

GLOBAL PAYMENTS SYSTEMS – THE CHALLENGES FOR CENTRAL BANKS *

The payments system plays an important role in both the monetary policy and bank supervision aspects of central banking. It is subject to credit, Herstatt, market, liquidity, operational, legal, reputational, intellectual, official and systemic risks. Containing these risks is primarily the responsibility of banks' management but central banks have an important role.

Introduction

It is indeed my pleasure to be here with you today to discuss payments issues from the perspective of a central banker. I congratulate Joseph Yam and his colleagues for putting together a programme that has drawn so many experts from the public and private sector.

This morning I would like to start off with some general observations regarding payments systems and central bankers. Then, I would like to make some observations on payments systems issues. I will do this in the context of risk analysis. If there is a message that I want to convey to you, it is that these issues seem to be universal. That said, the solutions do not need to be uniform. Each state will resolve those issues in the context of its social, political, and economic state of affairs. For us in the United States, we are in the unenviable position of taking a system created some time ago and getting it right. For those of you now moving to real-time gross-settlement systems for the first time, I envy your ability to learn from our mistakes.

Why are Central Banks Concerned with Payments Systems?

Central banks are concerned with price stability and market stability. These two goals are directly related to the three main functions of a central bank or monetary authority (I use these terms interchangeably). The three main functions of a central bank (and not all central banks have the same degree of direct involvement in each of these functions) are: (1) formulation and implementation of monetary policy, (2) bank supervision, and (3) provision of banking services.

Price stability, of course, refers to getting the balance right between inflation and recession. So, central banks are concerned with payments systems because many central banks implement monetary

policy through their payment system. There can also be other linkages between monetary policy and payments issues because payments can affect the monetary base. For example, in the near term, if smart cards were to be issued by non-bank firms not subject to Federal Reserve deposit reserve requirements, there would be some erosion of the monetary base, but it is anticipated that erosion would be quite small. It is, nonetheless, a matter that will need to be under continuous review.

Market stability refers to those functions that relate to the smooth, efficient, liquid, safe and sound operation of financial markets. A central bank's major concern will be with systemic risk, because of its potential for destabilising the economy. A central bank will be concerned with lesser risks as well. Shocks in the financial markets are likely to first surface in the payments system. Bank supervision plays a role here in ensuring that banks and payments systems are operating in a safe and sound manner. Banking services plays a role by either providing payments or settlement services for banks or by providing funds liquidity to market participants to help ensure settlement of transactions.

Of course, all of this serves to help ensure that savings can be channelled through the economy into investment which, in turn, will result in the provision of goods and services to the economy. A payment systems is a means that supports that end. It is a service. Indeed, it is the foundation of our economies and financial markets. This foundation must be an especially firm one. My former colleague Jerry Corrigan referred to the payments system as the plumbing of the financial system. I do not know about Hong Kong, but in the United States plumbers are in short supply and are highly paid and must be available around the clock. The same might be said of those in central banks who participate in payments systems, except they might

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have some doubts about the highly paid characterisation.

Much of the focus today is on electronic payments systems. My talk will focus on those systems. But the concerns of central banks regarding the payments system starts with the most simple payments tool – currency – moves on through other paper means of payments, including cheques and drafts, and continues on to the most complex electronic clearing and settlement systems. The means have changed but our concerns have not changed. I will try to prove that point today. The solutions will vary but the issues have not changed very much. What we are concerned with is the payments aspects of money. Whether we talk about central bank notes, commercial bank notes, cheques, travellers' cheques, automated clearing house (ACH) transactions, securities delivery-against-payments systems, wire transfers of funds, or even payment-against-payments systems, we are talking about the uses of different forms of money. Money serves as a store of value and can serve as a payments mechanism. A payments mechanism can be used to discharge an obligation. That is, if I am obligated to you in a stated amount, I will use money to convert my obligation to you into a more acceptable obligation, from your point of view. At the conclusion of the payment, you will want to have as your debtor a bank whose creditworthiness is acceptable to you. You will accept currency because it is creditworthy. Other forms of payment will result in your bank being obligated to you.

What is the purpose of these introductory remarks? It is to indicate that we are dealing with bank credit. Credit can mean risks. What I would like to do for the balance of my presentation is to see how payments and payments systems relate to various forms of risk.

Credit Risk

This is the risk that a counterparty – a net debtor in a payments system – will be unable to settle. This is a worse case analysis, involving the financial failure, the insolvency, or bankruptcy of a payments system participant. There is little credit risk with currency. Indeed, in the United States, under commercial law, the obligor's underlying obligation to the obligee is discharged when currency is accepted in payment. Currency does

not, however, involve systemic risk. Other payments mechanisms do. Even the cheque collection system can involve systemic credit risk. But there are not a great deal of large value cheques in circulation. I am aware of an instance where the chargeback of a large value cheque resulted in the failure of the bank in which the cheque was first deposited for collection. In addition, as you know, bank failure is not an unusual event in the United States. The Federal Reserve Banks, in addition to being the lenders of last resort, are also the correspondent bank of last resort. As the financial condition of a bank deteriorates, it will lose its correspondent banks, who will shy away from the credit risk presented by a failure. In these cases, the Reserve Bank steps in as correspondent bank. The Reserve Banks will protect themselves from credit risk. More significantly, the Reserve Bank and the Federal Deposit Insurance Corporation, the Federal deposit insurer, will work together to lessen the potential for unwinding myriads of consumer transactions. Our chief concern is retention of consumer confidence in the payments system.

In the United States, we are still assessing the credit risk inherent in the ACH system. While the great number of payments over this system are smaller value consumer payments, it is used for large intra-corporate transfers. It is not perfectly clear that this system can adequately cope with credit risk. I think that most of you are aware of the credit risk inherent in large value payment systems such as net settlement systems as CHIPS and CHAPS and in real-time gross-settlement systems.

The G-10 central bank governors helped focus our concerns here. These are reflected in the so-called Lamfalussy standards. A clearing and settlement system should be able to cope with the failure of at least the largest net debtor. Some payments systems are seeking to be go beyond this standard.

Credit risk can be lessened or eliminated with the use of collateral. Credit exposure can be secured by the pledging of collateral. Liquid collateral can be used to provide funds to be supplied to complete settlement. However, I have observed that, over the past few years, collateral has been viewed as a cure-all for credit risk. This raises several issues that will need to be considered. First, it can have competitive (or should I say

anticompetitive) implications. If a payment system participant can only use, for example, securities issued by the government of the country in which the payment system is located, then there will be a tendency for that payment system to foster the involvement of domestic banks at the expense of foreign banks. Second, an institution might not have sufficient collateral to participate in clearing and settlement systems around the world. It simply may not have sufficient collateral. Third, think of the nature of a commercial bank – a commercial bank is a firm that is a supervised, and regulated, unsecured debtor with respect to its creditor/depositors. The bank's assets are to be applied to satisfy its creditor/depositors. If a material amount of assets are pledged to secure a particular type of non-depositor creditor, such as a clearing and settlement system, this can affect the credit evaluation of a firm by analysts. That is, how well the depositors of the bank will do if the bank fails could depend in a significant measure whether the bank fails during the operating banking day where it has pledged a significant or material amount of assets to participate in clearing and settlement systems or whether it fails later in the day, after those systems have closed. In addition, those providing equity and longer term non-deposit debt financing to the bank may require higher compensation.

One other issue here is that banks and other financial intermediaries participate in a number of clearing and settlement systems around the world. The failure of a major firm will not affect just one system but would likely affect many. There is also the potential here to reduce risk across different systems. Excess collateral pledged for one system might be used to cover an exposure in another. These cross-margining arrangements can be used for securities, futures and options clearing and settlement systems.

As I stated earlier, credit risk is not just a large value payment issue. The use of smart cards also raises novel credit risk issues. What risks will the individual consumer be subjected to if the issuer of the smart card obligation is not a bank and is not subject to supervision?

Herstatt Risk – A Special Credit Risk

Herstatt risk is a special form of credit risk. It arises because of the lack of simultaneity between

payments systems in different countries and currencies. With due regard for the sensitivities of our colleagues at the Deutsche Bundesbank, I note that Herstatt risk existed and occurred long before the 1974 Herstatt failure. But it was sizeable enough in the Herstatt case to bring several payments issues to the attention of commercial and central bankers. Herstatt risk does not simply involve the temporal risk of payment for one leg of a foreign exchange transaction in an eastern time zone and waiting payment in a more western time zone. Indeed, in the Herstatt case, a bank that made a final CHIPS payment in New York but received an earlier provisional payment in Germany took the risk that the provisional payment could be revoked.

Those of us who regard ourselves as having some expertise in this area were in for a surprise. We learned that Herstatt risk involved more than moonlight risk of a day's payment. The Foreign Exchange Committee sponsored by the Federal Reserve Bank of New York demonstrated to me how much we are still learning about payments issues (and why programmes such as this are so necessary). The Committee defined Herstatt risk more accurately as beginning when an irrevocable instruction to pay is issued and ending when knowledge is received that the payment received has become final. Thus, this risk is more than moonlight risk and can extend for over a five-day period for each payment. The risk builds and declines along a bell curve. Having quantified this risk as much larger than viewed before, the Committee noted that it could be reduced through improved services from correspondent banks.

The Group of 20, which I believe consists of 19 multinational commercial banks (which shows that commercial banks count as badly as central banks where the G-10 consists of eleven central banks) is considering three arrangements to eliminate Herstatt risk. The first is what I refer to as a double-escrow arrangement. The second is a self collateralised payment-versus-payment system. As my colleague Bill McDonough has stated, we want to see Herstatt risk eliminated by its 25th birthday, which I believe is 1999. We would prefer the private sector to develop a solution. If the private sector is unable to devise an acceptable solution, the central banks will do so.

Market Risk

Market risk is the risk arising from the volatility of the price of a product in the market. For our purposes it consists of interest-rate and foreign exchange volatility. We typically do not associate these with clearing and settlement systems. But it is a feature of securities, futures, options and foreign exchange clearing systems. A key variable here is futurity – risk increases in direct relation to the length of time between the consummation of the trade and the final settlement of the transaction. Incidental market risk is associated with collateral, whose value can fluctuate.

Participants to a transaction can reduce their market risk by use of a multilateral clearing and settlement system. This is one of the goals of ECHO in London, which is operational, and Multinet in New York, which is still in its planning stages. These are foreign exchange clearing and settlement systems. Interestingly, the greatest risk to be faced by the designers and managed by the operators of these systems is not market risk but much greater settlement risk.

Liquidity Risk

Liquidity risk relates to the inability of a firm to have sufficient funds available to it or the inability to enter into transactions necessary to carry out the firm's business. Central banks can address a bank's or the market's funds liquidity through discount window facilities and open-market operations. Central banks do not, however, as a rule provide transactions liquidity to banks. Bankers need to have contingency plans to deal with these risks.

Operational Risks

This is a risk of which I assume many of you are well aware. It relates to whether payment system participants and the system in which they participate have adequate redundancy to weather a storm. The Fedwire system has three levels of contingency. Each of these levels of contingency is supported by a contingency arrangement for telecommunications and electrical power. We believe that Fedwire is such an essential part of our financial markets that prolonged down-time is not acceptable. I am sure that the same would be said about CHIPS.

Price discovery in a financial market can be affected if a clearing and settlement system is down and new transactions cannot be entered into the system.

Security risk is also an aspect of operational risk. The ability of an interloper to cause a system to crash or to initiate fraudulent trades will be a matter of continuing concern. Many of you have probably heard about the individuals from St. Petersburg, Russia, who managed to penetrate Citibank's system, with fortunately small loss to Citibank. There is a constant need to improve upon security – whether that money is in paper or electronic form. In part this is a matter of cost/benefit analysis; in part, this is a matter of payments system confidence.

I am sure that throughout this conference you will hear much about the operational side. One of my functions is to serve as the Product Director for Wholesale Electronic Payments for all of the Federal Reserve Banks. The one thought that stays with me is that, once established, these systems are not easily changed. They are like large supertankers. A lot of thought and action must go into each change. Much testing must go into each change.

Legal Risk

I am not referring to the high costs of lawyers. Legal risk can be defined as the risk that the payments made and/or settled over the system will not be valid and binding. This can result from an ultra vires transaction – the entity does not have the authority to engage in the transaction. It can result from the fact that the individual authorising the transaction for a corporation does not have the authority to do so. It can result from the provisions of bankruptcy statutes.

Bilateral settlements typically present little difficulty from a legal perspective. Multilateral arrangements have proved to be more difficult to address. While logic tells us that a multilateral settlement should be as valid as a bilateral one, there tends to be little statute or case law on this point. A number of countries have amended their laws to eliminate any ambiguity here. That was done in the United States. One of our chief goals was to eliminate any questions regarding the validity of CHIPS settlements. A law is pending

before the Canadian parliament to also ensure settlement in the new Canadian payments system, although I understand that there is a question whether a federal law can overcome a provincial commercial law.

There are still many issues to be explored regarding the bankruptcy of a multinational bank operating through branches.

Smart cards raise issues of legal risk. While in the United States we have specialised commercial law to deal with the collection of paper instruments and with wire transfers of funds and we have consumer legislation to deal with many aspects of ACH, debit card, and ATM transactions, we do not have a specialised law to address many of the issues posed by smart cards. Should we prevent the implementation of smart card arrangements until we can adopt that legislation? The answer is "no". We need to allow these experiments to grow. Some will survive; some will not. We will study these arrangements and look to devise solutions to problems. On the other hand, we expect the providers of these new consumer payments services to inform their customers adequately of their rights and obligations and risks.

Reputational Risk

This is the risk that a significant erosion of the reputation of a firm or a payments system will cause counterparties to refuse to do business or have transactions with the firm or over the system whose reputation is impaired. One part of a firm's reputation will be its history of dealing with others honestly, fairly, and in good faith. For example, a bank receiving an erroneous payment from another should promptly notify that bank and promptly return the funds as requested.

Another aspect of reputational risk may be a bank's reputation of being able to meet customer needs.

Intellectual Risk

This is the risk that can result from the failure of a market participant or system operator to have on hand individuals with the requisite skills. A colleague recently retired from the Federal Reserve Bank of New York. She had worked at the Bank for over 18 years, a good number of them on the

transfer against payment of book-entry United States Government securities over Fedwire. To me, one of her outstanding traits was that, in times of stress, she was the captain of her ship, standing on the deck giving orders to her staff calmly, while bullets and cannon balls were flying around her head.

This is also true of the applications staff, who with enormous pressures on their backs need to analyse a problem and devise the best solution as promptly as possible.

Official Risk

Official risk is the risk that official policy will cause market or payment system participants to act in a less than prudent manner. The potential for official risk can be reduced by the public and private sector working hand in hand. New policies or procedures can be proposed in a transparent manner.

It is best, I believe, for the public sector to allow the private sector to address a problem before the public sector does so. For example, instead of mandating the solution to a problem, the Federal Reserve can nudge the New York Clearing House to devise its own solution to a CHIPS problem. Indeed, that is how many of the improvements in CHIPS over the years came about.

Systemic Risk

This is the risk that the failure of one participant could lead to the failure of others. For large value payment systems, this risk is significant. One could ask the question whether this risk is so great in net-settlement systems that net-settlement systems should be prohibited and only real-time gross-settlement systems should be permitted to handle large-value payments. To date our answer has been that net-settlement and real-time gross-settlement systems can exist side by side. There is room for both. Indeed, I am not sure that banks have sufficient leeway in Fedwire to make all the payments that are now made over CHIPS. More importantly, we believe that these risks can be managed adequately by system participants and operators. To help ensure that this is the case, the bank supervisors have a key role here. Payment systems, such as CHIPS, are

regarded as providers of services to banks. The Federal bank supervisors have the authority to examine such payments and do so annually. Copies of that report of examination are provided to participating banks. Of course, bank examiners also examine the operations of banks participating in payments systems.

Significant efforts to help eliminate the potential for systemic risk have emanated from the G-10 central bank governors. The Lamfalussy report, which I mentioned earlier, set out minimum standards for evaluating cross border clearing and settlement systems and went on to set out how central banks should interact in judging new systems. The G-10 central bank governors payments committee has gone on to explore delivery versus payment systems. For those of you who have not

read these various reports, I commend them to you.

Concluding Remarks

But in the end risk management is not the responsibility of the official side. It is the responsibility of the management and directors of firms. We on the official side recognise that we cannot expect the directors of a major or minor bank to have great working knowledge of clearing and settlement systems. But the directors and senior management of a bank do have a responsibility to ensure that the bank's staff is managing participation in these systems worldwide prudently. That is an awesome task. I like to think that we on the official side are here today to help you in that process and that you are helping to fulfil your responsibilities by being here today. ☺