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# Challenges facing the sterling wholesale payment systems

*In the Ernest Sykes Memorial Lecture,<sup>(1)</sup> the Governor seeks to encourage wide-ranging debate on the future of the wholesale payment system in the United Kingdom. He considers some of the major developments affecting the wholesale payment system and the challenges they pose, particularly in terms of the management of risk, and suggests that a further shift in wholesale payments business from the paper-based Town Clearing to the electronic CHAPs might now be timely. He goes on to discuss some of the settlement systems being considered or developed in a number of UK financial markets, the sort of payments arrangements they will require and the measures that are available to reduce settlement risk exposures—noting in particular the possibility that the mainstream payment system itself might be developed to the point where it could achieve simultaneous exchanges of value.*

## Introduction

It is a pleasure and a privilege for me to have been invited to deliver this year's Ernest Sykes Memorial Lecture. Tradition dictates that the lecture should be used to speak on a topical banking subject. I have chosen an issue which concerns the core of our City infrastructure and the oil which lubricates transactions throughout the economy. My subject is the challenges which are now facing the sterling wholesale payment systems—that is, the systems for clearing and settling large value sterling payments.

Questions in this area have been emerging for some time, and I believe conditions are now ripe for a considered and wide-ranging debate on our wholesale payment mechanisms. I want tonight to explain why, and to consider some of the difficult issues which I think the debate should address. In doing so, I will concentrate on two particular areas. The first relates to the sort of payment services which need to be provided to the settlement systems that are currently being considered and developed in a number of our markets. And the second concerns the longer-term future of the mainstream wholesale payment system itself.

I should stress, however, that I do not have a set of ready-made solutions, nor a blueprint for an ideal system. My aim is rather to contribute to a debate that is already under way by describing some of the influences on our payment systems and some of the challenges facing them.

Let me begin, however, by outlining some of the reasons why the Bank has a close interest in payment and settlement systems. These are many and quite varied. Most fundamentally, there is an enormous national interest in the efficiency and integrity of the payment system, since every sector of the economy requires arrangements that provide predictable funds transfers, to known and accepted timetables, and where the various responsibilities of the payers, the payees and their banks are all clearly set down.

The Bank also has a direct interest in ensuring that its basic central banking functions—the implementation of monetary policy and in particular the execution of open market operations—are conducted against a background of stable and predictable clearing and settlement procedures. This is necessary in order to enable us to forecast day-by-day shortages and surpluses of cash in the money market so that we can plan our money-market operations. In addition, a less immediate but nevertheless important concern is the potential risks that the Bank might incur from providing final payment facilities to the banking system.

Third, the Bank has a supervisory interest on account of the payment and settlement system exposures incurred by the banks and other financial institutions which we supervise. The risks to individual institutions are not hard to understand—the worry is always that they may pay away money in anticipation of a receipt of money or other assets which in the event fails to materialise. These risks are present in any market but are particularly important in the settlement of wholesale financial market transactions where individual deals are often large in relation to the capital of the institutions concerned.

Finally, the Bank has a wider interest as it is essential that our wholesale payment and settlement systems should not have weaknesses which, if they were put under stress, might spread from one institution to another, or possibly even from one market to another, and thus threaten the stability of financial markets. But as well as the obvious need to be protected against this kind of systemic contagion, we also have an interest in having technically robust and efficient systems. It is of critical importance that, as a key part of the City's infrastructure, the methods available for settling funds transfers and other wholesale market transactions should contribute to London's attractions as an international financial centre. Our wholesale payment and settlement systems should therefore at the very least stand up to those in other

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(1) At the Annual General Meeting of the Chartered Institute of Bankers, on 24 May.

centres in terms of security, reliability, speed, ease of use and cost. The progressive strengthening of London's systems is therefore a major strategic objective for the City. And it is one which is likely to become increasingly important as financial centres develop elsewhere in Europe.

### Major developments affecting the payments system

The heart of the debate concerns the payment system itself, since this is the common denominator for all the other systems and therefore raises the most fundamental issues. But first I should summarise some of the factors which have led to the need for thoroughgoing debate. Basically, these fall into three categories: the variety of developments which have already occurred; a range of new factors affecting their operation; and changed perceptions of the needs of users and providers of payment services.

Of the developments which have already occurred, the most significant have generally reflected the possibilities opened up by new technologies. An important example is the Clearing House Automated Payment System, which is an electronic credit transfer facility for large value items. Since 1984 CHAPS, as it is known, has worked in parallel with the paper-based debit collection Town Clearing system. I will have something to say about both of these clearing systems later on.

Second, there has been continuing rapid growth in the amount of payments business. This is perhaps best illustrated by the fact that the average daily value of wholesale and retail payments business has risen from £41 billion in 1984 to £91 billion in 1988, which represents an average annual increase of 22%. The result is that last year in an average week the payments system handled an amount equivalent to a year's Gross National Product. Moreover, the growth in the sheer number of payments has also been very considerable, and has in consequence entailed an increase in what might be called operational risks as the volume of business becomes progressively more difficult to process physically. Last year, although over half the total value of business went through the electronic systems, about three quarters of funds transfers by number were handled by the paper-based clearings. The volume of paper payments has increased so that in 1988 over thirteen million pieces of paper were exchanged on an average day, which I am told, if all piled on top of each other, would be more than five times higher than the Nat West Tower.

A third factor affecting our payment systems in recent years has been significantly greater competition both among banks, and between banks and other financial institutions, in the provision of money transmission services. I believe that overall this has served to enhance the quality of service offered to customers. But, as I pointed out in a speech to the members of this Institute in Bristol last year, competition has at times tended to

inhibit co-operation among banks, so that improvements in customer services arising out of co-operative ventures have been less readily achievable than in the past.

A fourth development is the growing demands being made of the wholesale payment system by the securities and foreign exchange markets, and other markets in which an exchange of value is involved. There have already been instances, such as in the gilt-edged market, where new systems have been introduced to reduce risks which new participants were concerned about. More generally, the increasing use of book-entry transfer systems is likely to lead to pressures on the banks to adapt the payment services that they provide to reduce risks to market participants. I will return to this subject later.

A fifth influence is the growing internationalisation of banking and finance as this has extended directly to payments business. One effect has been an increase in international payments business and the use of off-shore payment systems. But, in addition, national systems have been much more extensively opened up to overseas participants. This new blood has brought to bear direct experience of other systems and mechanisms, and both developments have raised important questions about risk.

Indeed, another major impetus for a debate on our wholesale payment arrangements is the increasingly clear perception of the risks involved in providing and using payments services. This is in part related to the factors I have already described, but it is also symptomatic of a greater general sense in the banking community, both domestically and internationally, of the risks present in all parts of their business. The publication earlier this year of the Group of Thirty report on equity settlement systems is a good indication of the awareness of some of the issues I will address this evening; and I know that there is already a gathering interest in payment system risk and efficiency in London.

From my perspective this is a very healthy development. Today's markets are characterised by complex credit interdependencies, volatile prices, high volumes and wide participation. All of these factors feed through to the management of the wholesale payment systems, where any problems might initially surface. The risks may always have been there, but they have not always been clearly perceived: if the problem of risk has now come in to the limelight, then we have the opportunity to analyse and address it.

In doing so, it is needless to say important to be clear about the types of risk that can arise. However, I think you will agree that this is not an occasion for me to set out a detailed analysis of the risks and exposures to be found in the payments system. I shall also spare you an analysis of the concept of the 'finality' of a transfer of funds or other assets, although it will be clear enough that this is at the centre of the debate because the conditions under which a transfer is accomplished, in the sense that it is finished

and cannot be reversed, have a major effect on the risks that are entailed for the parties concerned. Although I might incidentally mention that Professor Jack, in his Committee's recent and tremendously useful report on Banking Law, discussed at some length the concept of finality in payment systems.

Returning to my broad theme, it is of course true that most of the challenges facing the wholesale payment systems are by no means new or unique to the United Kingdom. Experience in other countries can therefore be instructive and we should not shy away from looking overseas for lessons both as to what to avoid and what to aim for. In the United States, for example, a sharpened awareness of the potential risks in payment systems was brought about by the now famous computer failure at the Bank of New York in 1985. Perhaps the most disturbing feature of that episode was that liquidity difficulties on an enormous scale arose out of what was initially no more than a simple operational breakdown. The familiar prescription that all banks should look to the robustness of their own operational systems was supplemented with a new one: that payment and settlement systems need to be ready to cope with the possible systemic consequences of local problems.

Partly as a consequence of that event, the debate on payment system efficiency and risk is probably most advanced in the United States, where for many years the Federal Reserve has provided a nationwide electronic credit clearing system, known as Fedwire, which provides a final funds transfer mechanism—a facility which only a central bank can offer. The precise structure of Fedwire has proved, however, to leave the Federal Reserve with a substantial within-day exposure to credit risk because the transfers across banks' accounts with the Federal Reserve are made during the day in real-time as transfers are initiated. Moreover, the CHIPS electronic credit clearing system in New York run by the commercial banks involves certain less transparent risks for the participants. All these risks are now rightly being subjected to close scrutiny and analysis.

The development of electronic mechanisms in the United Kingdom has not been so extensive and so has avoided some of the problems which have exercised the United States. The question, however, is perhaps whether it has gone far enough, and in what ways it should be taken further. As I indicated earlier, despite the advent of CHAPS, a significant proportion of large value payments are still effected through a paper system—the Town Clearing. After five years of experience of the co-existence of the Town Clearing and CHAPS, it is therefore in my view timely to explore the merits of some further development. The discussion must start by looking at the different ways in which the Town Clearing and CHAPS handle customer requirements.

### **Town and CHAPS**

The principal demands of large companies and practitioners in financial markets, which are the main

users of the wholesale payment systems, is to have same-day use of any funds paid to them, since in most cases they will have associated payments to make or at the very least will wish to invest their receipts overnight. But the provision of the service almost inevitably involves risks for the banks.

In the paper-based Town Clearing, the paying customer's bank can in principle protect itself from the risk of over-exposure by returning a cheque unpaid: but in practice banks will generally be most reluctant to do so, save in the most extreme circumstances, for fear of doing damage both to their customers and to their own reputation. The difficulty for the paying bank is compounded, moreover, by decisions to return cheques unpaid having to be made in a very short time and so without much opportunity for reflection. Furthermore, banks have to decide whether or not to honour Town cheques drawn by a customer without knowing whether the Town cheques paid in for credit to that customer's account will be honoured by the banks on which they are drawn. If nevertheless payment is refused, the problem passes to the payee, or alternatively to the payee's bank if it has allowed funds to be paid out to the payee in anticipation of the payment that was in the event refused.

One of the features of the Town Clearing system is therefore that banks which have come to feel a strong commitment to honour cheques drawn on them will, in practice, typically be exposing themselves to their customers throughout the day to an extent that they cannot measure. A system of this sort, where it is tacitly assumed that the payment represented by a cheque is good, has advantages for payee customers since banks are often prepared to make funds immediately available to them on presentation of a cheque. However, this must be balanced against the difficulty for banks of measuring and controlling their exposure to risk. Of course, banks can reduce their risk exposure by getting even closer to their customer's business and counterparties, and whatever the nature of the clearing system it is important that they should do just that. But this does not detract from the importance of recognising and containing the risks that the structure of the clearing system itself entails.

CHAPS, being a system for making credit rather than debit transfers, overcomes some of these problems because a paying customer's bank may simply decline to transmit a credit if any consequent within-day exposure for it is not acceptable. It also has two other very important characteristics. First, CHAPS instructions are irrevocable and guaranteed by the paying bank once they have been sent, and second receiving banks are obliged to give same day value to their payee customers. Together, these features mean that neither the payee nor his bank has a credit exposure to the payer. The crucial risk advantage of CHAPS from the banks' risk management viewpoint is therefore that the exposures are explicit and measurable.

For this reason CHAPS has clear advantages on risk grounds over the Town Clearing. However, the extent of the benefits derived from CHAPS in this respect are reduced by virtue of the uncertainty about customer exposure levels in the Town Clearing affecting the decision-making process in CHAPS. This is readily illustrated by the fact that every day banks are asked to make CHAPS transfers for a customer on the basis of incoming payments through the Town Clearing. In such circumstances, the bank runs the risk that some or all of the Town items will be refused. So while the existence of CHAPS has in itself improved banks' ability to monitor exposures, the co-existence of Town and CHAPS effectively leaves banks with considerable difficulty in monitoring and controlling payment system risks.

It is because of this that a further shift of wholesale payments business from the Town Clearing to CHAPS, something which I understand the clearing banks themselves are seeking to encourage, might help the management of risk exposures; it would certainly benefit the monitoring and control of the risks of exposure to bank customers. I should stress, however, that this is an indication of the direction in which we might seek gradually to move. It would be imprudent to entertain the possibility of overnight change, not least because it is imperative that the quality of service provided to all users of our payment systems should be maintained at every stage of the long process of development which lies ahead of us.

### Settlement systems

As I have indicated earlier, part of the reason for examining wholesale payment systems is that increasing demands are being made of them by the systems for settling transactions in London's financial markets. The most serious settlement risk in these markets is of an exchange of value going badly wrong, with assets delivered without payment being received, or vice versa. The only way to eliminate this risk completely is for the exchange to be simultaneous and final, and the most important issues in the design of settlement systems arise in the attempt to get as close as possible to this ideal.

In this context, the recent experience of the Central Gilts Office is particularly relevant, as in that instance what was originally conceived as a computerised book-entry transfer system, without payment facilities, had to be enhanced to provide what are now known as assured payments. What this means is that every movement of stock between one account and another in the system automatically generates an assurance from the settlement bank acting for the recipient that the stock will be paid for. The catalyst for this innovation was the prospective enlargement of the number of participants in the gilt-edged market as Big Bang approached, including the entry of a number of overseas institutions. It became clear that these new participants would not be prepared to accept the payment practices of the old gilts market, and in particular would not part with valuable securities

against Town Clearing cheques whose soundness would only be demonstrated later in the day. The problem facing the designers of the CGO was therefore to find a way of synchronising the payment with the stock transfer. In principle this problem might have yielded to two approaches: the construction or adaptation of a payment mechanism to deliver intra-day final funds transfers to sellers; or a purely contractual method, in which the legal framework reduced risks for the buyer and seller by transferring the payment obligation and thus the counterparty risk to an institution acceptable to the party parting with stock.

In practice, the first of these approaches was not available because potentially the most promising payments medium, CHAPS, cannot currently synchronise funds transfers with the delivery of securities in a book-entry transfer system, though being fully electronic it could perhaps at some future stage have such a facility added to it. The solution which the CGO embodies therefore relies on the transfer of risk by means of contractual agreements. The settlement bank of a recipient of stock in the CGO system takes on an irrevocable and unconditional contractual obligation to make a payment for the stock to the sender's settlement bank. This obligation arises—and this is fundamental—at precisely the moment when the stock passes from one account to another within the CGO book-entry system. The transfer of stock and the creation of a payment obligation cannot arise independently.

In the CGO assured payment system, the banks are not only providing a service which—like CHAPS—protects the receiving customers from credit exposure against their counterparties, but they also undertake to do so without limit so long as they continue to act for their CGO customers. The settlement banks are prepared to do this because the link with the gilts transfer system enables them to obtain collateral of the highest quality in the form of a floating charge over the government securities held by their customers in CGO or which are due to be delivered to them, and by a fixed charge over moneys due and receivable in respect of CGO-settled sales. The assumption of an assured payment obligation is therefore always covered either by stock or by an assurance of payment from another settlement bank. The overall effect is that these contractual arrangements give assurance not only to the transactors but also to their banks, and I am therefore pleased that some uncertainties regarding the security of the floating charge are being addressed in the Companies Bill now before Parliament.

I have talked about the CGO in some detail because it reflects one answer to the important questions concerning settlement risk and because many of the issues relating to the settlement of gilts transactions also arise in settling deals in a range of other markets. The CGO is therefore perhaps a useful model for other systems, though it may not be able to be transplanted as a whole from one market to another because the design of systems and legal frameworks needs to take account of the assets that are to

be transferred through them and of the markets in which they are traded.

The most immediate analogy to the issues faced in the design of the CGO is probably the prospective Central Moneymarkets Office or CMO, which incidentally provides an illustration of the growing difficulty of maintaining an effective co-operative approach to new system developments.

In its initial phase, the CMO is intended to replace physical delivery of bearer instruments in the sterling money markets with a book-entry transfer system, the paper instruments themselves having been immobilised in a depository. In this respect it is rather like the early plans for the CGO. But plainly, for the reasons I have given, it would be highly desirable to develop the system so that in a subsequent phase it can incorporate some form of payments facility which offers within-day finality to sellers and others parting with stock. Also clearly in prospect now are similar needs in respect of the equities market as the Stock Exchange's proposals for a book-entry transfer system come to fruition in the TAURUS project.

The risks I have been discussing arise in all exchange of value markets, but are perhaps most intractable in the settlement of foreign exchange transactions. This was illustrated all too graphically by the Herstatt crisis, which occurred as long as fifteen years ago. The root of the difficulty is that the mechanisms for settling foreign exchange transactions generally rely on final settlement facilities across accounts with central banks in different countries and, in some of the most important instances, also in different time zones. In practice, this can make simultaneous exchange of value impossible, the result being that the party whose payment achieves finality earlier has no option but to bear an intra-day credit risk against his counterparty.

However, the achievement of simultaneously final transfers in the settlement of foreign exchange transactions poses problems beyond those that arise in a purely domestic context. It might require the linking of electronic funds transfer mechanisms in different currencies and therefore different countries, and this is not available within the existing payments infrastructure.

## Responses

I would suggest that two clear general messages emerge from my remarks so far. First, that the development of efficient and safe settlement systems raises important issues concerning their interface with the payment system and thus the type of payment services provided by the banks. And second, that the banks need to keep the requirements of these markets in mind in developing their wholesale payment services. It is therefore essential that all interested parties should be involved in the general debate and should actively participate in individual projects from the earliest possible stage.

Pressures from all these markets—both domestic and international—will inevitably lead market participants to pay more attention than hitherto to the characteristics of payment systems and the banks to take a greater interest in the risk management features of the various market settlement systems. I should therefore like to spend a little time considering what measures are available to reduce settlement risk exposures. These can be divided into a number of broad categories. The first are those measures which can improve the technical efficiency of a system and thereby increase the proportion of bargains which are settled promptly. Secure matching and clearing procedures are very important in this respect. So is the introduction of book-entry transfer systems, and I therefore warmly applaud the efforts being made by all those involved to overcome the difficult problems that have arisen in designing the TAURUS system for the equity market.

Second, there are measures which can reduce the duration of a settlement counterparty exposure and thus the danger of the associated risks crystallising. In this respect, short settlement periods have a part to play.

But the most important measures reduce settlement risks either by redistributing exposures to parties better able or more willing to bear them, or by reducing the size of the counterparty exposure itself. A redistribution of risk can be effected in several ways. The most obvious are agreements among payment and settlement system members to share the burden of any losses in some way and the use of a central institution—typically a clearing house—to act as a central counterparty or otherwise in a principal capacity in the settlement process. In addition, assured payment undertakings provided by third party banks, such as I described earlier in the context of the CGO system, can help to reduce risk by redistributing exposures.

A further important safeguard against risk can also be provided by collateralising settlement exposures. This is well illustrated by the CGO system, but collateral also forms the basis of the daily margining procedures used in derivative product markets to contain the extent of delivery risks.

A rather different type of measure is the netting of settlement and payment obligations, which in addition to producing logistical efficiencies, can in certain circumstances reduce the size of a settlement exposure. In some cases, moreover, netting may also reallocate risks. It therefore raises particularly important and difficult issues, and these are accordingly being considered by the international central banking community in their discussions at the Bank for International Settlements in Basle. Their task is to look in detail at the proliferation of actual and proposed schemes for netting and settling foreign currency payments and obligations, and to consider the implications of these schemes for credit, liquidity and other risks, and how these risks would thereby be distributed, or maybe reduced.

But, as I have already indicated, the most fundamental measure to reduce settlement risks would be to achieve simultaneous and final exchange of value as this is the only way of eliminating the risk of capital loss from a settlement default. This returns us unavoidably I think to payment systems and in the time I have left I would like to say a little more about the sort of payment arrangements which can come close to achieving this.

In fact, there are a number of concrete examples as the problem of achieving assured intra-day payments has already been addressed in some individual markets. I have already talked about the Central Gilts Office. A different approach is taken in the eurobond market, where the transfer of securities is in broad terms conditional on the recipient having made sufficient funds available to the clearing house to pay for them. And a third approach is taken in many futures and options markets here and overseas, involving members holding accounts with one of a group of bank branches which offer so-called protected payments to and from a clearing house.

One could, of course, aim to design separate payment arrangements for each market rather than rely on the existing payments infrastructure. But it would perhaps be a mistake for the debate to overlook the possibility of developing the existing mainstream payment mechanisms, and particularly CHAPS, so that they could handle payments which are conditional on the delivery of securities—or of foreign currency payments—and could therefore achieve simultaneous exchanges of value. Such a development would among other things open up the possibility of taking collateral in exchange for payments.

In thinking about how to respond to the needs which arise in the design of settlement and payment systems, I will make one final general point. There is almost inevitably a trade-off between the quality of service offered by the banks to their customers and the risk exposures incurred by the banks. Customers will naturally want to have use of incoming payments as soon as possible; but if banks

respond to this demand, they risk increasing their own exposure to payment or settlement problems. Accepting risk is, of course, the particular specialisation of banks, but the terms of the trade-off depend on the structure and rules of the payments system. If we can design systems which reduce risks while still offering payees quick use of funds, we shall therefore have done an important job well.

## Conclusion

Let me conclude by summarising what we should all be seeking from our payment and settlement systems—and in particular from the wholesale systems which have been my main concern tonight. First, the quality of the payment services provided to users should be high in terms of the availability of intra-day funds to payees. This capacity for access to funds would ideally be combined with book-entry-transfer systems to enable simultaneous final delivery against payment transfers. But the risks incurred by providers of these services should be clear, measurable and controllable. The risks borne by individual banks should also be proportionate to their capacity to bear them. And any system should be designed to protect against a chain of defaults—it should not be such as to propagate failures so that local difficulties become systemic problems. In specific terms, perhaps the most challenging objective we can pursue is to achieve simultaneous final delivery of the two sides of a foreign exchange transaction—and the greatest achievement would therefore be finally to solve the Herstatt problem.

All this raises some hard questions which require careful consideration of technological and legal factors and a balancing of the benefits to users of systems against the risks to providers of those services and the costs of implementing solutions. I have deliberately asked many more questions than I have offered answers. And I have done so in recognition that these issues are going to become more pressing and in the belief that this is going to be one of the key areas for debate during the period ahead.