Developments in wholesale payments systems

Payments systems have been recognised only relatively recently as being a central issue for the stability of the financial system. In this speech,[1] *the* **Governor** *traces the emerging recognition over the last ten to twenty years of the risk inherent in existing interbank payment systems, and identifies the key issue for banks as one of how best to provide a high quality service to users of payment systems* at the same time as *controlling the often massive intra-day credit risk which occurs between banks. In discussing the different ways of controlling interbank payment system risk, the* **Governor** *endorses the decision in principle by the APACS banks to eliminate (rather than reduce) such risk by introducing gross real-time settlement in CHAPS. He argues that, in moving towards such a system, the 'trade-off' between inefficiency and cost is in many ways more apparent than real; and discusses some of the ways in which the precise role of central banks in payment systems might change. The* **Governor** *also considers the implications of developments in the European Community for domestic payment systems and for the Ecu settlement system, and suggests that there must be attractions to trying to incorporate as much as possible of the existing infrastructure of domestic systems into whatever emerges in the later stages of EMU. For both banks and non-banks, the introduction of real-time gross settlement will encourage them to manage their own payment flows carefully. It will also provide a basis for developing better delivery versus payment mechanisms in a number of markets.*

Mr Chairman, I hope you will permit me to add my welcome to everyone at this conference and especially to those who have travelled from overseas. And, on behalf of all of us here, can I congratulate you and your colleagues for putting together such a substantial programme and attracting so many of those actively involved in the development of payment systems.

Preparing for this conference, I could not help but be struck by how in recent weeks and months central bankers have been preoccupied by very short-term market developments. And, in truth, that is often the case. It is the nature of the job that day-to-day—and even minute-to-minute—market developments are our immediate focus; and disturbances to financial markets inevitably pre-empt our time. In such an environment, one of the most important tasks for central bank governors and their senior colleagues is to create space and time for long-term issues, such as those concerning this conference.

Albeit for different reasons, much the same can be said of bank chairmen and chief executives. Given the immediate pressures for profitability and the sheer complexity of their day-to-day business, it is always bound to be difficult for those on the bridge to focus as much as they would wish on the strategic questions facing their own institutions and the markets in which they operate.

Quite frankly, I think that until recently the development of payment and settlement systems did suffer somewhat as a result. In the first half of the 1980s, to the extent that central bankers looked beyond their core task of setting and implementing monetary policy, their time was taken up with the great changes in market structures and regulatory regimes which we have seen over the past decade or so. And to the extent that the management of banks and securities houses looked beyond immediate business decisions, they naturally enough focused on the strategic choices created by deregulation and the consequences of the new regulatory systems being introduced by the authorities. But, looking back a few years, I think that many of us here today also have to face up to the fact that the sheer technical complexity of payment and settlement issues kept them away from the top of the agenda. At worst and putting it crudely, not enough of those at the top understood sufficient about payment systems to appreciate that some of the issues which most concerned them—most obviously systemic risk—could be addressed through changes to the settlements infrastructure; and those operating the systems at working level on a day-to-day basis were too often preoccupied by the technicalities to appreciate their strategic importance.

The emergence of payment and settlement issues as a priority

I hope you will forgive me for airing these thoughts, and I only do so because, as this conference itself demonstrates, those problems are so obviously behind us—and have been so for some years now. It may have been a latter-day conversion, but a great deal has been achieved in recent years. In London, the Bank introduced the Central Gilts Office in 1986, subsequently the Central Moneymarkets Office, and we are moving to a similar system for ecu-dominated securities. At the same time, the Bank has

(1) To the Twelfth Payments Systems International Conference on 6 October 1992.

Large-value sterling payment systems

Although in some countries there is no clear dividing line between retail and large-value payment systems, in the United Kingdom it is easy to distinguish between those payment systems which are designed for large volumes of relatively low value traffic (such as the systems which handle ordinary cheques, direct debits, automated salary payments and so on, where the average payment is for about £500) and those designed to handle much lower volumes of high value traffic (where the average payment is for over £2 million).

The United Kingdom has two large-value payment systems, as well as two securities settlement systems that have their own in-built payment arrangements. All four systems provide same day value for the beneficiaries of the payments.

The United Kingdom's principal large-value system, CHAPS, typically handles some 35,000 payments a day, with a total value of about £75–80 billion (making the average payment worth over £2 million). CHAPS is a nationwide, electronic system (ie payment instructions are sent electronically from one bank to another) which handles credit-transfers (see below). Interbank settlement takes place at the end of the day across accounts at the Bank on the basis of the net amount owed by each bank (see the next box for a brief description of different forms of settlement).

A credit-transfer system is one in which a payment instruction is given by the payer (the person making the payment) to his bank; the payer's bank then passes the instruction and the funds on to the beneficiary's bank. Standing orders and bank giro credits are probably the most familiar examples of credit-transfers. By contrast, in a debit-transfer system the information passes between the banks in the opposite direction. For example, if payment is made by cheque, the cheque will pass from the payer to the beneficiary and then to the beneficiary's bank; the beneficiary's bank then returns the cheque to the payer's bank in order to collect the funds.

The United Kingdom's other large-value payment system is the long-established *Town Clearing*, which processes large-value cheques drawn on and paid into branches of banks in the City of London. Since CHAPS started in 1984, the Town Clearing has declined in importance: it now handles less than 500 payments a day, with a total value of about £5 billion (ie an average payment size of over £10 million). As with CHAPS, interbank settlement is net at the Bank of England at the end of the day.

Both CHAPS and the Town Clearing are run by the CHAPS and Town Clearing Company, which is owned by fourteen settlement banks (including the Bank of England) and which forms part of the umbrella organisation for the UK payments industry, the Association for Payment Clearing Services (APACS).

The two securities settlement systems, the *Central Gilts Office* (CGO) and *Central Moneymarkets Office* (CMO) are run by the Bank of England. The CGO settles transfers of government stock; the CMO settles transfers of a range of shorter-term sterling money-market instruments. CGO and CMO have in-built electronic payment arrangements: in both systems the transfer of a security typically generates a payment instruction to move funds from the buyer's account at a nominated settlement bank to the seller's account at his settlement bank. Each day the two systems together generate about 3,500 payments worth about £35 billion. As with CHAPS and the Town Clearing, interbank settlement takes place net at the end of the day across accounts held at the Bank.

Payment systems (large-value and retail) in other countries as well as the United Kingdom are described in the following two publications:

- 'Payment Systems in EC Member States' (the Blue Book); prepared by an ad-hoc Working Group on EC Payment Systems; Committee of Governors of the Central Banks of Member States of the European Economic Community, Basle, September 1992; and
- 'Payment Systems in Eleven Developed Countries' (the Red Book); prepared by the Group of Experts on Payment Systems of the Central Banks of the Group of Ten Countries; Bank for International Settlements, Basle, April 1989. (Annual statistical updates are also available.)

More detail on the large-value systems in the G10 countries is contained in:

- 'Large-Value Funds Transfer Systems in the Group of Ten Countries' (the Pink Book); prepared by the Group of Experts on Payment Systems of the Central Banks of the Group of Ten Countries; Bank for International Settlements, Basle, May 1990.

Copies of these publications are available from Payment Systems Division (HO-6), Bank of England (071-601-5684).

been concerned for some years about the development of our wholesale payments system. There too there has been progress—very significant progress. Over the three years since I first identified, in a speech at the Institute of Bankers,[1] a number of major issues for our wholesale payments system, there have been intensive discussions between the APACS banks involving the Bank of England. And we have, during the past few months, begun to see some of the fruits of those discussions—first in the imposition of limits in the CHAPS system, and second, in the commitment of the banks to go forward to a real-time gross payment system over the next few years. There is much work still to be done, but I think this represents a very significant step forward both for the banks and for London's position as a leading financial centre. I shall have something more to say about these changes in a moment: but I would like to say now how much I welcome them, and how very significant I believe they will be.

First, however, I should explain the background to these various changes—which are paralleled in other centres—and why they are so very important. They are, inevitably, a product of a number of factors. At one level, the deregulation of the 1980s was associated with—indeed reflected—a shift from producer-oriented thinking to consumer-oriented thinking, with financial institutions facing increased pressures to provide high quality services to their customers—and this inevitably included prompt and safe settlement of transactions. Second, deregulation was intended to improve efficiency by promoting competition, and that obviously posed questions about the international competitiveness of financial markets; in London, both the monetary authorities and private sector practitioners were determined that the City should have the necessary infrastructure to remain one of the great international financial centres of the world and the pre-eminent centre in Europe. Structural questions therefore came to the fore; and while these initially focused on market membership and dealing systems, it was inevitable that all parts of the infrastructure were examined and that attention turned from front office systems to back office systems. It was clear enough that London's systems had not kept pace with the volume and nature of the business being generated—although the other great centres were facing similar problems.

At the same time, the innovation triggered by deregulation increased the complexity of our markets and intensified the linkages between them. This inevitably raised questions of risk—how to measure it; how to control it—which were given greater impetus by the huge growth in the traffic passing through our settlement and payment systems.

Against this background, minds were focused by a series of near dramatic settlement failures, such as the Bank of New York in the United States in 1985 and the events of October 1987, when settlement systems in the United States and elsewhere scraped through by the skin of their teeth and some clearing houses in minor but still important centres, such as Hong Kong, were bankrupted. That the failure of an individual institution could have knock-on effects through the mechanism of settlement systems was hardly novel. In recent history, the collapse of Herstatt in the mid-1970s had revealed not only weaknesses in the arrangements for the prudential supervision of international banks—which led to the Basle Concordat—but also the problems which could potentially flow from the two legs of foreign exchange transactions being settled in different time zones. What was new in the more recent crises was first, that events in one market—such as equities—could instantly affect derivative markets, and so feed back through to the original market, exacerbating the problem; and second, that the manner in which this happened and its consequences were influenced by the settlement arrangements employed by the markets affected and their linkages with the wholesale payments system.

These events were bound to lead to greater interest among policy-makers on settlements issues. But, in fact, most important of all was a growing appreciation that the vast volumes of business being processed through the payment system had led to huge unmeasured intra-day exposures for banks, as a result of their willingness to give customers immediate use of incoming funds before being certain that interbank transfers would be settled. The issues thus went right to the core of the financial system, here and elsewhere.

It was hardly surprising, then, that payment issues pushed their way to the top of the agenda. Certainly I regard this as one of the most important developments in my governorship, and I am pleased to say that for some years now payment system issues have indeed featured high on the list of the Bank of England's priorities—being taken forward by a specialist Payment Systems Division.

The key issues

In the speech I gave to the Institute of Bankers nearly three and a half years ago, I tried my hand at setting an agenda for a debate which was then just commencing in the United Kingdom, although others as you will know were slightly further ahead. The central issue emerging then—as it remains now—was how best to balance the provision of a high quality service to users of payment systems with the control of risk. The precise terms of that issue plainly varied from system to system but its general character seemed clear: the demand for the availability of intra-day funds to payees entailed a transfer of intra-day credit exposures to the banking system. I suggested then that the demand for intra-day funds was perfectly legitimate, but that the risks incurred by the providers of payment services—namely, the banks—should be clear, measurable and controllable; that the risks borne by individual banks should be proportionate to their capacity to bear them; and that any system needed, as a priority, to be designed to protect against a chain of defaults.

(1) The Ernest Sykes memorial lecture, 24 May 1989.

Forms of settlement

Interbank settlement in domestic payment systems usually (although not always) takes place across accounts held by the settlement banks at the central bank.

Settlement can be either gross or net. In a real-time *gross settlement* system, each payment instruction is settled individually. Thus, every time Bank A sends a payment instruction to Bank B, Bank A will provide Bank B with the full amount of the funds to be paid; typically, this will be done by the central bank debiting Bank A's account and crediting Bank B's. The need to settle every transaction individually could of course be cumbersome in a paper-based payment system, but it is not necessarily technically difficult when electronic communications and processing facilities are used.

In a *net settlement* system, interbank settlement takes place only at discrete intervals, usually once a day. Net settlement systems can be based on bilateral or multilateral netting. When settlement takes place in a bilateral system, Banks A and B will calculate the net amount due between them—ie the aggregate gross amount A owes B (resulting from all the payment instructions A has sent B) less the aggregate gross amount B owes A (resulting from payment instructions sent the other way). This bilateral net amount will then be transferred between the accounts of Banks A and B at the central bank. Similar settlement transactions will take place between each pair of banks in the system. Multilateral netting is similar except that each bank such as Bank A will calculate the aggregate gross amounts it owes to all the other banks in the system (ie Banks B, C, D, E. . . . .) less the aggregate gross amount they collectively owe Bank A; the result is thus a single multilateral 'net net' debit or credit figure for each bank (rather than the 'net' figure for each pair of banks in bilateral netting).

We claim no credit for uniquely identifying those issues; they were being posed in similar, if not identical, terms in some other centres. And I repeat them now for the simple reason that, three years on, the solutions are both more apparent and, critically, command widespread support.

Mr Chairman, your programme illustrates that emerging consensus and the more detailed preoccupations to which it has given rise. I see that there are to be sessions on the business consequences of risk reduction strategies; on how to satisfy customer needs and the bottom line; on cross-border payment issues; and on the role of central banks. I hope that my remarks this morning might provide a serviceable framework for your discussions.

To reduce or to remove interbank payment system risk?

As I have suggested, the heart of the matter is interbank credit exposures in large-value payment systems. I do not think that anyone now disputes that such exposures exist, and that they arise from the practice of giving unconditional value to payee customers *before* the interbank settlement has taken place. Nor do I think there is any disagreement that such intra-day exposures can be massive—sometimes exceeding the capital of the banks concerned—and that the problem needs to be tackled. The question is, how? Since the majority of large-value systems are still based on the settlement of amounts calculated after netting of debits against credits, a helpful starting point is, I believe, offered by the minimum standards for netting schemes published by the G10 central banks at the end of 1990—well-known as the Lamfalussy standards. While they were drawn up with cross-border arrangements in mind and in the context of proposals to establish foreign currency netting schemes, they are in practice equally relevant to domestic payment systems. This can be seen, I think, by concentrating on just three of the Lamfalussy standards.

The first states that systems must be designed so that participants 'have both the incentives and capabilities to manage and contain each of the risks they bear', and it emphasises that banks themselves should set limits on their settlement exposures. This is a natural enough application of the banker's basic skill of monitoring and limiting credit exposures to customers and counterparties. But there is an important distinction between trading markets, such as for interbank deposits and foreign exchange, and payment systems, both retail and large value.

In trading markets—whether interbank deposits or foreign exchange—the standard approach to controlling risk is, of course, to set counterparty exposure limits, whether or not netting is involved in the settlement system. In the major wholesale markets, such as foreign exchanges, this is plainly a sensible approach, since banks have considerable discretion in choosing with whom to deal; on reaching its limit against one counterparty, a bank can usually very easily deal with an alternative counterparty instead, with no detrimental effect to its customers. The risk of a settlement failure remains—in the case of foreign exchange, what has come to be called Herstatt risk—but the scale of the exposure can be controlled.

The same cannot be said, however, of straightforward payment system exposures arising from processing customer business, since the pattern of payments and thus, in the main, the pattern of exposures is determined by the customers rather than the banks themselves. Put simply, if more customers choose to send payments from a particular bank then, other things being equal, other banks in the system will face higher exposures to that bank. In retail

systems this may not greatly matter—the consequent exposures are typically small and the nature of the business is such that banks can more easily delay giving final value to the payee customer until the interbank settlement has taken place. But in large-value systems, where the exposures are largest and the payments urgent, the lack of full counterparty control is fundamental.

This arises in part for operational reasons. Beyond a certain point, the application of interbank exposure limits in large-value payment systems would inevitably lead to delays or refusals in implementing customer payment instructions. And given that the end-users of large-value systems are typically settling transactions in other financial markets where there is an exchange of value—such as equity settlements—that could easily lead to knock-on effects elsewhere in the system. The efficiency of the overall market place would be impaired. Moreover, the banks themselves would be liable to lose business to competitors who were less mindful of the risks involved.

This is not to say that limits in large-value payment systems are meritless. Far from it, and I greatly welcome the steps being taken in that direction by the members of CHAPS, since limits will give banks a clear incentive to match the timing of outgoing and incoming payments in order to reduce their net exposures; and will thus go some way to reduce the exposures resulting from a given payment stream. But given operational considerations, system limits cannot provide anything other than an interim solution.

The second Lamfalussy minimum standard which I would highlight emphasises the importance of ensuring that settlement is completed. This is especially relevant to large-value systems because of their fundamental importance to the implementation of monetary policy; to the operation of financial markets; and, indeed, to the economy as a whole. The inability to settle on a particular day, for whatever reason, could easily bring about a major crisis with unpredictable effects, not just domestically but internationally. It is hard to see that any central bank could simply stand aside in such circumstances. And it is no doubt for this reason that in some countries the central bank explicitly underwrites the interbank settlement. But even in countries where this is not the case, there may nevertheless be irresistible pressure for the central bank to step in rather than contemplate a full systemic crisis. Given that this would involve the use of public funds to settle private sector obligations passing through a private sector system, this is surely unacceptable if alternative structures could be devised, still within the private sector, to eliminate interbank settlement risk entirely.

The third and final Lamfalussy standard which I want to highlight calls for netting schemes to have a well-founded legal basis in all relevant jurisdictions. I am not giving any secrets away in saying that in many countries, including the United Kingdom, there is an unresolved question mark about how robust, as a matter of law, are the multilateral netting arrangements used in large-value payment systems. Indeed, there is a danger that a liquidator of a failed bank could successfully challenge the netting, claiming that it was an artificial device to get round insolvency laws. If such a challenge were to be successfully mounted, the resulting gross exposures could turn out to be much larger than the net amounts which banks believed they had been controlling. As a consequence, it is impossible in the absence of legislation for many systems to meet this critical Lamfalussy standard. Moreover, given the internationalisation of markets, participation in domestic payment systems by foreign banks is likely to become increasingly common, requiring measures to ensure that the law of a foreign member's home country did not undermine the system's rules.

The Lamfalussy standards

The Lamfalussy Report (1) sets out the following six minimum standards for the design and operation of cross-border and multicurrency netting and settlement schemes:

- Netting schemes should have a well-founded legal basis under all relevant jurisdictions.
- Netting scheme participants should have a clear understanding of the impact of the particular scheme on each of the financial risks affected by the netting process.
- Multilateral netting systems should have clearly-defined procedures for the management of credit risks and liquidity risks which specify the respective responsibilities of the netting provider and the participants. These procedures should also ensure that all parties have both the incentives and the capabilities to manage and contain each of the risks they bear and that limits are placed on the maximum level of credit exposure that can be produced by each participant.
- Multilateral netting systems should, at a minimum, be capable of ensuring the timely completion of daily settlements in the event of an inability to settle by the participant with the largest single net-debit position.
- Multilateral netting systems should have objective and publicly-disclosed criteria for admission which permit fair and open access.
- All netting schemes should ensure the operational reliability of technical systems and the availability of back-up facilities capable of completing daily processing requirements.

(1) 'Report of the Committee on Interbank Netting Schemes of the Central Banks of the Group of Ten Countries'; Bank for International Settlements, Basle, November 1990. Available from Payment Systems Division (HO-6), Bank of England (071-601-5684).

Three key factors, therefore, lead me to conclude that the goal for large-value payment systems should not be the reduction of interbank settlement risk by means of setting and enforcing bilateral limits, but rather to bring about a qualitative change in payment risk, leading I would hope to its removal. First, the manner in which payment system exposures arise creates a trade-off between risk reduction and operational efficiency which it is hard to see being struck successfully. Second, avoidable private sector risk is being borne at least in part by central banks, which is unacceptable—and, I might add, inefficient in terms of the overall system, since it cannot be properly priced within current mechanisms. And third, the problems with the legal basis of netting make it questionable how satisfactory a way forward net settlement could be for wholesale payments.

Fortunately, this analysis also points towards a solution. *Gross* settlement avoids the legal problems associated with netting; and *real-time* settlement removes the intra-day interbank credit that is the source of the risk borne by the banks themselves, and potentially by the central bank.

Such a solution would bring about an entirely desirable separation between interbank credit risks willingly undertaken through bilateral transactions, and those risks arising from the provision of money transmission services, which are an involuntary and wholly undesirable feature of payments arrangements. Payment systems do, of course, need to be liquid in order to function smoothly, but the mechanisms for providing that liquidity should be explicit. Far better to separate the money transmission process from any credit necessary to support it; far better that such credit should be provided by a visible and voluntary market transaction, where risk can be controlled.

I am quite clear, therefore, that real-time gross settlement is the way forward, and I am quite clear also that it would have benefits for end-users, for banks, for central banks and for the efficiency and robustness of financial markets. I therefore fully endorse—and greatly welcome—the view reached by the APACS banks. But I am also conscious that it is not a simple approach and that it would have consequences which banks and their customers will naturally wish to consider.

Inefficiency versus cost?

In addressing the problem of interbank risk in payment systems, we are in reality addressing a triangular trade-off between risk, inefficiency and cost. The avoidance of one of these three undesirables appears inexorably to worsen the menu for the other two. In order to move away from our present position—trapped in the risk corner so to speak—we need to leap to what, initially at least, appears to be an unenviable choice between inefficiency and cost.

There can be no disputing the proposition that measures to eliminate payment system risk should not dent operational efficiency. If we are to enjoy financial markets that can deliver the quality of service demanded by customers, banks are going to need to be able to guarantee time-certain intra-day payments, and they are therefore going to need access to adequate liquidity in order to avoid delays in the execution of individual money transfers or, at worst, even gridlock of the whole system. But if we are to shun both risk and inefficiency, are we forced into the third corner, that of cost?

In one sense, the answer—inevitably—is yes. Precisely because it has been no more than a by-product of existing systems, the liquidity—in other words the interbank credit—which has enabled them to operate efficiently has not only been uncontrollable and therefore potentially unlimited, it has also been provided free of charge. That being so, the introduction of a system depending on explicit transactions for liquidity is bound to entail new, explicit costs. Instead of a hidden creation of liquidity, banks participating in a real-time gross settlement system need to ensure that there are adequate funds on their central bank accounts, or to raise funds in the money markets, or to make use of central bank credit facilities; each of which is bound to involve a cost, whether in the form of a financial charge or the loss of an earning opportunity.

You will have noticed that I took particular care to stress that these trade-offs *appeared* to be inevitable. And I did so because underlying the problems in the current arrangements in a number of centres has been the failure to see that risk and inefficiency themselves represent costs—and, indeed, costs of the worst sort in that they have lacked transparency and have been borne implicitly rather than explicitly. In other words, global inefficiencies will inevitably have flowed from the unpriced and uncontrolled risks inherent in large-value payment systems at present.

Second—and rather more mundanely—it is important not to exaggerate the additional explicit costs which would fall on banks—and thus ultimately on their customers and shareholders—from eliminating interbank payment risks, since much can in fact be done to minimise those costs. The approach we favour in the United Kingdom is for the central bank to provide settlement banks in the restructured CHAPS with an intra-day credit facility, which does not incur interest charges but which is covered by the banks providing high quality assets as security to remove the risk to the central bank. Provided banks have enough assets of a suitable kind, the attraction of this approach is that it provides the necessary intra-day liquidity at minimal additional expense, without in any way disturbing existing mechanisms for managing liquidity overnight and for longer periods. In that way, the sharp corners of the risk-cost-inefficiency triangle can, I believe, be rounded off.

Issues for banks

This does, I hope, address one of the main issues which has been preoccupying the banking industry in its debate about how to address the problem of interbank payment system exposures. But I am very well aware that it is not the only such issue.

The Padoa-Schioppa report

The EC central banks have recently issued a report entitled 'Issues of common concern to EC central banks in the field of payment systems'.[1] This report compares the main features of payment systems in EC Countries, assesses the impact of the Single Market on such systems, and gives preliminary consideration to the consequences of Economic and Monetary Union for payment systems.

The report identifies four action points:

- the definitions of principles for the co-operative oversight of payment systems in EC countries;
- the establishment and implementation of minimum common features for domestic systems;
- preparatory work in the area of large-value cross-border payments in view of EMU; and
- the continuation of the oversight of the Ecu Clearing and Settlement System.

These action points are being taken forward by a permanent Working Group set up by the EC Governors Committee and chaired by Dott T Padoa-Schioppa, Vice Director-General of the Banca d'Italia.

Delivery versus payment

In September, the G10 Central Banks published a report on delivery versus payment (DVP) in securities settlement systems.[2] The report considers how the design and operation of these systems can influence the credit and liquidity risks in the settlement process; it also seeks to clarify the concept of DVP, and discusses the possible implications of introducing DVP, including the material contribution this can make to reducing risk.

(1) 'Issues of Common Concern to EC Central Banks in the Field of Payment Systems': prepared by the Ad-hoc Working Group on EC Payment Systems; Committee of Governors of the Central Banks of the Member States of the European Economic Community, Basle, September 1992. Available from Payment Systems Division (HO-6), Bank of England (071-601-5684).

(2) 'Delivery Versus Payment in Securities Settlement Systems': prepared by the Committee on Payment and Settlement Systems of the Central Banks of the Group of Ten Countries; Bank for International Settlements, Basle, September 1992. Available from Financial Markets and Institutions Division (HO-2), Bank of England (071-601-5783).

The role of central banks and the control of payment systems

Another is the role of central banks in payment systems. This varies markedly from country to country. In some countries, the central bank owns and operates many, if not all, the payment systems; while in others, such as the United Kingdom, the design and control of the systems is the responsibility of the members. But nowhere can the central bank simply ignore large-value systems. In the first place, we are bound to have a keen interest in the stability of wholesale payment systems given that disruption would adversely affect the whole of the country's financial system. Whatever their precise role, therefore, central banks inevitably want to reassure themselves that wholesale payment systems are robust, reliable and efficient, and they will therefore take on an oversight role to a greater or lesser extent.

Second—and, in fact, more fundamentally—central banks provide, as the issuer of the currency, the fulcrum of any payment system; a final riskless settlement is available to banks only in base money through a transfer across accounts held at the central bank. In systems that settle on a net basis at the end of the day, the central bank need not have a close operational role beyond providing the final settlement facility. But where gross settlement is made in real-time throughout the day, the central bank is inevitably drawn further into the payments process because each wholesale transaction has to pass across its accounts.

Moves to real-time gross settlement do, therefore, entail changes in the precise role played by central banks. But it is important for central banks not to jump to the conclusion that their oversight role and their provision of final settlement services makes it necessary for them to own and operate payment systems lock, stock and barrel. Oversight can be exercised in many ways which do not involve direct ownership; and final settlement facilities can be offered to payment systems rather than used as a reason to take them over. Indeed, central banks have no obvious comparative advantage in managing and operating payment systems, and I believe it is appropriate that the payments process should, where possible, be left to the banks themselves—whether individually, enabling them to compete in the provision of services to customers; or collectively, where joint provision of a central service is necessary or desirable.

This involves a balance of responsibilities. Those banks which own a system must demonstrate that they are capable of running it in a secure, effective and fair manner. Equally, central banks must be careful to ensure that their legitimate interests do not spill over into unnecessary involvement. In a UK context, I firmly believe that, even when real-time gross settlement has been introduced, CHAPS should remain a system run by its members. But in saying this, I quite recognise that a different approach may be considered more appropriate in other centres.

Europe

A quite separate issue which I know concerns many bankers is how developments in Europe will impact on domestic payment systems and on the Ecu settlement system. The existence of these concerns is perfectly understandable. At present, cross-border or foreign currency payments are typically made through bilateral arrangements based on correspondent banking networks; and these arrangements

provide what is, in effect, a series of international links between relatively self-contained domestic systems. It is plain enough that the increased economic integration promised by the Single Market will inevitably lead to changes in payment systems; and equally plain that there are many ways of addressing this.

One would be to develop an entirely new, Community-wide payment system. Another would be to build what would amount to bridges between existing national systems, which would otherwise continue to operate independently. I do not have a model to offer, partly because the needs of the market must be the pre-eminent consideration and these will emerge only as the Single Market develops. But I would suggest that there must be attractions in trying to incorporate as much as possible of the existing infrastructure into whatever eventually emerges, not least because domestic systems—such as CHAPS in this country—represent a massive investment of time and effort by the banks concerned.

This point has been well taken on board by the EC Central Bank Governors, who last year set up a working group to look at European payment arrangements chaired by Tommaso Padao-Schioppa, who will be speaking at this conference tomorrow. His group have just produced a report which, I understand, has been distributed to everybody attending this conference and which I commend to you. Among other things, it sets out two important principles. First, it recommends that a minimum set of common features for domestic payment systems should be identified and implemented. This would, of course, make linkages between systems more straightforward and would also help to ensure that the European debate is conducted in similar terms in different centres. Second, Tommaso's report suggests that domestic systems should incorporate, wherever appropriate, the use of gross settlement arrangements.

These two principles reflect the need for domestic payment systems to converge on the same, high standards if they are usefully and safely to be incorporated or linked into any future payment system serving the European Community as a whole. In the absence of such an approach, domestic systems might easily remain incompatible, not only in their technical standards but also in their risk management features, making it impossible to devise safe and secure cross-border links.

The same principles carry beyond European developments to international payment arrangements generally. Work to reduce and indeed minimise risk from domestic systems is likely to be essential to steps to improve the efficiency and risk characteristics of international arrangements. We cannot hope to achieve closer integration while standards of risk management are varied and, it has to be said, often too low. International developments are, therefore, a further reason for pressing ahead with domestic risk-reduction programmes.

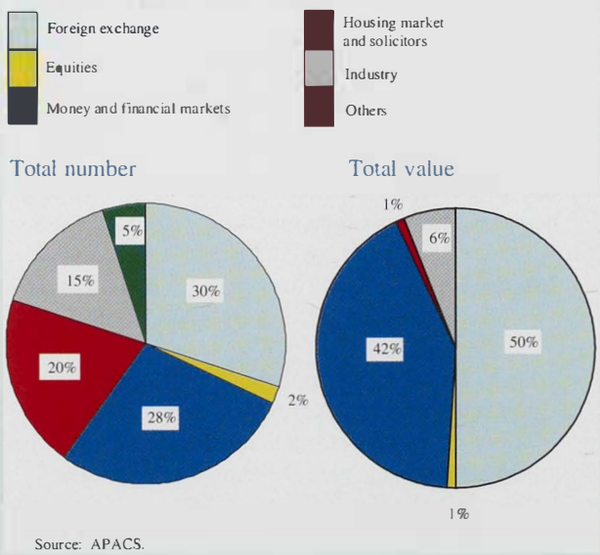
Issues for users

In what I have been saying so far, the end-user—the customer—has remained a rather shadowy figure, making

Analysis of CHAPS by user

CHAPS payments are made by customers in a wide range of economic sectors. But, as the chart below illustrates, financial markets account for about 60% of the number of payments made and over 90% of the value; particularly important are payments made in settlement of foreign exchange deals (eg a sale of sterling for dollars, where the transfer of sterling from seller to buyer would typically take place using CHAPS). By contrast, industry, solicitors and other users such as government, account for about one third of all payments and only a few per cent of the value.

CHAPS by user



Source: APACS.

the quite reasonable demand for greater efficiency and prompter settlement from his bank and thus setting off a train of events leading to major structural reform far beyond anything he contemplated. But those changes will, in fact, have important implications for customers themselves. Customers may well find that, almost for the first time, they face the true cost of using the large-value payment system and thus will have an incentive to manage their own payment flows carefully, choosing the service which they really desire and taking closer control over their own intra-day positions. This is all to the good, and will create opportunities for banks and customers alike.

Moreover, the introduction of real-time gross settlement will provide the means to address the need to co-ordinate delivery versus payment in a number of markets. In fact, there is hardly an area of economic activity where the problem of DVP, as it has come to be known, does not arise. Perhaps the most familiar example is the individual who sends a cheque by post for goods, only to find the company, having cashed the cheque but not sent the goods, has gone bankrupt. But the need for secure DVP arrangements is most pressing in financial markets, and most especially

securities and foreign exchange markets, because the amounts at stake are so large.

The parallel development of electronic book-entry transfer systems in securities markets—such as TAURUS in the United Kingdom—opens up the possibility of DVP by linking the final delivery of securities by book-entry transfer to the simultaneous final transfer of money via a real-time payment system.

An essentially similar facility would become available to foreign exchange markets if domestic payment systems were linked so that the two legs of a settlement occurred simultaneously. Alternatively, and rather more modestly, the operating hours of domestic settlement systems could be extended to increase the time overlap between centres; for example, a real-time system in Japan could stay open later in the evening and Fedwire in the United Systems could begin operation earlier in the morning, creating a window during which the two legs of dollar/yen transactions could be settled at approximately the same time. Any solution to the Herstatt problem would, of course, require extensive international co-operation. But that is not a reason for putting the problem on one side, and we should recognise that nearly twenty years after the Herstatt failure, we have still not satisfactorily addressed the settlement issues to which it first alerted us.

Conclusion

The prospect which has opened up of addressing the need for DVP in securities markets and in the foreign exchange markets depends entirely on moves to real-time gross settlement in domestic payment systems. In fact, as I have tried to describe today, there are in any case compelling reasons for introducing such systems on account of the hitherto hidden, uncontrolled and uncosted risks in interbank payment arrangements. I am very glad that the UK banking industry has taken the very important step of deciding in principle to convert the United Kingdom's main large-value system, CHAPS, to an RTGS system by 1995. We all owe a great debt for this to John Davies, who, as Chairman of APACS, has played such an important role in steering the debate amongst the APACS banks.

This will, I firmly believe, bring about a substantial improvement in the United Kingdom's payment systems. But similar developments are in train elsewhere too, and I equally welcome that, as I am in no doubt that the introduction of RTGS represents the way forward for all significant financial centres and provides the best means of ensuring safe and efficient payment systems. And that can only mean a better service to customers, who are the people entitled to and expecting it at the end of the day.