nature of these functions. From the banks' viewpoint, the deposit serves as collateral for providing the payment service. The collateral coverage is 100% whenever the funds available for the execution of the transfer fully cover the amount of the transfer, which eliminates customer risk related to payment execution. When the transfer is not fully covered by funds, the bank has a comparative advantage in extending an overdraft loan to the customer, since previous experience in collecting payment commissions provide the bank with valuable information on the customer's credibility.

The applicability of confidential information obtained in managing a customer's payment obligations can be extended to the granting of investment loans to the customer. The record of the customer's deposit balance helps in assessing the customer's credit worthiness. A bank possessing such information can provide

² According to the First Banking Directive (77/780/EEC) 'credit institution' means an undertaking whose business is to receive deposits or other repayable funds from the public and to grant credits for its own account. Money transmission services are mentioned in the list of activities pursued by credit institutions in the EEA states according to the Second Banking Directive (89/646/EEC).

loans at more advantageous terms than a lender not having such information. Information obtained from records of a deposit balance and payment flows gives the bank an advantage in assessing credit risks. Standard theories of the banking firm attribute the maturity transformation capability of banks specifically to this information advantage.

The complementary nature of deposit taking, lending and payments intermediation has given banks an advantage in providing each of these services. But their complementary nature also means that success in each activity is dependent on the other activities. If the prospect for one of the activities deteriorates, the others will also suffer. Together they comprise an integrated whole, the economic value of which is greater than the sum of the individual components.

2.2 Private cooperative arrangements: the emergence of quasi central banks

Market forces gave rise to private cooperative arrangements, which in many respects can be viewed as forerunners of central banks operating under state guarantee.

The execution of a payment instruction between two customers who have accounts in different banks gives rise to an interbank claim. To settle such a claim, the payer's bank – in a world of commodity money – transfers an amount of gold/coins corresponding to the payment to the payee's bank. The banks could achieve an efficiency gain by predepositing a certain amount of their reserves with each other. This was accomplished by holding deposit balances in each other. Instead of transferring commodity money corresponding to every single payment transaction between two banks, the payee's bank debited the deposit account of the payer's bank. The interbank payment obligation was settled by a book entry. When the trade flow was reversed, the account was credited by the appropriate amount.

Alternatively, a system of credits could be used. Banks associated via their customers' trade flows could open credit balances on each other. The payee's bank accepted a deposit at the payer's bank corresponding to the payment. When the trade flow was reversed, this deposit could be used to settle the interbank payment obligation, and if the available deposit was not sufficient, the payee's bank provided a credit by booking a deposit for the payer's bank. This mechanism, called 'netting by novation', required settlement in commodity money only occasionally.

Liquidity bears a cost no matter whether one is using borrowed or own funds. You can achieve a further efficiency gain by minimizing the amount of liquidity needed for the smooth flow of payments. To achieve this, banks developed multilateral cooperative arrangements. In a multilateral setting, the offsetting nature of payments between banks could be better utilized. For this purpose, a central counterparty was needed, against which the multilateral net position of each participant could be calculated.

Furthermore, banks in the same geographical area had an economic incentive to concentrate their reserves, which were needed as liquidity for payment services provided for their customers.³ The banks could manage their liquidity in

³ In 1888 Edgeworth noted the existence of economies of scale in holding reserves. See Redish (1993), p. 783.

a more efficient way by keeping these reserves in one place. In response to these market forces, usually one bank in each economic area assumed the role of a central counterparty (reserve bank) to the other banks.

Efficiency gains could be attained by means of cooperative arrangements also for check collection. In the nineteenth century private clearinghouses emerged in many countries to replace bilateral check collection with collective net settlement. To economize on shipments of currency and coin, clearinghouse members started to keep the bulk of their reserves in the vaults of the clearinghouse, receiving in return clearinghouse certificates. Instead of shipping currency and coin to settle, member banks could simply pass around clearinghouse certificates. These clearing houses acted in this respect as reserve banks.

As a result of private cooperative arrangements, centralized institutions emerged, which provided reserve accounts, clearing and settlement and, to some extent, liquidity services.

In a world of commodity money and a reserve ratio of one hundred per cent, a privately run centralized system would have been sufficient. The sole purpose of centralization was to save on shipping costs and so become more efficient. There were however at an early stage, strong incentives to reduce the reserve ratio, ie to have part of the assets in a form that was less liquid but capable of generating earnings. This process loosened the connection between the money stock and its commodity backing, a process that went on for several hundred years, and finally, with the breakdown of the Bretton Wood system in 1970s, ended up with a pure fiat money. The last tie to commodity money - the gold standard - had been broken.

2.3 Central banks as service providers to banks

The tendencies to centralize reserves and minimize the reserve ratio provided the driving force behind the evolution of private reserve banks into public institutions – ie proper central banks. The efficiency gains had to be counterbalanced by arrangements for underpinning confidence. First, the banks had to be confident that their claims on the central counterparty were in good hands and that they were not subject to a solvency risk. Second, only a central bank with the right to issue publicly guaranteed claims on itself could satisfy a widespread demand to convert deposits into currency. The desire to reduce the reserve ratio and economize on resource costs of metallic backing of the money supply led to the centralization of reserves and the need of a lender of last resort – a central bank.

Proper central banking developed only gradually. In fact, most central banks were not established specifically because of the tasks with which they later became associated, ie payment finality and stability services, not to mention monetary policy. In most cases the reason was more prosaic and was related to financial advantages of the government and/or the need to develop or unify the monetary and financial system. In Germany, Italy and Switzerland, the establishment of a central bank was linked to the political unification of the country. Establishment of the Federal Reserve System can also be seen as part of a unification process, as one function of the Federal Reserve Banks was to centralize cheque clearance. The primary purpose, however, was to support financial stability. Bank supervision was from the onset an explicit task of the Federal Reserve System.

However, once such government sponsored banks had been established, their central and privileged position within the system, their command over the bulk of the nation's specie reserve, and their ability to provide extra cash, ie notes,

by rediscounting commercial bills led to their becoming bankers' banks. Charles Goodhart has noted that 'in most cases of the Central Banks founded in the 19th century the full ramifications of their role as bankers' bank were only dimly perceived at the time of their founding; these functions developed naturally from the context of relationships within the system'.⁴

These early government sponsored banks, no matter the specific reason for their establishment, over time became the vehicles for proper central bank functions, the need for which derived from market developments.

The founding of central banks in selected countries

1668	Sveriges Riksbank	As a result of an operation to rescue the only bank in the country
1694	Bank of England	To support the credit of the government against the privilege of being the sole chartered joint stock bank
1800	Banque de France	To promote the growth of trade and industry by granting credit and issuing bank notes
1811	Bank of Finland	To become the only bank in Finland after the country had been separated from Sweden (1809)
1816	Austrian National Bank	To restore the value of the national currency
1876	Reichsbank	To centralize and manage metallic reserves and to facilitate and improve the payment system after the unification of the country and the money
1882	Bank of Japan	To restore convertibility of notes, bring order in currency issuance and to facilitate the circulation of currency
1893	Banca d'Italia	To unify note issuance and monetary conditions
1907	Swiss National Bank	To unify the nation's monetary system
1913	Federal Reserve System	To support financial stability and to make the collection and clearance of checks more efficient

The emergence of central banks took different paths in different countries, but the underlying forces were the same. What I want to emphasize in this context is that central banks developed as a result of market forces and government intervention aimed at making the payment system efficient and robust. Private initiatives can go a long way in making systems efficient and safe, but sufficient confidence in the system can be attained only in collaboration with the sovereign. From the viewpoint of payment systems, the deposit banks and the central bank were to constitute an integrated whole, which was the basic infrastructure for payments intermediation.

Besides the supply of settlement services in final money and reserve account facilities, intraday liquidity and RTGS services are nowadays important services that central banks generally provide to banks.

Banks need liquidity also for reasons other than those related to unfavourable reactions by depositors and other creditors. Banks must have recourse to liquid funds to bridge the timing of outgoing and incoming payments. Especially payments related to securities trade transactions require good liquidity, both in terms of amount and immediate availability. There are basically three ways to respond to these liquidity needs. The banks can have liquid assets of their own or they have recourse to borrowed funds provided by either the market or the central

⁴See Goodhart (1989).

bank. Normally all three are used, although there is growing emphasis on the central bank as a source of the liquidity that is needed for smooth payment flows.

Banks that net their mutual payments provide liquidity to one another by implicitly accepting claims on each other. These claims vary during the netting period and are settled only at discrete intervals at the end of each period, usually at the end of the day. In a multilateral arrangement with a clearinghouse as the central unit, the netting process produces continuously updated credit and debit positions vs the clearinghouse.

A claim resulting from the netting process generates an interbank credit risk if customers' accounts are credited before corresponding payment cover is transferred between banks. As a result of technical developments and automation of payment transfers in the post-war period, banks began to process payment instructions separately from the clearing and settlement process. In the context of competition in providing services to customers, this meant that the so-called settlement risk associated with netting could be substantial, between participating banks in bilateral netting and between banks and the clearinghouse in multilateral netting.

Banks have not always paid much attention to these risk positions. There are several reasons for this. Debit/credit positions emerge automatically as a result of payment flows. These intraday positions have not always been consciously viewed as debit and credit positions. Rather, attention was almost solely focused on end-of-day net balances. One should also note that yet in the 1960s and 1970s payment-related risk exposures were on the whole smaller than they are today. Payment flows, especially cross-border flows, were much smaller and banks operated in a more sheltered environment, with cartels and relatively strict segmentation between geographic and functional areas. As a result of recent trends toward economic liberalism, banks have encountered tighter competition and a wider range of competitors. Today not all counterparties have necessarily known each other for decades, and the way of doing business has become more combative. As a result, payment-related risk exposures came into focus some 10 - 15 years ago.

During the course of the 1980s rapid technological change and deregulation, which was manifested in a remarkable increase in commercial and financial integration of the world economy, contributed to an explosion in numbers and values of payments, both within and across national borders. The manifold growth in payment flows at a time when the financial sector had become more fragile implied greater risks related to payments. Moreover, cross-border payment arrangements lack the homogeneity of national systems with regard to the jurisdiction, technology, currency and singleness of the relevant central bank.

There are no statistics that would show in a coherent and standardized manner how payment flows have developed over time. Various indicators suggest growth rates that are at least two or three times that of GDP. For instance, between 1979 and 1991 the average annual growth rate for SWIFT message traffic was 11% per member bank and twice that in total. In value terms, the growth rates were much higher.

The value of payments is a multiple – in some countries a very large multiple – of GNP. The ratios of annual value of transferred funds to GNP and to population rose particularly sharply in the 1980s.

Table 1. Ratio of annual value of transferred funds to GNP, selected countries

	UK	US	FR	JP	IT	DE	FI
1983	28	39	29	12	4	11	3
1988	28	79	60	19	8	89	6
1990	49	89	33	71	18	61	13
1993	44	86	45	101	30	73	18
1995	42	84	38	98	32	63	17
1998	54	89	68	105	42	70	14

Sources: BIS, ECB, Finnish Bankers' Association, Bank of Finland

Table 2. Annual payment transactions per capita, USD 1000, selected countries

	UK	US	FR	JP	IT	DE	FI
1983	228	548	237	115	24	115	35
1988	413	1555	992	443	111	1734	123
1990	839	1977	688	1681	341	1237	356
1993	713	2120	986	3406	516	1725	303
1995	806	2350	1032	4001	610	1890	424
1998	1269	2871	1764	3128	870	1933	351

Sources: BIS, ECB, Finnish Bankers' Association, Bank of Finland

In this situation the European central banks defined a number of measures for increasing the stability of payment systems⁵. One of these was to start providing RTGS services to banks with the aim of maximizing the systems' share of large-value payments.⁶ Liquidity needs in a gross settlement system are however more explicit. To avoid gridlock situations, the central banks assumed responsibility of providing intraday liquidity to the banks against adequate collateral. In other words, the central banks decided to provide a mechanism by which banks could transform illiquid assets into liquid ones, which could then be used to cover payment obligations on a real-time basis.

The principal reason for developing RTGS services was clearly stability. But the central banks also wanted to enhance efficiency by providing final intraday settlement and public intraday credit lines. In private netting systems with decentralized risk controls, participation criteria and bilateral lines of credit can be used in a discriminatory way. A public RTGS system can be viewed as a swift and 'democratic' alternative to private arrangements. Customers not only demand more payment services but they also want those services provided more expeditiously than before.

⁵ The document 'Minimum Common Features for Domestic Payment Systems', approved in 1993 by the Committee of EC Central Bank Governors.

⁶ Other measures were the regulation of access and the compliance of large-value net settlement systems with minimum standards set out in the Lamfalussy report

2.4 Conclusion

Banking business is continuously evolving. This holds for organizational structures of banking firms, instruments used, technical solutions, services provided, and business areas in which banks participate. In the 20th century there were banks running eg real estate firms and even travel agencies. The basic functions have, however, remained essentially unchanged over the centuries. And, reflecting this fact, the role of banks has always been vital for the rest of the economy, even after stock exchanges, insurance companies and investment funds had attained status as significant financial institutions.

With central banks, the situation is different. Central bank functions have evolved gradually and they have undergone fundamental changes over time that reflect the interplay between market forces and public policy. The public policy functions have ranged from providing financial support to the government to safeguarding price stability. In addition, the history of most central banks includes phases in which the bank was expected to develop or unify monetary conditions in the country, or to have a significant role in overall economic policy. Most central banks were initially highly active also in commercial banking. In fact, remnants of this phase are still present in a few central banks.

It is, however, interesting to note that central bank functions, over the years, have not only tended toward considerable harmonization on the global scale but have also converged on those functions that can be derived from market developments on the basis of economic theory. In the last two or three decades central banks have 'cleared the table' and streamlined those functions which technical developments and market forces postulate and economic theory ascribes to the central banks as their core functions, eg the promotion of monetary and financial stability. As a rule, treasury functions have been separated from central banks. Within the area of financial stability, large-value payment systems have assumed a prominent role.

3 Oversight: an integral part of central banking

The evolution from a pure commodity money system to a pure fiat money system took several hundred years. Step by step, the commodity backing of money became ever more indirect and remote until today's inconvertible and intrinsically useless paper money emerged. This gradual process of 'dematerialization' of money was the driving force not only behind central banks' monetary policy operations but also in respect of their payments and regulatory/supervisory activities. In fact, in an abstract sense the fiat money system is the common denominator for central bank operations in the areas of payment systems, monetary policy, and macro-prudential supervision. This does not mean that the mandates to pursue these activities are all equally clear and unambiguous.

3.1 Financial stability

Confidence in money as a medium of exchange and unit of account gradually became a policy matter. As the link to a commodity with an intrinsic value became weaker and weaker, it became increasingly important to underpin confidence in money via legislation, regulation and supervision. A two-tier system gradually emerged, comprised of central bank money and deposit bank money.

Confidence in central bank money was achieved by stipulating in the law that the central bank operates under the guarantee of the State. Payments made with central bank money were unconditional and irrevocable, ie they were final. Notes and coins issued by the central bank were made available to the general public for their payment needs, and deposit claims on the central bank could be used by the banks to settle their interbank claims. To secure general acceptance, notes and coins were made legal tender.

In fact, the concept of legal tender was adopted long before paper money became a common payment instrument. Already in the Middle Ages, coins in precious metals were proclaimed to be legal tender by the monetary authorities. Making coins legal tender went beyond the need to have an agent, often the sovereign, verify the fineness and weight of a lump of gold and stamp it. Typically, gold and silver coins were made legal tender at specific values expressed in terms of the unit of account. The monetary authority guaranteed that this money could be used in domestic transactions and that its nominal value would remain fixed. The payee could rest assured that he would be able to settle his own debts with the money he received in a transaction.

A closer examination of how the commodity money system worked in practice however suggests that its linkage to nature was not completely rigid. The sovereign could benefit from debasing the currency in terms of gold content while maintaining the nominal value of the coins, ie their value in terms of the unit of account. The concept of legal tender already in the era of commodity money contained an element of pure guarantee by the monetary authority unrelated to the substance value of the money.

However, the major part of the stock of money consists of liabilities of deposit banks rather than the central bank. In a modern economy that is wholly dependent on money as a medium of exchange, it is important that economic agents can also fully trust in the deposit money provided by banks. Economic agents

should not have to devote resources to investigate the soundness of the deposit money of different banks. Homogeneity and confidence in deposit bank money are achieved by convertibility at a fixed, one-to-one, exchange rate between deposit bank money and central bank money. But there is no automatic guarantee that this is the case. Convertibility rests on confidence gained in the market and supported by regulation and supervision. The payee must be confident that the banks remain sufficiently liquid, solvent and able to respond immediately to an order to convert deposits into cash. This confidence induces general acceptance of bank money. Lack of convertibility between deposit bank and central bank money would raise payment transaction costs.

Viewing deposit making as lending highlights the need to subject banks to monitoring and regulation. Seen in this light, the depositor makes a loan to the bank. The receipt for the loan, ie the deposit certificate, entitles its holder to reclaim the money on demand. Thus lending must be accompanied by rules and restrictions to protect the lender-depositor against the risk that the borrower-bank will not repay the loan. With a large number of small depositors, this regulatory/supervisory function can be executed more efficiently and economically on a collective basis, by the authorities. In other words, the public authorities perform a service that it would be too difficult or too costly for individual depositors to perform for themselves.

During the 19th century, banking expanded and developed in many countries under conditions approaching laissez-faire, characterized by a relatively free operating environment for banks, multiple note issuers, and the absence of a government-sponsored 'lender of last resort'. Bank failures occurred not only in response to economic shocks and recession but also for bank-specific reasons.⁷

The process of gradual dematerialization of money, which was driven by efficiency gains, created the need for regulation, supervision, and safety net arrangements aimed at promoting confidence in the deposit banking system. But is it unambiguously clear that precisely the central bank should be the public agency deeply involved in regulating and supervising the payment system in order to secure financial stability?

Along with the growing dominance of free market philosophy, academia has since the 1970s experienced a resurgence of interest in free banking. Discussions of the topic have dealt with the monopoly of money issuance and the fragility of banks. Some proponents of free banking argue that the historical record provides little support for the claim that free competition tends to destabilize the banking system.⁸ This view is based on the idea that when all actors; including depositors, counterparties, managers and shareholders of banks; realize that they are 'on their own', they exercise a much higher degree of care, which forces financial institutions to operate in a sounder and more prudent fashion. It is also pointed out that without public support banks have a strong incentive to privately develop cooperative systems for protecting their collective reputation.

The most fundamental argument against this optimistic view of free banking is that private arrangements may prove to be insufficient in extraordinary circumstances. And, if financial institutions actually maintained sufficiently large finan-

⁷ There is an extensive literature on free banking. A survey of experiences of free banking is presented in Kevin Down (ed;1992), *The experience of free banking*. An analysis of banking crises in Finland is presented in Risto Herrala (1999), *Banking Crises vs. Depositor Crises: the Era of the Finnish Markka, 1865-1998*.

⁸ Kevin Down (1992).

cial buffers, this would greatly impair their ability to contribute to economic welfare in normal times. Moreover, since it is clearly difficult for the authorities to refuse to grant assistance if the consequences - eg large scale failures - would be serious, free banking has not gained wide support among politicians.

3.2 The role of the central bank

The role of the central bank in regulating and supervising banks is a matter of appropriateness rather than definition. Those supporting heavy involvement usually refer to the central banks' comparative advantage in terms of information, on the one hand, and to risks related to their liquidity services, on the other hand. Those opposing central bank involvement in regulatory and supervisory activities argue that as far as payment systems are concerned the oversight function is not compatible with their operational activities. It is also said that the responsibility for macroprudential supervision may in certain situations conflict with monetary policy aims.

The creditor argument. We have seen that provision of liquidity to bridge gaps between incoming and outgoing payments is an essential service that central banks provide for banks in order to promote the smooth flow of payments. Besides the possible lack of synchronization of payment flows, individual banks may experience temporary liquidity problems because of disturbances in the management of liquidity. To prevent the cumulative effects of a disturbance from threatening overall financial stability, the central bank may decide to provide liquidity to the troubled bank. As long as the liquidity is fully collateralized, the extension of credit per se does not call for special monitoring or regulation and supervision. The same holds for normal monetary policy operations in which liquidity is supplied to banks. With collateral eliminating the counterparty risk, being a creditor is a weak argument for supervision.

Ever since the days of Thornton and Bagehot in the nineteenth century, central bankers have claimed that central banks should provide liquidity only to solvent banks and against good collateral. But we all know that this has not always been the practice, and most central bankers with long experience in dealing with the banks admit that there may be situations in which it might be considered appropriate to interpret the principle of solvency and full collateralization in a flexible way. In fact, Bagehot recommended that the quality standards on collateral accepted by the Bank of England should be relaxed in times of crisis.

In many countries for a long time in the post-war period, provision of central bank financing to banks was not generally done in accord with the principle of full collateral. The process of liberalization of the financial markets during 1980s highlighted the risk exposure that central banks encounter in such operations. And as we know, it is stated in the Maastricht Treaty (1992) that, 'the ECB and the national central banks may...conduct credit operations with credit institutions and other market participants, with lending being based on adequate collateral'.⁹

Although central bankers hesitate to state it publicly, most of them are not able to completely avoid deviations from the rule in extraordinary situations. In special circumstances, there may be adequate cause to deviate intentionally from

⁹ Against this background it is interesting to note that the Federal Reserve has chosen an alternative approach for intraday credits, ie pricing.

the rule¹⁰ and, more importantly, there may be cases in which a deviation becomes clear only ex post. Some countries have recent experience of how difficult it is in practice to assess the economic state of a bank in a stress situation.

The difficulties are both conceptual and practical. Clearly capital adequacy as defined in regulatory requirements cannot be applied as such. Regulatory capital standards are important elements in prudential policies pursued by the authorities. In fact, they are the cornerstone of bank regulation. In international work on bank regulation, a strong capital position is commonly regarded as the most important characteristic of a sound bank. But capital adequacy, as defined in the Basle Capital Accord of 1988 and now under review, was designed to indicate a bank's ability to absorb losses. The required capital should serve as a buffer against asset risks, assessment of which is based on increasingly sophisticated methods. The capital standards are not meant to measure solvency as such.

A bank is solvent when the net value of its assets and liabilities is positive according to the best assessment. But because of the very nature of banking, the assessment of net value is far from straightforward, since liabilities are fixed in nominal value while asset values depend on the economic situation. How should asset values be assessed? Obviously the value that could be attained if assets were liquidated immediately is not appropriate, as the bulk of bank assets are non-marketable, as they should be in true banking. And a major sell-off of assets for which there is a secondary market would in practice easily bring about a temporary slack in market prices. On the other hand, one can rightly question the extent to which it is appropriate to assume a gradual realization of assets and accept the influence of expectations as to future asset values on net value calculations.

In respect of the creditor argument, the central banks are in a somewhat awkward situation. They cannot readily rely on this argument without suggesting that 'easy' money would be available if it comes to a pinch, which is something that they want to avoid. The creditor argument is further eroded if they argue – as they sometimes do nowadays – that not all credit risks related to emergency lending should be born by the central bank but that the bulk of it should be born by the State.

The information argument. Whereas the validity of the credit risk argument is questionable, the information argument is more convincing but still not conclusive. Typically problems first show up in a bank's payment traffic and in its position vs the central bank. By managing banks' reserve and settlement accounts, the central bank automatically monitors continuously in real time the liquidity positions of individual banks. Furthermore, being active in the money market, the central bank receives first hand information on how each bank is perceived by the other market participants.

A sudden increase in a bank's demand for central bank financing is normally a signal that something is wrong. The reason could be a technical obstruction to the normal flow of payments, or the liquidity need might reflect more fundamental problems. In either case prompt decisions and measures may be required, not least in connection with liquidity assistance.

Traditional banking practices generally generate large open interbank positions, which require close monitoring of creditworthiness. Doubts about creditworthiness usually cause counterparties to take steps to reduce their credit expo-

¹⁰ Sveriges Riksbank stated in its Financial Market Report (1997, p.54) that 'In the event of a crisis that threatens stability, for example, the Riksbank is ready to take an active part in coordinated public efforts to overcome the crisis or mitigate its effects. *One* instrument for this is the possibility, as a last resort, of providing credit without full collateral in order to support liquidity.'

sure eg by shortening the average maturity of their claims on the troubled bank and by adjusting credit pricing. Being one of the major players in the money market, the central bank is in a position to notice these signals at a very early stage. The dynamics of a market heavily dependent on expectations and disposed to self-fulfilment of expectations can suddenly lead to a situation in which the funding problem becomes acute.

In carrying out its basic tasks as the monetary policy authority and settlement agent for the banks, the central bank automatically monitors the banks in a way that rapidly reveals possible disturbances in the market or in the performance of a single market participant. When a problem occurs, the situation has to be assessed virtually instantaneously and the authorities must decide very quickly whether extraordinary liquidity assistance should be provided and whether other measures are needed.

An assessment of the situation, the seriousness of the problem, and its consequences for the financial sector is possible only if the central bank has conducted continuous surveillance of the banks and the financial sector as a whole. The flow of signals produced by the monitoring process has to be interpreted more or less on a continuous basis. This implies that monitoring and macroprudential analysis must be closely integrated, which suggests a close link between these two activities also in terms of how they are organized. This provides a strong argument for having macroprudential supervision in the same organization as monetary policy operations, interbank settlement and liquidity services, ie in the central bank. Having macroprudential supervision in another organization would require very close cooperation between that organization and the central bank. They should be able to work together in this area as if they were a single organization.

3.3 Oversight and macroprudential supervision

We have seen that the historical developments in banking and payment systems have created a public need to promote financial stability, to maintain confidence in the monetary system and to protect consumers. We have also seen that the central bank has a role to play in these areas. But, there is no single answer to the question on exactly how regulation and supervision should be organized within the public sector. And accordingly, the role of the central bank varies from country to country, depending on historical factors and matters of judgement. In some countries bank supervision as a whole is organized within the central bank, in others a separate public body – a banking supervision authority - is also involved. At one end of the spectrum we have for instance Holland, Italy and the United States with bank supervision within the central bank. At the other end of the spectrum we have the UK, Sweden, Norway, Denmark and Iceland, to mention a few countries.

The position of the central bank vis-à-vis the government seems in general to be one of the factors influencing the organizational structure of supervision. Lately the emphasis on central bank independence in respect to monetary policy has been paralleled by claims to separate supervisory functions from central banking, which reflects a fear that central banks otherwise would become excessively powerful institutions outside normal democratic influence. The current trend is more in favour of separation than the reverse.

Even with a separate body for banking supervision, the central banks claim that certain supervisory functions should remain specifically with them. One set of

such functions is related to the payment systems, another to the soundness of banking in general. Those activities focusing specifically on payment systems are usually referred to as oversight and those concerning the soundness of banking in general as macroprudential supervision. Both concepts are difficult to define in a way that would separate them unambiguously from the rest of supervision. In fact, that can probably not be done, as these activities are closely interrelated and partly overlapping, and the boundaries between them are not fixed. Instead of precise boundaries, one should rather talk about areas of emphasis.

The overriding objective is the same in any case: financial stability and confidence in the monetary system. The central bank approaches this objective from a macroeconomic perspective while the banking supervision authority's approach is more microeconomic in nature. Thus the central bank analyses the performance of the financial institutions - primarily the banks - on an overall level. Special attention is given to interlocking claims among financial institutions and linkages between the financial sector and the real economy in order to detect risks that could threaten overall financial stability.

Macroprudential supervision covers not only financial institutions on the aggregate level but also financial markets, since wide and abrupt asset price movements easily undermine the stability of financial institutions directly or indirectly via their customers. Another specific reason for the central bank to keep an eye on the financial markets is that movements in asset prices may interfere with the implementation of monetary policy by affecting interest rates and wealth. And more generally, extreme asset price volatility - often reflecting extrapolative expectations - can have pervasive effects on market confidence and real economic performance.

Neither can the macroprudential supervisor be indifferent to individual institutions if a failure could give rise to broader systemic instability. It is only realistic to recognize that certain institutions are so central to the financial system that their failure could cause a systemic crisis.

Banca d'Italia has defined the scope of application of payment systems oversight as 'the infrastructure of the financial system designed to ensure the transfer of money between economic agents'.¹¹ The infrastructure includes technical, administrative and regulatory aspects of the system whereby financial transactions are managed and executed. And, as with prudential supervision, the aim of payment systems oversight is systemic stability. This means, on the one hand, that the overseer focuses primarily on payment circuits, whose proper functioning is important from a systemic point of view and, on the other hand, that oversight to an extent applies to individual banks. Since the infrastructure is basically maintained by the banks and the banks are the players in the system, problems in an individual bank, if large enough, may cause destabilizing shocks throughout the financial system.

An essential feature of payment systems oversight relates to the word 'system'. The transmission of payments requires a 'system' connecting payment intermediators and allowing for transfers of money between bank customers and between banks themselves. Inability of a bank to settle its payment obligation is immediately felt by its counterparties and may threaten even well managed institutions. The failure of one bank immediately generates losses to banks exposed to it in the settlement system. Oversight is largely aimed at promoting the design and construction of systems in such a way that they are able to contain temporary dis-

¹¹ Banca d'Italia, *White Paper on the Payment System Oversight*, May 1997 and November 1999.

turbances. The prevention of failure of individual institutions because of their activities in general is normally not seen as part of payment systems oversight proper.

The prime concern of the overseer is to maintain and promote confidence in the system. Payment systems should above all be robust. In the 1980s and 1990s central banks took a growing interest also in the efficiency of payment systems. There are two reasons for this. The first is that certain aspects of efficiency - in particular flexibility, implying the ability to accommodate changes in the environment - support robustness. The other is that efficiency in itself is considered a public good that can benefit from public intervention.

In most countries the role of the central bank as regards efficiency has not been so explicitly formulated as eg in Italy and Australia. According to the Italian 1993 Banking Law (Article 146), 'The Banca d'Italia shall promote the regular operation of payment systems. For this purpose it may issue regulations to ensure the efficiency and reliability of clearing and payment systems'. The Reserve Bank of Australia, under the new financial regulatory structure set up in 1998, has formal responsibility for the efficiency of the payment systems. The dual aim of stability and efficiency was formulated in the context of the European Central Bank as a task 'to promote the smooth operation of payment systems'¹².

Contributing to maintenance and improvement of the competitive environment is usually considered to be the best vehicle for attaining efficiency. Another important approach is to promote cooperation between system participants. Also, central banks with regulatory powers prefer to carry on a dialogue with the banks.

The historical focus of what we, for simplicity, may call microprudential supervision is depositor-investor protection via the setting of rules and standards and the verifying of individual institutions' compliance with the requirements. Developments in the market that have increased interdependencies between market participants have meant that bank supervisors are paying more and more attention to the functions of the banks and the market places in which the banks are active. With central banks not being able to be indifferent to the state of individual players, especially if they are large, and bank supervisors paying more and more attention to functions and marketplaces, the overlap between these supervisory activities have tended to expand.

Some overlap is unavoidable, and to this extent the macro and micro approaches are interrelated. These features of overlap and complementarity require coordination between supervision activities focusing on the financial system as a whole and those focusing on individual institutions, regardless of the organizational structure. The difference in focus as between investor protection and systemic stability is however so pronounced that there are good arguments for having the primary responsibilities for these two functions divided between separate bodies.

3.4 Conflict of interest/distortion of competition?

Concerns have been expressed that conflicts of interest could arise when the central bank acts as both overseer of private payment systems and provider of own payment services. It has also been asserted that this dual role distorts competition.

¹² Treaty of Maastricht, Article 105.2.

A conflict of interest could emerge only if the aim of supervision is different from the aim of participation. But that is not the case. Both activities are ultimately governed by an attempt to promote the safety and efficiency of the payment system, ie by a public goal. The profit motive is not the governing factor. It is a different matter that safety and efficiency, being closely interrelated, may be conflicting goals. Frequently, there is a tradeoff between safety and efficiency in the operation of payment systems. When that is the case, the central bank has to strike a balance between the two, giving priority to the attainment of a minimum level of safety.

The provision of payment services can distort competition. This depends on the what services the central bank provides and the terms on which these are provided. In the past many central banks provided certain payment transmission services directly to the non-bank public. This is still the case in a few countries. But it is usually only the government and governmental agencies that are allowed to have accounts with the central bank and only for certain kinds of payments. This practice is a relict of the past and cannot be considered a proper central bank activity. As a rule central banks only offer services that assist banks in executing payment instructions from their customers and in settling their interbank transactions.

The central bank should step in only when there is a public interest in doing so. Participation has to be seen as part of a public service to promote a safe and efficient payment system. Bruce J. Summers from the Reserve Bank has concluded from this that 'the operational role of the central bank should not be taken as a constant, but rather as a matter of policy choice influenced by environmental factors'¹³. Environmental factors like the rise in payment-related risk exposures explain the recent trend toward more central bank intervention.

Not surprisingly, the operating role of the central bank varies from one country to another. In Germany, for instance, the central bank plays a major operational role in the payment system. At the other end of the spectrum, we have the United Kingdom, where all payment systems are owned and managed by private enterprises. The central bank provides only settlement accounts and the medium for final settlement. It seems, however, that this arrangement does not prevent the central bank from exerting sufficient influence on the design of these systems.

The Bank of England is represented in APACS (Association for Payment and Clearing Services), in the clearing companies operating under the APACS umbrella, and in all policy-making committees. This, in combination with a recognized position as public policy representative and as settlement agent for interbank obligations, enable the Bank to accomplish its aims and set requirements. With this type of organizational structure, the starting point is that the initiatives and duty to develop systems lie with the banks. The Bank of England steps in only when needed and then only on a temporary basis.

Public involvement is always a question of policy choice. In a market economy, respect for market forces should be the starting point. Public intervention has to be backed by solid justification. Central banks must be favourably disposed to the benefits of placing operations in the hands of the private sector, and they have to be prepared and honest enough to continually question current arrangements.

In the provision of settlement services there are elements of competition. Either bank money or central bank money can be used in interbank payments, but

¹³Summers (1991).

only the latter is final money. Such finality is a valuable commodity highly appreciated by banks. In domestic payments, which comprise the bulk of all payments, central bank money is the predominant medium for interbank settlement. Cross-border payments, on the other hand, have traditionally been settled in bank money by debiting and crediting correspondent accounts.

The establishment of the European Central Bank System and the introduction of the common currency the euro - enlarged the monetary content of the word 'domestic' to cover the whole euro area. The new arrangements enable settlement also of cross-border payments within the euro area in central bank money over accounts with the central banks. This of course reduces the role of correspondent banking and the use of deposit money in interbank settlements. This represents a trend that will continue. Some banks that have been acting as quasi central banks for smaller banks view this as an intrusion in their business area. Most banks, however, welcome this central bank option as a complement to traditional correspondent banking. From the central bank's viewpoint, the purpose is to reduce counterparty risks in cross-border payments.

A central bank policy favouring real-time gross settlement (RTGS) of payments rather than settlement of net positions is also sometimes viewed as an intrusion in the business of deposit banks. Indeed, the policy pursued by the central banks can be viewed as such in two respects. First, there is the question of liquidity service. In netting systems, participating banks provide more or less implicitly the needed liquidity in building up bilateral or multilateral positions during the day. With gross settlement, there must be enough liquidity for each individual transaction, which the central bank ensures by providing intraday liquidity.

Central banks have assumed this positive attitude to provision of intraday liquidity because it reduces the likelihood of gridlock situations. As the Bank of England has recently pointed out,¹⁴ there is a temptation for banks to delay making outgoing payments until they have received incoming payments. This can cause a payments gridlock, ie a situation in which everyone is waiting for incoming payments. But if all market participants pursue this same behaviour on an individual level, the result is a welfare loss on the aggregate level¹⁵.

Secondly, in the euro-wide RTGS system, all instructions concerning a given customer payment are channelled through the central bank system together with the interbank cover. The same service is provided for domestic RTGS payments. In netting systems central banks are not in any way involved in the transmission of customer-related information. To transmit the payment instruction along with the cover is not necessary, but in operational terms this is a practical arrangement.

These are undeniably features that expand the activities in which both private banks and central banks are active. But as Mr. Padoa-Schioppa, ECB board member, puts it, 'if we accept that a well constructed monetary and banking system comprises not only commercial banks but also a central bank, then we have to accept that they do some of the same things.'¹⁶ The decisive issue is not what but why the central bank does certain things. The operations conducted by the central bank must serve a public function.

Furthermore, the central banks should design their pricing policies so as to avoid competitive distortions.

¹⁴ Bank of England Financial Stability Review, Nov 1999, p. 104.

¹⁵ Angelini (1998).

¹⁶ Padoa-Schioppa (1994, p. 38).

3.5 Monetary stability

In a pure commodity money system, the stock of money is exogenously determined by the supply of that commodity. The value of money in terms of its power to purchasing other goods is determined in the market. This was still very much the case under the gold standard with defined convertibility between paper money and gold. The money stock was anchored by natural resource constraints. The amount of notes in circulation could not rise too much in relation to the gold reserves, as this would have jeopardized the convertibility and value of money. As the link to a commodity became weaker and weaker and finally disappeared, the need increased for some kind of control of the supply of money.

In many countries there were legal restrictions on the extent to which the value of notes in circulation was allowed to exceed the gold reserves of the issuing bank. This was also the case in Finland. The amount of notes and coin the Bank of Finland could issue was limited by law to a certain ratio to its gold reserves. Finland provides a good example of how note issue was gradually detached from a 'natural' limitation. In 1859 foreign claims were also included in the note issue coverage. Later, in 1925, the limitation of money in circulation was extended to domestic bills maturing in three months or less. This explicit limitation on note issue was abandoned only in the late 1980s when the Act on the Bank of Finland was revised. By then the last bit of commodity convertibility had already been abolished. The amount of the money stock had become a pure policy matter.

The central bank has become the monetary agency that controls the money supply in order to ensure monetary stability. That the responsibility for monetary stability rests with the central bank is not disputed. The very privilege of the central bank to issue State-guaranteed (outside) money gives the central bank the power to regulate the total amount of money. The mission of the central bank is to manage the supply of outside money by creating and absorbing liquidity and via the multiplier effect influencing the amount of deposit bank (inside) money. The monetary policy mission is more or less by definition linked to the note issue privilege given to the central bank.

Both robustness and efficiency of the financial system are important for the conduct of monetary policy. Reducing systemic risk to a minimum allows the central bank to pursue monetary policy without needing to consider systematic consequences of refusing liquidity. And financial stability means there is no risk that widespread disturbances in the financial market would interfere with monetary policy. The linkages between monetary and financial stability have been increasingly recognized. Improving the efficiency of payment systems increases the responsiveness of the monetary system to the impulses from the central bank. Both from a safety and efficiency viewpoint, the central bank is primarily concerned with large-value payment systems, which are fundamental to the conduct of monetary policy.

3.6 Conclusions

From this one can conclude that legal stipulations, appropriateness and strong complementary links form the basis for the central bank's three basic functions: controller of the money supply, settlement agent, and macroprudential supervisor/payment system overseer. Together these constitute an integrated whole. It would not be possible to leave out one of the functions without seriously hampering the conduct of the other two.

4 Challenges to banks' financing operations and payment intermediation

So far, I have described the activities of banks and central banks from a historical perspective. A historical approach is useful as it clearly demonstrates the prominent role that market forces have had in shaping the activities not only of banks but also central banks. These activities, which still constitute the pillars of both commercial banking and central banking, are deeply rooted in history.

By properly executing these functions, the potential risks of conflicting goals can be avoided. They can all be geared to serve a common goal, monetary and financial stability, which is a public good.

A historical review also shows how the development of the basic functions of central banks reflects the evolution of money and commercial banking. Central bank functions have been shaped in response to developments in the market.

Another conclusion we can draw is that the strength of banks lies in the complementary features of their basic activities. Intermediation of funds between depositors and investors and between payers and payees constitutes a functionally integrated whole, which is the very essence of banking. Also the basic activities of the central bank are strongly interrelated and hence comprise a logical whole.

What is the relevance of these basic features today when the financial sector is in a state of flux. Are the structural changes we are now witnessing fundamental in the sense that there is reason to reassess the banking firm and the relationship between banks and the central bank. I believe, that although the changes in many respects are fundamental, they do not require a total revision of how we view the banking firm or what the central bank functions are in relation to the banks.

4.1 Less scope for maturity transformation

What then are these changes? The most important one is probably that the banks' competitive environment has changed from a sheltered one to a highly competitive one. The banks face increased competition on both the asset and liability sides of the balance sheet, and competitive pressures are coming from both within the sector and more importantly from non-banks. Finance companies have for decades been increasing their share of business and consumer lending. In addition, the commercial paper and bond markets have captured larger pieces of the business credit market. Asset securitization implies shifts from bank credit to capital market lending.

On the liability side, investment companies and their mutual funds have gained an ever-increasing share of what was traditional bank funding. Competition has extended also to payment systems. The most prominent, although still not very significant, example is the emergence of electronic money. This is of particular interest as it signifies an intrusion not only into what has been considered the exclusive business of the banks but also a monopoly of the central bank.

As a consequence, there has been a proliferation of specialized non-bank financial institutions. Increased competition, in turn, is putting greater pressures on bank profits, forcing banks to consolidate in search of scale economies and to innovate and expand into a broader array of potentially profitable services, in the search for new scope economies. Thus, the lines between banking and non-banking firms are blurring.

This does not mean that the complementary features of the traditional banking functions have become irrelevant, although new technology has reduced their importance. The most important factor behind the complementary features in banks' traditional services is information. New technology has dramatically reduced the costs of information gathering, processing and transmission, and thus shifted the border line between expensive private information and public information easily available at low cost.

This has consequences for the maturity transformation function of the banks. The provision of long-term corporate loans financed by short-term deposits is likely to play a less prominent role in the more market-oriented environment of the future. Large corporations will be able to increasingly replace traditional bank lending with commercial paper and other instruments sold directly on the market. But lending to smaller corporate customers is likely to remain a largely uncontested domain of commercial banks. Local presence is a key characteristic in this type of lending, and this feature tends to give banks competitive advantages, even in the presence of a more active financial market. Banks are also likely to preserve their role as fund providers for projects that are particularly difficult because of problems of asymmetric information. The provision of liquidity will also remain an important function of banks.¹⁷ The business area in which private information bestows a competitive edge has shrunk but not disappeared.

4.2 Erosion of the banks' position in payment intermediation?

4.2.1 Alternatives to deposit money

Banks execute payment instructions they have received from their customers by transferring deposit money from payer's account to payee's account. Conceptually the payment transaction consists of two components. One is the medium of exchange, ie wealth in the form of a deposit. The other is a technical infrastructure for registering the deposits in book-entry form and for carrying out the account transfers for settling the interbank debit and credit positions resulting from the transaction.

As to the operational/technical requirements, the provision of payment transmission services is not restricted to banks, albeit the threshold for entering the business may be high due to high fixed capital costs. The technical solutions themselves are available to everyone. But how about the other component, the wealth component? Are there viable alternatives to bank deposits that could be used as a medium of exchange?

Whereas until quite recently, bank deposits dominated household portfolios of financial assets, that will not be the case in the future. The shift of household savings from bank deposits to the capital market directly and especially indirectly via mutual funds, is to be considered a permanent structural shift that has in many countries only begun. In Finland the share of deposits of households' financial assets has diminished from three-quarters to one-half in ten years.

¹⁷ See Danthine et al (1999).

In principle, any form of wealth for which there is an accounting system based on bookkeeping entries could be used. To become a proper medium of exchange, it must however become generally accepted. Therefore, one requirement is safety, another is economic feasibility and a third is divisibility.

4.2.2 Mutual funds

In recent years there have been a number of papers¹⁸ speculating in the possible role of mutual funds in the transmission of payments. In particular, reference is made to the US market where mutual funds have grown in importance since the 1970s, and where investors in mutual funds can write 'cheques' against their mutual fund accounts. Some writers expect commercial banks to become obsolete in this field and that the mutual funds will take over as providers of liquidity and payment services. This would indeed pose a threat to core banking. Let us look more closely at mutual funds and the payment services they can offer compared to those provided by banks.

A mutual fund is a company that invests on behalf of unit holders with similar financial goals. Each mutual fund unit holder owns a percentage of the portfolio created and managed by the fund manager. Both the asset and liability sides of a mutual fund are fundamentally different from the assets and liabilities of a bank. The assets consist of marketable claims, including equity, bonds, commercial paper and money market instruments. On the liability side, the deposits of a mutual fund represent a claim on the asset portfolio held by the mutual fund. The depositors hold a direct claim on the assets of the intermediary. The return they earn is tied to the performance of the underlying portfolio. Consequently the unit holder-depositors do not receive a predetermined interest payment. The return is market related and so is the value of the claims. In other words, the value of the mutual fund liabilities fluctuates depending on the worth of the underlying assets.

Since the liabilities of the mutual fund bank are precisely claims on the underlying assets, a change in value is reflected immediately in a change in the price of a mutual fund unit. Therefore, it is argued that depository institutions organized on the mutual fund principle cannot, in contrast to traditional banks, fail if the value of their assets declines.

Over the last decade, a large and growing body of theoretical literature has focused on the problem of optimal financial institutions and their regulation. With the experience of recent banking crises and regulatory failures, there has been growing interest in what are usually called 'narrow banks', '100 per cent reserve banks' or 'collateralized banks'.¹⁹ Mutual funds represent one variant of the 'narrow bank' concept. But due to the equity nature of their liabilities, mutual funds realize gains from trade resulting from the transformation of illiquid assets into liquid liabilities that can be used for transaction purposes.

Many see mutual funds as essential components in achieving a financial markets structure that is efficient in the intermediation of both financing and payments without the systemic instability inherent in banking. In this view, conventional banking should be split up into mutual funds or some other form of narrow

¹⁸ See eg Scott (1998), Harper (1998), Gup (1998), Miller (1998), Schmidt (1998), Schanze (1998), Krueger (1999), Cowen et al (1990).

¹⁹ It is interesting that the last time economists advocated narrow banking was after the bank failures in the 1930s.

banking, on the one hand, and finance companies and other financial intermediaries, on the other. The finance companies and other financial intermediaries would fund themselves in the public securities markets rather than via demand deposits. Claims on mutual funds, rather than bank deposits, would be the vehicle for payments intermediation. In this model, payment and loan services would be separated, thus signifying a fundamental break with conventional banks.

This leads us to ask 'Are banks dead? Or are the reports greatly exaggerated'²⁰. In my view, improved investment opportunities and advances in information technology enable mutual funds to play a noteworthy role in combining savings and liquidity services. But many of the conclusions that have been presented seem to be too straightforward. One has to look closely at the payment service offered by the mutual fund and try to assess the competitiveness of mutual fund payment services relative to bank payment services.

Mutual funds presently offering payment services allow one to draw on the fund, ie to write 'cheques' against his account at the fund in favour of a named third party. But, to my knowledge, these are drafts payable through a commercial bank at which the fund maintains an account. What the fund does is to operate a chequing account with a bank and allow its shareholders to write cheques on that account, subsequently debiting the customer's mutual fund account by the par value of each cheque.

True, the fund provides a payment service. But it is not the case that the fund units serve as the medium of exchange. The medium of exchange is still deposit money. Deposit money is transferred from payer to payee. Fund units are only used as a savings instrument, part of which is transformed into money. Any form of wealth could be used in this way. What the fund provides is an efficient and practical way to transform productive illiquid assets into deposit money. Thus they offer a useful link between two activities - investment and payment - but not a new medium of exchange.

Fund shares become a medium of exchange only if the units themselves are transferred between accounts at the fund. The payee would have to be willing to accept a certain number of units in the fund as settlement of a payment obligation. Only then would we have true 'portfolio money'. There are probably no insurmountable technical obstacles to establishment of a portfolio money system. Without trying to explore more closely the technical requirements, I only refer to the sophisticated techniques used for securities settlement in book-entry form. Rather, there are a number of other factors, which are more critical in assessing the prospects for mutual fund-type assets becoming a proper medium of exchange.

First we have a 'practical' question concerning clearing. Just as a mono bank system is not a realistic alternative, there should be a number of funds making up the portfolio money system. And these funds should have a clearing system whereby they could settle their interfund obligations. Then customers with accounts in different funds could participate in the system.

The central party of the clearing system should itself be a mutual fund if the system is to be a fully-fledged portfolio money system. Then the individual funds would hold clearing accounts at the central fund, which would in turn hold a portfolio of traded securities. Final settlement of payments obligations among mutual funds would involve adjustments in their accounts at the central fund. In what has

²⁰ Referring to the famous quote by Mark Twain, Boyd and Gertler (1995) wrote a paper with this title.

been called the New Monetary Economics,²¹ financial markets are thought to reach a state of efficiency that would allow people to dispense with money. According to this line of thought, development leads to a barter system of a higher order: instead of conventional money, goods or assets are used for payments. Proponents of the New Monetary Economics claim that this sophisticated type of barter can be more efficient in a low transaction cost environment than monetary exchange. The mutual fund is viewed as the most promising means of realizing this scenario.

A hybrid version would allow the mutual funds to have clearing accounts with the central bank just as banks do. Then the ultimate means of settlement would however be a draft on the central bank rather than mutual fund units.

The portfolio money option raises fundamental questions concerning the essence of money. In contrast to bank deposits, mutual fund units, as we have seen, are not expressed in fixed nominal values. The value of a mutual fund unit is market related. The payee receives wealth the purchasing power of which depends on the market value of the mutual fund portfolio. And, as we have recently witnessed, the market value can vary substantially from day to day, even in times of relatively stable economic conditions. Furthermore, the medium of exchange is disconnected from the unit of account. What happens to the notion of money in such a system, where the value of the ultimate means of settlement can fluctuate in terms of some numeraire good or basket of goods, ie where the securities used to settle debts do not have fixed par values in terms of the unit of account?

In the extreme case, there would be no central bank and no outside money in this new world visualized by the proponents of the New Monetary Economics. A unit of account would nevertheless be useful in terms of efficiency. Most authors in this field maintain that a single unit of account would be desirable, but almost anything could serve as such, even a purely abstract unit that is not convertible to any goods or assets.

In both the old commodity money system and the present deposit money system, the medium of exchange is simultaneously the unit of account, ie the numeraire. Basic features explaining the success of deposit money are homogeneity and a fixed exchange rate vs central bank money. Both features are relevant from the efficiency perspective, as they reduce transaction costs. Technological advances directly affect only a part of the transaction costs.

4.3 Factors favouring the banks' position in payment intermediation

Proponents of the New Monetary School claim, in essence, that reducing transaction costs sufficiently makes a common means of payment superfluous. Not everyone is willing to accept this. In a recent paper Krueger (1999) argues that a common, standardized medium of exchange will also be used in a low transaction cost environment. His arguments are based on network effects, on the one hand, and the benefits of using a common medium of exchange, on the other.

²¹ The term was first used by Robert Hall (1982).

4.3.1 Network effects – a barrier to innovations

Technology readily gives rise to network effects, ie a situation in which the utility a consumer derives from using a particular network is a positive function of the size of the network. In many cases, 'the size of the network' can be approximated by the number of users. Krueger points out that money can also be interpreted as a network – a payment network. Previously the word 'convenience' was often used to depict the same thing.

This view stresses the importance of general acceptability. What makes money accepted to an individual is the belief or experience that it will be accepted also by others. This means that there is a barrier complicating any switch to a different kind of money. A switch can be brought about only by a coordinated and simultaneous effort by all or a large number of money users.

This does not mean that you cannot have several competing media of exchange in the same currency area. We have in fact cash and deposit money circulating side by side. But, what is significant is that these two types of money are linked by a fixed exchange rate of 1:1 and are perfectly convertible. There is no reason why they could not coexist. Krueger draws the conclusion that to be successful the issuer of a new type of money should link up with the existing payment system by using a 1:1 exchange rate and pledging full convertibility. This is one reason why it is of critical importance that e-money be made fully convertible into cash and deposit money.

The existence of network effects complicates a smooth evolutionary process toward mutual fund and other media of exchange with fluctuating market prices. This of course does not mean that there could not be a shift to portfolio money if the benefits were sufficiently great and the shift could be accomplished in one coordinated move, possibly with the help of the authorities. But, are the benefits of portfolio money that much superior to cash and deposit money? Krueger doubts it. He draws attention to the cost benefits of having a common medium of exchange and unit of account.

4.3.2 A common medium of exchange lowers transaction costs

In a Walrasian general equilibrium framework, any amount of a particular asset could be exchanged against another asset at the current market price without any transaction costs. But, although technology has greatly reduced transaction costs, these costs have not become negligible. Technical progress has affected only one cost component, ie processing costs, while there are other components that have not been directly affected by this development. Of these, the most important one is the risk component.

Asset money is meaningful only if there is a well functioning, liquid market for the assets. Therefore, there must be market makers, who are prepared to take a price risk by holding a position. The price for this service is the spread between buying and selling prices. Krueger refers to a study²² according to which more than 50 per cent of transaction costs are not directly affected by technical progress.

²² Stoll (1989)

The risk component of transaction costs can however be reduced if a common, standardized medium of exchange is used. This allows traders to concentrate on a particular good or asset (or group of goods or assets) that he exchanges against money instead of having to devote part of his attention to the payment medium. This is the reason why one currency - the US dollar - has assumed the role of a vehicle medium of exchange in the foreign exchange market. Currencies are often exchanged via the dollar because trade volumes are highest in the dollar markets and the spreads are small.

As to the unit of account, it is quite evident that the use of a common unit of account leads to considerable cost savings. There are strong market incentives in favour of a common unit of account. A common unit of account promotes transparency and thus overall economic efficiency. One example of current interest is the changeover to the single currency in Europe.

4.4 Conclusion

Information technology will reduce the importance of those factors explaining the maturity transformation function of banks. The business area in which private information produces a competitive advantage is shrinking but not disappearing. Local presence is still highly important in lending to smaller corporate customers and households. Also complicated loan projects benefit in terms of costs from local expertise.

Investment opportunities and information technology have brought us closer to a situation envisaged by the proponents of the New Monetary Economics in which payment and loan services are separated, payment services being offered by mutual fund-type organizations. Payments by means of asset transfers represent a return to a barter economy but on a higher level of sophistication. Portfolio money would imply a complete integration of payment transfer services and portfolio investment services. But with varying unit values, true portfolio money would lack some essential characteristics of conventional money, ie homogeneity and equality with the unit of account. Both features reduce transaction costs. Moreover, portfolio money transaction costs include a risk-related component, which is not directly affected by technology.

Because portfolio money is detached from the numeraire and is not valued at par with central bank money, it is fundamentally different from what we normally mean by money. This would not in itself prevent portfolio money from being used for settling claims in a money-like fashion. There would certainly be people who are not scared but rather positively attracted by the element of uncertainty attached to the value of portfolio money. For these people, the cost related to information gathering and processing and the price risk is outweighed by the prospects for wealth increases.

Still, I would be cautious about drawing dramatic conclusions on the basis of current developments in the financial market and specifically concerning mutual funds. Bank deposit money enjoys a substantial benefit from being an established system, which is generally accepted and universally used. A changeover to a fundamentally new form of money would require a coordinated effort on a sufficiently large scale. Even if portfolio money proved to be a feasible alternative to deposit money as a means of exchange for some consumers in respect of certain kinds of transactions, these people could exploit these benefits only if everyone else started to use the same means of exchange.

From the payments viewpoint, the impact of mutual funds will nevertheless be profound. Mutual funds are able to transform capital and money market instruments into liquid claims, which can be easily and relatively inexpensively converted into money for use in payments.

That largely the same technical infrastructure, including distribution channels, can be used in the provision of the different core services provided by banks is still a significant factor favouring joint production. Banks' ability to supplement payment services with liquidity and lending services gives the banks a competitive edge in relation to mutual funds. Not only do supply considerations increase the competitiveness of joint production but demand considerations favour an arrangement in which savings, liquidity, financing and payment services are provided by the same firm. The customer benefits from a pooled supply of these services, not the least in terms of convenience.

However, a portion of savings, though smaller than before, will be kept at banks for payment and liquidity reasons also in the foreseeable future. Pre-deposited funds will remain an important element in reducing risk for the agent offering payment services and for the customer seeking such services on good terms. Furthermore, deposits are relevant in the build up of a bank-customer relationship, which has implications also for the terms on which a customer has access to overdrafts and loans.

The erosion of commercial bank balance sheets is likely to continue. Improved investment opportunities in the financial market will attract a growing share of both commercial borrowing and household savings. But the banks are well situated to accommodate these changes by expanding off-balance sheet activities, as they have been doing already for quite some time. By adopting the philosophy of 'if you can't beat 'em, join 'em', banks have become active players in the capital market and in the mutual fund business. In Finland the banks dominate the mutual funds market. At the end of 1999, some 80% of all mutual funds assets were managed by companies owned by banks, and the banks actively market mutual fund investments at the expense of deposits on which they pay low rates of interest.

Information technology, which is weakening the basis for some traditional bank activities, can also be utilized by the banks to strengthen their position as payment intermediators. A gradual substitution of Internet and mobile phones for traditional distribution channels increases customer convenience and lowers bank costs. This process is already well under way in some countries and is starting in others. Moreover, the banks are in a good position to provide payment services that can be integrated in a safe and efficient way with on-line business/internet commerce. In this area, the key to success is the ability to create operationally efficient systems combining the supply of goods and services with payments on a real-time basis. The banks have a strong incumbency advantage in this area. They have mastered the dominant payment media and have established information links with both consumers and businesses. Consolidated into one integrated whole, these elements can form the future infrastructure needed to make the Internet era something more than a marginal phenomenon.

5 The role of the central bank in respect of payments is growing, not diminishing

The role of the central bank in the payments area is not a constant. It is influenced by changes in the market and by political choices. In the last, say, twenty years the most profound factor behind market developments has been information technology. And, we have not yet seen the full impact of these developments. In fact, market analysts are inclined to believe that the major breakthrough of the new information technology is still ahead. Also of great importance is the prevailing political philosophy. While changes due to technical developments and other environmental factors typically come about in a step-wise and non-reversible manner, changes due to political judgement show a gradual and wave-like pattern.

5.1 Policy choices

The present trend of market liberalism sets the tone for how the central bank responsibilities for both payments systems operations and oversight are viewed. The operational approach can be described as 'minimalist' and 'back to basics'. The central bank should do only what is necessary and for which there are good arguments in terms of general interest. As long as the present political climate prevails, there will be an underlying tendency to keep central bank involvement in payment operations at a minimum.

As to oversight, the situation is different. Central banks are still establishing and defining their position as overseer. This is somewhat surprising considering the fact that central bank operations, as well as oversight, as we have seen, can be traced to the very beginnings of central banking. Oversight of payment systems is a function that has always been performed by central banks. But, precisely because oversight was long considered a 'natural' function of the central bank, this function was normally not very clearly specified in the law.

In Europe legislators started only quite recently, actually only after the tasks of the European Central Bank had been defined in the Maastricht Treaty (1992), to define more precisely the central bank mandate in this area. But efforts to be more precise on this point are not confined to the European Union. There are two reasons for the present trend of defining explicitly the oversight function of the central bank. On the one hand, market developments and the recent crisis in the financial sector called for closer public involvement in safeguarding financial stability. On the other hand, the general market orientation called for explicit explanations for authority intervention.

The process of defining more exactly the central bank's role in oversight is still ongoing. Where necessary, the oversight mandate and means will be strengthened. At the same time the general market philosophy, shared by most central bankers, is reflected in how central banks implement their oversight responsibilities. The present trend of emphasizing market initiative and the discussions and cooperation among market participants and with the central bank will continue. Direct intervention is considered a last resort.

5.2 Environmental factors

Central bank involvement in the operation of payments systems is governed by the dual objective of safety and efficiency. The core function of central bank involvement in payment systems is to provide final money, a state guaranteed medium of exchange the banks can use when settling their interbank obligations either on a net or a gross basis. Gross settlement on a continuous basis implies greater central bank involvement than does net settlement. Information transmission and processing costs have been one factor favouring net settlement in the past. Advances in technology have reduced the importance of these cost factors, which increases the economic viability of gross settlement. Not only cost but also risk aspects are likely to increase rather than reduce the demand for gross settlement services.

The essence of the settlement service provided by the central bank is the transfer of central bank money between participants' accounts. These transfers must be made on the books of the central bank and by the central bank, regardless of the extent to which information exchange between the central bank and the participants has been automated. This means that all other functions related to settlement transfers need not be managed by the central bank. In respect to net settlement, this means that all calculations of net positions on a multilateral basis can be made outside the central bank, which is the case already in most countries with separate clearing-houses.

Even if we view the central bank's settlement operations as a service to the banks for which there is a demand, the central banks are not at present willing to leave the use of this service totally to the discretion of the banks. As long as the banks do not have enough incentives to internalize all external costs of payment disturbances and failures, there is a good case for issuing guidelines for the use of central bank settlement services. In Europe the development of private circuits for cross-border payments in conformity with minimum requirements set by the authorities may well at some point attract a growing share of international payments, which would, in relative terms, reduce the operational role of central banks.

The allocation of payments between central bank gross settlement and private net settlement is primarily a matter of market choice. Thus, the quality of service and pricing are decisive. As to pricing, the central banks are guided by general principles concerning the efficient use of resources. Moreover, in the European Union the central banks are covered by EU competition rules, which forbid unfair competition. The right to categorically require gross settlement in central bank money concerns only payments in which the central bank is a counterparty.

Present trends in payment intermediation and banking include aspects that increase rather than reduce the need for payment systems oversight by the central bank. The most important such aspect is the present process of reorganization of banking and private initiatives to develop payment intermediation at cross-border level. Structural changes may imply unexpected risks. On the other hand, it is easier to implement central bank instructions in a dynamic environment than in a static environment.

5.3 Conclusions

Those fundamental factors, which shaped the role of central banks in the past, are still relevant. Current developments in the market have not changed the basis for central bank involvement. But, the profound changes taking place in financial markets, including payment systems, mean that efforts must be continued to specify and, when necessary, modify the exact content of central banks' operational and oversight functions.

Because of structural changes in financial markets, the central banks must be constantly ready to evaluate the criteria for access to their payment services and how far the public safety net for payments should be extended. A new category of a generally accepted payment medium may emerge - a medium of exchange that is neither a claim on the central bank nor on a bank but on a non-bank entity without direct access to the central bank and not covered by the public safety net. However, I can see no such development in the market that would in the near future call for an extension of the concept of 'public' money beyond the banks. The status of the different means of payments has to be made very clear, however.

The market-focused climate presently prevailing requires that the operational role of the central bank be constantly assessed. Historical relics, such as intermediation of retail payments, that are still present in some countries should be eliminated. The share of central banks in payment intermediation is primarily a matter of market choice in a competitive environment.

The central bank's oversight mandate requires further specification. This may well mean a formal expansion of both coverage and means of oversight. At the same time there will be a tendency to rely in practice as much as possible on non-regulatory means. Thus it can be foreseen that monitoring, analysis, dialogs with the private sector and cooperation will make up the bulk of the practical implementation of oversight.

6 Conclusions

In previous centuries, the importance of payments grew primarily in response to increases in the monetization of economies and continuous progress in the division of labour in the production of goods and services. This process is ongoing. However, the unprecedentedly strong growth in payment flows that began in the 1970s and, in some countries, in the 1980s can be ascribed to two specific factors. One is the structural change in financial intermediation. The growing share of financing that was channelled through the market directly, or indirectly via mutual funds, presupposes deep and liquid markets supported by extensive arbitrage activity detached from savings and investment decisions.

The other factor is the globalization of financial markets with a rapidly growing share of cross-border transactions. The accumulation of financial surpluses in Japan, in oil producing countries and in the emerging market economies in Southeast Asia and the subsequent growth of new financial centres provided an extra stimulus to financial transactions. Together financial imbalances, arbitrage and globalization have resulted in an increase in payment flows exceeding manifold the growth in the real economy.

Banks had not much choice other than to accommodate this dramatic increase in both domestic and cross-border payment flows in their existing payment systems, which had been developed under different conditions from those now prevailing. The new situation required more efficiency and more robustness. The need for more robustness was accentuated by the increase in financial fragility that took place at the same time. As part of public policy, the central banks started to draw up guidelines to create basic prerequisites for achieving a sufficient level of both efficiency and safety. In line with the market liberalism prevailing in economic thinking in general, the central banks tried to confine their guiding role to the definition of minimum standards, pointing out that the prime responsibility for developing the payment systems lies with the private sector. In many countries it was not difficult to assume this minimalist approach, as the central bank simply lacked the means to issue binding instructions.

According to some observers advances in technology include elements which threaten the banks' position as payment intermediators. There are two reasons why these fears are exaggerated. The first is that new technologies in data communication and processing do not, after all, take us all the way to the new world envisaged by the proponents of the New Monetary School. Costs not affected by technical progress (risk-related costs) and network effects imply the existence of a threshold for replacing bank deposits with other financial assets as the dominant medium of exchange. The other reason is that the same advances in technology enable banks to consolidate their position as payment intermediators. By tradition, banks are in a good position to develop the joint supply of payment and financial services and to provide payment and liquidity services linked to Internet commerce and thus enable the development of an efficient and viable concept of on-line business.

The banking industry is in a critical period, which will continue for some time. What makes the situation historically significant is that the industry faces pressures simultaneously from a number of quarters, each of which could have a fundamental impact on the future course of banking. Economic liberalism, along with economic-political integration in Europe and the revolution in technology, all of which have fundamental implications for the competitive situation, require comprehensive changes in the structure of the banking sector and in the perform-

ance of individual banks. The banking sector and individual banks will look different when the 'fight' is over and we enter a more stable phase. But there will still be banks – of various sizes - performing the traditional functions of intermediating financing and payments.

I am inclined to draw a further conclusion. The strengthening of the interrelationship between the banks and their central bank, induced by the structural changes we are witnessing, will remain. This is likely to hold for both the operational complementarity and the oversight function, and central bank involvement will increasingly focus on oversight. The central bank's role as supplier of cash will inevitably diminish. In most countries the possibilities for replacing cash with automated transfer payments and private e-money are substantial.

However, the roles of the banks and the central bank vis-à-vis payment systems are still in need of some fine tuning. Once these are properly defined and accepted, it will be easier for both parties to act. This of course does not mean that a mutual understanding will be reached on all issues. There are genuine differences in the way the central bank, representing public policy interests, and the banks, representing profit-motivated private interests, look at things. But, it is of utmost importance that the rules of the game be clear and well accepted by all participants.

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