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**COMMITTEE ON PAYMENT AND SETTLEMENT SYSTEMS**  
**Secretariat**

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**CURRENT TOPICS IN PAYMENT  
AND SETTLEMENT SYSTEMS**

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## Foreword

In July last year, the Bank for International Settlements (BIS) established its first presence outside Switzerland in the form of the Representative Office for Asia and the Pacific in Hong Kong SAR. In November of the same year, the Committee on Payment and Settlement Systems (CPSS) of the G10 central bank governors decided to hold its next meeting in Hong Kong in May 1999. The Committee wanted to make use of the opportunity offered by the BIS Office in Asia and the Pacific to establish and renew contacts with central banks in the region. To this end the CPSS organised a workshop the day after its meeting.

The aim of the workshop was to enhance the exchange of information and cooperation on all issues relating to payment and settlement systems between, on the one hand, the central banks of Asia and the Pacific and, on the other hand, between them and the central banks represented in the Committee. At the same time, the workshop contributed to the ongoing discussion on enhancing financial stability worldwide, as the CPSS is one of the institutions represented in the newly created Financial Stability Forum. The workshop, which was widely attended, brought 26 central banks and monetary authorities together. The workshop was special in two respects. Firstly, because the CPSS was meeting for the first time outside Basel. Until then, CPSS meetings, which are held twice a year, had always taken place at the BIS in Basel. Secondly, because it was the first time the CPSS had organised an event with central banks from a specific region. While there had previously been meetings that had included central banks from non-G10 countries, they had not focused on a particular region.

The workshop covered four broad areas: operational and policy experiences in periods of transition with respect to payment systems, central bank oversight and the Core Principles for payment systems, a progress report on foreign exchange settlement and a central bank perspective on securities settlement infrastructure. The fact that the chairpersons of the different sessions at the workshop were drawn from both G10 and non-G10 central banks clearly underlined the common interest and shared expertise in the area of payment and settlement systems between all participating central banks.

Wendelin Hartmann,  
Chairman, Committee on Payment and Settlement Systems,  
and Member of the Directorate, Deutsche Bundesbank

# Opening remarks<sup>1</sup>

by Gregor Heinrich

Dear colleagues and guests,

On behalf of the Bank for International Settlements (BIS) I would like to welcome you to Hong Kong. At the very beginning I would like to thank everybody who helped organise this workshop. There are first the staff members of the BIS Representative Office for Asia and the Pacific under the leadership of George Pickering. And, from the BIS in Basel, I would like to thank my team, the Committee on Payment and Settlement Systems (CPSS) secretariat.

I have the pleasure to introduce the chairman of the entire meeting today, Wendelin Hartmann. He joined the Bundesbank in 1964 and has been a member of the Directorate of the Bundesbank since 1992. He is thus also a member of the German Central Bank Council. In 1995 he was appointed Chairman of the European Monetary Institute's Working Group on Payment Systems and also chaired its successor group, the European Central Bank's Payment and Settlement Systems Committee until July 1999. Today, he is present in his capacity as Chairman of the CPSS, the Committee on Payment and Settlement Systems of the G10 central banks, a position he was appointed to on 13 July 1998. He has been a member of the CPSS since 1990 and of its predecessor working group since 1980. I think it is difficult to find anyone more experienced in payment systems issues and I would like to invite him to introduce this meeting.

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<sup>1</sup> The papers and proceedings are reproduced as presented at the workshop, having undergone only light editing. The views expressed in them are those of their authors and not necessarily the views of the BIS or the central banks represented.

**A. Introduction: by Wendelin Hartmann, Member of the Directorate, Deutsche Bundesbank; Chairman of the CPSS**

Ladies and gentlemen, I would like to welcome you in my capacity as the chairman of the G10 Committee on Payment and Settlement Systems (CPSS). You may know that the G10 has never been a group of only 10 countries but, in fact, of eleven because Switzerland as the host country was integrated in the group. A couple of years ago, I think it was just two years ago, Singapore and Hong Kong joined the CPSS, so we are 13 countries at present. The extension of the Committee is thus limited, which is one of the reasons, by the way, why we are here. Up till now the CPSS held most of its meetings in Basel. However, this time we are here in Hong Kong for several reasons. The first one is to support the BIS Office and Mr Pickering and his team as well as to get acknowledgement from the region here. However, there is a second reason and this relates to the ongoing work of the Committee, which has meanwhile reached a dimension of worldwide importance. This is the first meeting we are holding in the Asian-Pacific region. This shows that we are very much interested in learning from the work and experience of central banks in these countries. We are ready to learn and maybe we will also be able to transfer a lot of the experience we have gained over the last years. Developments in Europe, namely the creation of Monetary Union and the establishment of the European Central Bank, which will be explained by Mr Godeffroy, may be of specific interest.

We have had a very busy week up till now. It started on Monday and Tuesday when John Trundle (Bank of England) held a workshop on the practices and principles for payment systems. This work has attracted attention and is now also important in the IMF environment. So everybody is looking forward to the final report. I am sure that the report will be of great interest to many countries all over the world.

On Wednesday there was a special meeting on S.W.I.F.T. chaired by Robert Reynders (National Bank of Belgium). S.W.I.F.T. is of great importance to the whole banking industry and, as far as I know, all of the central banks assembled here in this room are more or less intensively using S.W.I.F.T. S.W.I.F.T. is of such importance that, also in connection with the Year 2000 problem, it is really fundamental that this institution is available at all times and is able to adequately serve both the central banks and the whole financial industry all over the world. Therefore we are permanently following the development of S.W.I.F.T. and its preparatory work with regard to the changeover to the Year 2000.

Yesterday we had our regular CPSS meeting with very interesting topics, as you can see in your folder. One important issue which we have been discussing permanently over the last year is how to organise the end of the year, i.e. the changeover to the Year 2000. One of the questions has been whether 31 December should be a holiday. Within the European Union (EU) we agreed that it should be one; the United States, however, decided differently. I am sure the panel will also reflect on this question.

The workshop we have organised for today is of specific interest and will to some extent complete the work of this week by broadening the angle of view to the developments in emerging countries. Ladies and gentlemen, let me now introduce the first chairperson of this workshop. It is Mrs Suwannacheep from the Bank of Thailand. She has been Director of the Payment System Department of the Bank of Thailand for about two years. She is also director of the Bank of Thailand's Year 2000 contingency planning working group and a member of various payment systems related committees. In other words, she is a very experienced and competent person to conduct the first session.

## **B. Presentations and discussions**

### **Module 1: Payment systems: operational and policy experiences in periods of transition**

**Chair: Saowanee Suwannacheep, Director, Payment System Department, Bank of Thailand**

Thank you, Mr Hartmann, for a nice introduction and good morning, ladies and gentlemen. As a newcomer to the BIS payment system forum, I feel very honoured to chair this session and to be a part of the BIS's effort to extend regional payment system knowledge to central bankers from Asia, the Pacific and the Indian sub-continent. As you may have already realised, globalisation is driving financial market infrastructures from decentralised, single country and single currency contexts toward more multi-currency and multi-country payment systems in both regional and international spheres. The allotment of the multi-currency and multi-country payment system can be seen in payment systems like TARGET, which links the RTGS systems of central bank members in the European Union, or the Eurosystem of the Euro Banking Association, which is a true multi-country payment system. If we look beyond the G10 countries, many central banks have started to introduce RTGS for making wholesale payments or are seeking to enhance their current systems to provide for RTGS to achieve the ultimate safe and sound payment systems as recommended by the CPSS.

So all of us are here today for the session entitled "Payment systems: operational and policy experiences in periods of transition". We have a number of distinguished speakers who are internationally recognised and have helped develop a diverse range of payment systems in many countries. They will share with you their operational and policy experiences in the implementation of payment systems.

Ladies and gentlemen, I would like to introduce our speakers and I would like to introduce the gentleman to my right first, John Veale. Mr Veale is the Head of the Payment Policy Department at the Reserve Bank of Australia. He has been closely involved in the implementation of Australia's RTGS system and played an important role in the formulation and implementation of policies to improve the safety, efficiency and competition in Australia's payment system, as well as in other countries where he has worked as an IMF consultant.

The speaker to my left is Mr Sita Ram Mittal. Mr Mittal is the Chief General Manager in the Information Technology Department at the Reserve Bank of India. He has been a pioneer in the Indian payment system, starting from S.W.I.F.T. and the cheque clearing system. With his strong information technology background, his latest challenge has been to develop the RTGS system for India, which he will talk about. The third speaker, also to my left, is Jean-Michel Godeffroy, who is the Director General for Payment Systems at the European Central Bank. His broad experience includes one year with the Federal Reserve Bank of New York and his participation in the Working Group on EC Payment Systems. Mr Godeffroy will talk about TARGET.

Our last speaker is Clyde Goodlet. Mr Goodlet is the Regulatory Policy Adviser in the Department of Monetary and Financial Analysis at the Bank of Canada. He is the key person to find the ways and means to control systemic risk in various clearing and settlement systems. He will speak on Canada's Large Value Transfer System (LVTS), the newest system that is being implemented in the country.

So I would like you to meet our speakers and, since we have limited time, I would like to ask you to speak for 15 to 20 minutes each, starting with Mr Godeffroy.



## Panellists/Speakers

### **Introduction of TARGET in the European Monetary Union: Jean-Michel Godeffroy, European Central Bank**

Ladies and gentlemen,

I am very often asked to speak about TARGET and on European payment systems in general. But I rarely have the opportunity to do so in Asia. As a result, I would like to start my remarks today from a rather broad perspective.

The introduction of the euro - which meant the voluntary transfer of monetary sovereignty from the level of national Member States of the European Union to the European level - is a major event in the history of Europe. It is the latest step in the grand cultural, political and economic project that is European integration. European integration itself is deeply rooted in the willingness of the peoples of Europe, after World War Two, to overcome the nationalist tensions which had caused so much harm on our continent and, indeed, in the whole world. The Kosovo war today reminds us that nothing should ever be taken for granted.

Several ways to European integration were tested but the most successful one has been economic integration. Today, persons, goods and capital can move as freely between France and Germany as between New York State and New Jersey. Monetary Union in Europe is the logical outcome of this economic integration process, because this process would not be sustainable in the long run if the competitive position of the various economic actors could be threatened by inflation differentials and by erratic movements in the exchange rates.

In this context, integration of payment systems is one of the elements which support the singleness of the euro money market. It is, as a result, a modest but indispensable contribution to the European project.

As agreed, my speech will focus on TARGET. I will first briefly recall what TARGET is and why it has been created. Then I will expand on the performance of TARGET during the first few months of operation and discuss the relationship between TARGET and other payment systems in euro. Finally, I will touch upon our future work related to TARGET.

#### **1. What is TARGET?**

TARGET is the main payment system of Euroland. Its structure mirrors that of the Eurosystem. The Eurosystem is the central bank of the euro area (also informally called Euroland), in the same way as the Federal Reserve System is the central bank of the United States. The Eurosystem is composed of the European Central Bank (the ECB) and of the 11 national central banks of the countries which adopted the euro as from 1 January 1999. The main decision-making body for the Eurosystem is the Governing Council of the European Central Bank, which is composed of the six members of the Executive Board of the ECB and of the 11 Governors of the national central banks of Euroland. In general, defining the Eurosystem's policy is the responsibility of the Governing Council, but the implementation of this policy is mainly undertaken by the national central banks.

This institutional context explains the main features of TARGET, the payment system in euro run by the Eurosystem. TARGET is formed by the real-time gross settlement (RTGS) systems run by the national central banks. These systems are connected by an "Interlinking" system, which mainly consists in a set of common procedures and in the use of a single information carrier for cross-border payments: S.W.I.F.T.

Only some functions are performed in a centralised manner by the ECB: they relate to the end-of-day procedures, to the daily monitoring of the system and to the settlement of cross-border payment and settlement systems. The ECB also directly manages a payment system called the ECB Payment Mechanism (EPM), which is not open to commercial banks but only to public organisations such as

central banks. The EPM may be a way for central banks outside the European Union to consolidate their liquidity management in euro; but, obviously, a similar service can be obtained by relying on one or more national central banks of the Eurosystem.

TARGET has many features in common with other decentralised payment systems such as Fedwire in the United States or ELS in Germany. However, the various components of the system are technically very heterogeneous because they were built, or at least designed, before Monetary Union according to local agreements between the banks and the central bank.

Another originality of TARGET relates to the direct connection which has been granted to banks located in countries of the European Union which have not joined the European Monetary Union (Denmark, Greece, Sweden and the United Kingdom). These banks have access to TARGET directly from their local central banks, although the latter are not part of the Eurosystem. This arrangement has been implemented because the decisions relating to the selection of countries joining EMU were taken mid 1998, at a time when most TARGET-related investments had already been made. This decision is also justified by the intention to smooth the future integration of these countries to the European Monetary Union. But participation in TARGET by these countries is subject to some restrictions, in order to avoid any impact on the single monetary policy of the Eurosystem.

TARGET has been set up to reach two main goals: first, to serve the needs of the single monetary policy; and, second, to improve the soundness of payment systems.

When monetary policy experts prepared the framework for the future monetary policy of Euroland, they came to the conclusion that the existence of a single money market (and, as a result, of a single yield curve for short-term maturities) was a prerequisite. And, indeed, TARGET has been the instrument of the integration of the money market in Euroland. TARGET is therefore directly linked to the primary function of the Eurosystem: to determine and implement monetary policy for Euroland.

The second objective of TARGET was to promote the smooth functioning of payment systems in Euroland. This objective is stipulated by the Treaty establishing the European Union. The choice of RTGS as a payment processing mode follows a policy line which dates from back to 1993, when central banks of the European Union considered that the use of RTGS systems should be encouraged because RTGS is the soundest way to process payments, especially those of very large value.

## **2. Performance of the system**

Before the launch of the European Monetary Union, there were some uncertainties about the future performance of the system. There were fears that the capacity of the system would be insufficient, the processing of payments slow, its fees too high and that it would be too demanding in terms of collateral. Some even took the view that, due to these expected problems, TARGET might only attract a limited amount of traffic. All these fears have proved unfounded.

The system has proved capable of processing a much higher number of large-value payments than expected from the beginning of Stage Three and, under normal operating conditions, the end-to-end duration of a cross-border payment in TARGET is less than a few minutes, sometimes even lower than one minute.

As regards costs, the importance of the price difference between TARGET and alternative systems was overestimated. The TARGET fee for cross-border payments is very transparent: it is a flat fee (no entry fee, no periodical fee or end-of-year requirement to cover possible shortfalls between costs and revenues). So the real difference between the TARGET fee and other systems' fees may not be as great as it seems.

As far as intraday liquidity is concerned, we evaluate the needs of the banking sector to be around EUR 150 billion. To meet these needs, they can rely on the EUR 100 billion which they maintain as fully remunerated reserve requirements and which they can use to meet their intraday needs. But collectively, and even more so at the level of individual banks, intraday needs are higher than the amount of required reserves.

Additional liquidity can be obtained through intraday credit from the central bank. As a matter of policy and following a strict interpretation of the provisions of the Treaty, the Eurosystem never grants uncollateralised credit, even intraday. But it has decided to define a wide scope of eligible collateral.

Collateral for central bank credit is traditionally composed mainly of marketable assets and in particular of government debt. But the Eurosystem decided to accept a much wider range of collateral, partly because the Treaty prohibits any privileged access by public bodies to refinancing, but also as a way to counterbalance the impact for the banks' need for 100% collateralisation of central bank credit. The collateral pool eligible for credit by the Eurosystem amounts to more than EUR 5,000 billion, of which EUR 1,000 billion in the books of the banks. Even if banks have other uses for these assets, it is clear that the collateral shortage, which was often predicted, did not materialise.

In the end, it appears that TARGET might have struck the right balance between risk avoidance (i.e. full collateralisation) and efficiency (i.e. very wide definition of eligible assets).

In this context, bigger banks, which, of course, have cheaper alternatives for processing their payments, use TARGET extensively for their very high-value payments, for which TARGET offers advantages in terms of liquidity. Smaller banks which do not participate in other payment systems regard the TARGET price positively because it is undoubtedly lower than the correspondent banking fees they would otherwise have to pay. (Approximately 5,000 banks now have access to TARGET while the other systems have fewer than 100 participants.)

The statistical data available for the first few months of 1999 confirm that our objectives have been attained. TARGET is the system which is primarily used for high-value interbank payments and in particular those linked to the money market. During the first four months of 1999, TARGET as a whole processed, on a daily average, payments with a value of about EUR 950 billion. This represents 69% of the amounts processed in all large-value payments in euro. The share of RTGS payments in the total value of payments in euro has increased from 50% in 1998 to about two thirds now.

In this period the daily average of cross-border TARGET payments was about EUR 350 billion and domestic TARGET payments represented EUR 600 billion a day. This large share of cross-border payments is an indication of the successful integration of the money markets in Euroland.

But TARGET does not have the monopoly of payment processing in Europe. Indeed, in line with a market principle that inspired the construction of Monetary Union, other systems can operate alongside TARGET, provided that they comply with the minimum standards of the Lamfalussy Report. These systems are also requested to settle in central bank money. In our view, these systems should ideally complement TARGET in those areas where RTGS processing is not required. At present, there are four such large-value payment systems in the euro area: Euro 1, the German EAF, the French PNS and the Spanish SEPI. Euro 1 is a netting system run by the EBA Clearing Company, based in Paris, but with a membership widely distributed in the European Union; EAF and PNS are hybrid systems, combining features of RTGS and netting systems. While Euro 1 settles mainly cross-border payments, EAF, SNP and SEPI settle mainly domestic ones. These systems taken together settle about EUR 450 billion daily.

The very co-existence of different payment systems in euro has made banks' treasury management more complex because many of them receive funds in one system while they expect them in another one. In addition, banks have continued, in some cases, to use correspondent banking connections in particular for commercial payments. But progressively, correspondent banking in euro in Euroland is moving towards interbank funds transfer systems and banks have secured bilateral agreements concerning the delivery of funds.

### 3. Future work

Our first priority is of course to ensure that TARGET overcomes the Y2K obstacle without difficulty. We are confident that this will be the case because almost all components of TARGET are fairly recent. Nevertheless, we are busy checking and an overall rehearsal, involving banks, will be organised at the end of September. In order to smooth the transition to the next millennium, the Governing Council of the ECB has decided that TARGET will be closed on 31 December 1999.

Our second priority is availability. The importance of the payment flows processed through TARGET clearly shows that the concept was right and that it has answered a market need. However, TARGET was a major IT project whose start was determined by a Treaty and not by technical reasons. I think that it is fair to say that the availability rate of TARGET, at about 98%, remains lower than expected and our IT experts are busy improving the stability of the TARGET components.

Finally, during the next 12 months, we will endeavour to:

- further harmonise some features of the national RTGS systems - such as rejection rules - in order to address banks' concern about differences in TARGET across countries;
- establish a direct communication channel between the Eurosystem and the banks, in order to help them to be informed more quickly about the status of the various components of TARGET.

Thank you very much for your attention.

Chair: Thank you very much, Mr Godeffroy. Any questions from the floor about TARGET?

Q:<sup>2</sup> Jean-Michel, you mentioned the relatively large number of payment systems in Euroland and the possible redundancy. We see a lot of movement in the consolidation or proposals for consolidation in securities settlement systems right now in Europe. There are a large number of payment systems. Could you just make a comment on the general trend in the consolidation of the infrastructure, how the ECB sees that process and what the end result may be?

A (Jean-Michel Godeffroy): Thank you very much. I think that to a large extent the consolidation process in payment systems has already occurred. Before Monetary Union we had more or less 30 payment systems for large-value payments. Of course TARGET itself combines 15 of them and some others closed and some others were converted to RTGS and so on. So let us say that in three or four years' time we have moved from approximately 30 payment systems, 30 large-value payment systems, in Europe to five, which is already a big step in the consolidation process. We had some doubts as to whether the banking sector could live with five systems but I think now the situation is relatively stable, in particular because to some extent these systems have specialised. Just to take an example, the banks in Paris settle among themselves in PNS, which is the local large-value payment system. It is almost the case for all of them. They share their cross-border flows between the EBA and TARGET and more and more there is a rule, I would say, which is established a bit like, I guess, in the United States there is a rule between what you process in CHIPS and what you process in Fedwire. In the long run I would expect some further consolidation but I do not think it will be very close to now because the experience proved that, although there are some difficulties, in the end we can live with it. In the securities industry - I do not want to prejudge what Yvon Lucas will say later today - there has been no consolidation so far at all, and what is happening today is the first step towards consolidation. In my opinion, the securities industry is following what the payments industry, or prepared, before Monetary Union. The securities industry was clearly not prepared for Monetary Union and they now discover the rules of Monetary Union and the process is a bit hectic.

Chair: Next I would like to invite Mr Clyde Goodlet to speak on the LVTS of Canada.

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<sup>2</sup> Q indicates a question, A an answer. Where possible, the name of the person concerned is given.

**Introduction of LVTS in Canada:  
Clyde Goodlet, Bank of Canada**

Thank you and good morning.

As will be clear to those of you who have glanced at this paper, it is far too long to present in the time allocated. Therefore I propose to touch on just a few of the more interesting points in the hope of enticing you to read the complete paper at your leisure.<sup>3</sup>

The introduction of the Large-Value Transfer System or LVTS on 4 February of this year in Canada represents a necessary step in the establishment of a modern payment system infrastructure. However, the design of the LVTS is somewhat different from the arrangements in most other countries. It provides an interesting alternative for achieving the same outcomes that more traditionally well-designed RTGS Systems provide. Prior to the introduction of the LVTS Canada did not have a means of processing large-value payments that effectively handled the potentially substantial credit, liquidity and systemic risks associated with these payments. The system that cleared and settled payments in Canada, called the Automated Clearing Settlements System or ACSS, was a decentralized arrangement that settled multilateral net positions of participants on the day after the clearing process was completed. This arrangement posed considerable risks to the participating institutions and their customers particularly when large-value payments were involved. Most importantly, if a participating institution was declared in default and was not able to settle its clearing obligations, other institutions and their customers could be exposed to significant credit or liquidity risks. These risks arose because the participants in this system were forced to involuntarily extend substantial amounts of overnight credit to the other participants and had no means by which they could control or reduce these risks. In addition, this arrangement posed significant systemic risk. The paper provides some reasons why it took so long for Canada to deal with these risks in its payment system and the motivation for the payment system participants to get on with the job of building a modern, large-value payment system. Canada was the last G10 country to build a payment system that provides at least same-day settlement.

A well-designed clearing and settlement system that handles large-value payments will provide the following benefits to participants in, and the ultimate users of, the system. First, the participating institutions will be certain that once a transaction has been accepted by the system, and by that I mean once it has passed the risk control tests, the transaction has settled or will settle no matter what else happens. And second, given the certainty of settlement, the participating institutions are able to provide to their customers unconditional and irrevocable use of any funds received through the system. The payment mechanism used in most countries to achieve these objectives is an RTGS arrangement. However, RTGS Systems can impose considerable costs on participants as they typically require each participant to collateralize the use of intraday credit, or if such credit is not permitted, then participants must hold significant amounts of non-interest bearing balances at the central bank in order to effect payments.

In developing the LVTS, the Canadian Payments Association, which is a private sector body, and its members worked closely with the authorities to rigorously risk proof the system and to contain the costs of running it, with particular emphasis on the costs associated with the use of collateral. They sought to build a system in which the costs of collateral to support the use of credit were less than what they perceived to be the costs in standard RTGS Systems. So the LVTS is designed to use multilateral netting arrangements, to reduce total exposures for a given volume of payments in the system and to ensure that each participant faces a cap on the total amount of exposure it can create in the system. Any exposure created by an individual participant through its use of intraday credit will be fully collateralized, and even if the participant with the single largest obligation fails to settle this obligation at the end of the day, the combination of caps and collateral ensures that the liquidity required to settle the system will be available and that any credit losses can be safely absorbed. Finally the Bank of Canada has agreed to guarantee settlement in the extremely unlikely event of the failure of

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<sup>3</sup> Copies of the paper which forms the basis of these remarks are available directly from Clyde Goodlet, Bank of Canada.

more than one participant on the same day during the LVTS operating hours and where the sum of the exposures of the failed participants exceeds the collateral pledge by the private sector participants. The LVTS payment messages are netted multilaterally throughout the day and settlement takes place on the books of the Bank of Canada at the end of the day. Fully collateralized overdraft loans are granted by the Bank of Canada, if necessary, to participants which have a multilateral net payable position.

The paper provides considerable detail on the two streams of payments in the LVTS. Let me draw your attention to the discussion of Tranche II payments, since it is this payment stream, which can be described as a survivors-pay arrangement, that yields the considerable reduction in the amount, and hence the cost, of collateral needed to support a given value of payments. There is also a related discussion for the rationale behind the provision of the Bank of Canada guarantee for settlements and why we are not concerned that there are any moral hazard implications in this arrangement.

The Bank of Canada, in discussions with the private sector participants, has undertaken a number of initiatives to further reduce the costs associated with the use of collateral in the LVTS while ensuring that the safety of the LVTS is maintained. First, it established a new form of collateral for use in the LVTS that will be considerably less costly for participating financial institutions than the pledging of government securities. This collateral takes the form of Special Deposit Accounts at the Bank of Canada, which will pay a rate of interest slightly less than the market rate of one-day funds to the most creditworthy institutions. For financial institutions that raise one-day funds in the market and invest them in these SDAs, the overall cost will be at most a few basis points. The participating institutions made considerable use of this new type of collateral initially, although its usage has been declining recently.

Another initiative was aimed at reducing the cost of collateral needed to make end-of-day LVTS payments to settle amounts owing in the securities clearing and settlement system. Participants in this system, which is called the Debt Clearing Service or DCS, must fully collateralize their payment obligation during the day. Certain participants in the DCS make final and irrevocable payments at the end of the day to the clearing house via the LVTS to discharge payment obligations that have arisen from their purchases of securities (either for themselves or their clients) or those of other DCS participants. DCS participants were concerned that there would be a “doubling up” of collateral requirements since the Government of Canada securities that were typically used in the Debt Clearing Service to collateralize most of their payment obligations to the clearing house during the day could not be used to support the use of intraday credit in the LVTS when making payment to the securities clearing house at the end of the day. The Bank of Canada, the private sector operator of the securities clearing and settlement system and the participants were able to create a legally robust arrangement whereby the collateral could be transferred from the Debt Clearing Service (where it supported the intraday payment obligation) to support exclusively a payment by an eligible participant to the clearing house in the LVTS and thereby avoid the possible doubling up of collateral. The legal arrangements ensure that the collateral in question supports only one payment obligation at any point in time and that in the event of a participant failure, the appropriate parties are entitled to use the collateral. The payment obligations of individual participants in the DCS can amount to several billion dollars on a given day. This arrangement, by reducing potential collateral needs in the LVTS, can result in significant reduction in costs. It also helps to reduce concerns that time critical payments to the securities system clearing house may be held up in the LVTS for a lack of intraday credit. The participants have been making appreciable use of this provision in the first few months of the LVTS.

Another initiative by the Bank of Canada was to agree to broaden the range of collateral that it would accept in the LVTS to include Federal Government guaranteed mortgage backed securities. The cost to participants of this type of collateral is considerably less than the cost of pledging Government of Canada securities. This development should also reduce the overall cost of running the system.

A final innovation that the Bank implemented concerns the transfer of funds between the LVTS and the DCS systems. Transfers of surplus balances can go both ways, but consider the case where an LVTS transfer participant has sold securities in the securities clearing and settlement system resulting in a positive funds position in that system and it wishes to use those funds to make a time sensitive payment in the LVTS. Given that the DCS system does not settle participant payment obligations until

late in the afternoon, this institution could be faced with having to use collateral to support intraday credit in Tranche I to make the LVTS payment even though it has a surplus balance of funds in the DCS system that could be used to fund the payment. To deal with this type of situation, the Bank has agreed to provide a mechanism whereby it will purchase the financial institution's funds receivable position in the Debt Clearing Service and pay for this receivable by making an LVTS payment to the institution. The advantage for the financial institution of course is that it can now make an LVTS payment without having to resort to the use of Tranche I intraday credit, thereby saving collateral costs.

Now let me turn to the experience to date with the LVTS. Since the system became operational on 4 February 1999, the average daily value of payments transferred over the system has been about CAD 100 billion. The message volume is running at about 12,000 per day. Over the same period, the value of large-value cheques in the ACSS, that is the debit-pull system, has declined by about 50%, to about CAD 25 billion per day. Given the concerns expressed by the participants regarding the cost of collateral, it is not surprising that most payments in the LVTS have been made using Tranche II, that is the survivors-pay arrangement. Initially, participating institutions kept a significant amount of excess collateral pledged to the Bank of Canada. We were a bit surprised by that. Whether this will be a stable long-run behaviour or just reflected some initial caution concerning the ability of the participants to move payments through the system in a timely manner remains to be seen.

I'd like now to turn to a couple of issues that have arisen since the LVTS design was agreed upon and implemented. The first one is migration. A significant issue for the Bank, and one that the Bank is monitoring very closely, is the speed with which large-value payments migrate from the current ACSS system to the new LVTS system. The ACSS system has continued in operation and is ultimately expected to handle primarily the clearing and settlement of small-value payments. If the systemic risk concerns raised by the operation of ACSS in handling large-value payments are to be adequately addressed, most of the large-value payments that clear and settle in that system will have to move to the LVTS. Participants may face some challenges in persuading their customers to make large-value payments to switch to the LVTS since historically these customers have not perceived any risk to using paper cheques that clear and settle via the ACSS. In addition, participants' customers will have to incur some costs in changing their processes to make large-value payments, which will slow migration to the LVTS. We're hopeful that the prospect of receiving more timely information regarding the receipt of payments and the benefits of having irrevocable and unconditional intraday use of funds received over the LVTS will persuade corporate treasurers to use the LVTS for their large-value payments. In this regard the Federal Government has already moved a considerable portion of its large-value payments to the LVTS.

The coexistence of a paper based debit-pull and an electronic credit-push payment system has also caused some additional concerns for the participants in both systems. The paper provides considerable detail on the nature of these concerns but briefly the concerns arise because the LVTS has become the sole focus for the implementation of monetary policy. The Bank of Canada establishes a 50 basis point operating band for the overnight interest rate and encourages the overnight interest rate to stay within this band by charging the upper limit of the band for LVTS overdraft loans and paying the lower limit of the band for surplus LVTS balances. Given that the Bank will typically set the level of LVTS balances at zero, LVTS participants have an incentive to flatten their LVTS positions at the end of the day, at rates within the band. Initially, the Bank also charged for ACSS overdraft loans and paid interest on surplus ACSS balances at rates of interest that are 250 basis points above and below the limits of the operating band. This wider spread was chosen to create incentives to move large-value payments from the ACSS to the LVTS system.

Now consider the situation where some banks have a funds surplus in LVTS and a funds deficit in the ACSS. If almost all of the large-value payments migrate to the LVTS, these positions are likely to be relatively small. However, if some large-value payments remain in the ACSS, then the costs of having two systems could be quite appreciable. Participants in the two systems would receive below market rates on surplus balances in one system and have to pay above market rates on deficit positions in the other system at the same time. And while the participants might try to enter into offsetting transactions, a lack of information regarding ACSS transactions and risk considerations might limit

their ability to do so. There could thus be pressure on the Bank of Canada to reduce the size of the band on ACSS imbalances because of the high cost of holding surplus and deficit ACSS positions. And indeed that is precisely what has happened. Participants were finding it difficult to forecast their ACSS surplus or deficit positions and were having difficulties in entering into offsetting surplus and deficit positions in LVTS and ACSS. So, in response to these concerns in April of this year, the Bank reduced the ACSS spread from 250 basis points to 150 basis points above and below the limits of the operating band. We hope that this will reduce the costs of operating both systems but not the incentives for participants to encourage their customers to move their large-value payment transactions to the LVTS. The Bank is meeting with the LVTS participants to consider other actions that might help deal with this situation. And while we're prepared to be somewhat flexible and allow a period of time for large-value payments to migrate to the LVTS, ultimately action will have to be taken by the participants, the Bank, or potentially the Government to meet this objective.

Another interesting issue related to the operation of LVTS is the impact of the recent decision by our Federal Government to permit foreign banks to branch directly into Canada. The direct entry of foreign bank branches into Canada raises potential choice of law and conflict of law issues in the event of an insolvency of a foreign bank with a branch that is a direct participant in the LVTS. These concerns have to do with the viability of the netting arrangements in the LVTS, the enforceability of the pledge of various types of collateral and the viability of the legal protections that are designed to ensure that the settlement rules of the LVTS will operate as planned, free from legal challenges and stays. The paper discusses a number of these concerns in some detail. Clearly, the Bank of Canada has a direct financial exposure to these risks if the participation of foreign banks directly in the LVTS were to call into play the Bank's guarantee of settlement in circumstances that it was not intended to cover. The simplest and most effective approach to dealing with these concerns would have been to prohibit foreign bank branches from direct participation in clearing and settlement system such as the LVTS. The branches could then have had access to these systems indirectly through other direct participants including a related subsidiary. However, this approach was judged by the Government to be unnecessarily constraining. Instead it was decided that the branches would be permitted direct participation in large-value clearing and settlement systems if they were able to provide satisfactory legal opinions as to the application of foreign law. Based on legal opinions provided by counsel of foreign banks as well as any other relevant information, the Governor of the Bank of Canada is to be empowered to make a judgement on whether direct access into the LVTS by banks from a given country would pose a systemic risk or a risk to the Bank of Canada in guaranteeing settlement. Where the judgement is that the foreign banks' participation would pose systemic risk or an unacceptable risk to the Bank of Canada, the Governor will have the power to prohibit or place conditions on the foreign bank's participation in the LVTS.

At the beginning of the presentation I noted the two very desirable characteristics of a modern, well-designed large-value payment system, one being the provision of the certainty of settlement for transactions accepted by the system and the other being the ability to provide the customers of the participating institutions with unconditional and irrevocable intraday use of any funds received through the system. These properties can be produced by various types of large-value payment systems. RTGS Systems that provide real-time, irrevocable movement of central bank balances with every payment message accepted by the system can clearly provide certainty of settlement and hence can support the provision of irrevocable and unconditional use of these funds by ultimate recipients whenever they are received during the day. The LVTS system, which is a deferred net settlement system, provides these same benefits. As with RTGS Systems, each payment message will be processed in real time and each transfer of funds is subject to risk control mechanisms. Collateral pledged by the private sector participants ensures that even if the participant with the single largest possible payment obligation owing at the end of the day fails to meet this obligation, the collateral will be sufficient to support the provision of central bank balances necessary to settle the LVTS. Beyond this private sector commitment, the guarantee provided by the Bank of Canada ensures that even multiple failures will not prevent the LVTS from settling payment obligations at the end of the day. That is, under all circumstances there is absolute certainty for the participants that all transactions accepted by the LVTS will settle and that participants expecting to receive central bank balances at the end of the day will do so. With certainty of settlement, the participants in the LVTS can offer intraday,



irrevocable and unconditional access to recipients of funds transferred over the LVTS. A significant difference between the LVTS and most RTGS Systems would appear to be the more economical use of collateral in the LVTS to support the use of intraday credit (that is its reliance on a collateralized survivors-pay arrangement for the Tranche II payment stream). The survivors-pay arrangement means, however, that surviving participants may bear some of the losses as a result of the failure of a participant, a situation that does not typically arise in RTGS arrangements. There is also the central bank guarantee in the LVTS system that is only invoked in the case of multiple participant failures where the failed participants owe funds as a result of making Tranche II payments and only after the large amount of collateral provided by the private sector has been used to cover the losses associated with these failures. Central bank guarantees are not typical in RTGS Systems, although systems that provide uncollateralized intraday credit combined with legal finality of transfers of funds among participants' accounts on the books of the central bank are effectively offering a central bank guarantee similar to what is provided by the Bank of Canada. One obvious and major difference is that the LVTS is a net settlement system as opposed to a gross settlement system. But as I hope is clear from this abbreviated discussion, this difference does not have any bearing on the ability of the LVTS system to deliver the same outcomes as the RTGS System. One disadvantage, however, that my boss, Chuck Freedman, always mentions, is that LVTS arrangements are more complex to explain than those of an RTGS System. This is especially unfortunate as the term RTGS seems to be used in many cases as a shorthand description of good or well-designed systems, but all such systems need not be RTGS.

Many policy proposals involving the financial sector are designed to promote efficiency, often through the reduction of costs, or to improve the safety of the sector and there is often a tension between the achievement of these goals. The design of the LVTS is no different in this regard. Canada has attempted to produce a large-value payment system that ensures that systemic risks are fully dealt with but at the same time one that addresses the need to contain the operating costs of the system and particularly the costs associated with the use of collateral. While the LVTS is not an RTGS System, it nevertheless provides the same benefits in what the participants consider to be a cost-effective manner. The recent introduction of LVTS has been very successful and we are confident that the issues associated with the migration of large-value payments from the paper system to the LVTS can be successfully dealt with. The decision to permit foreign bank branches to enter Canada directly and potentially become direct participants in the LVTS demonstrates the need for those of us who are concerned about systemic risk issues to constantly assess the impact of changes in the environment on the risks facing large-value systems.

Thank you for your attention.

Chair: Thank you for your presentation on the newly operated LVTS system, which has many interesting features which some of us have to go back and study. Any questions from the floor?

Q (Peter Ledingham): Clyde, I have not seen in the paper - I had a quick look through - whether you've been able to come up with any estimates of just how much you have ended up being able to save in terms of cost compared with the RTGS estimates? It is perhaps a very obvious question but it would be interesting to know if you have been able to put any numbers onto that.

A (Clyde Goodlet): An obvious question but I am afraid with no obvious answer yet. We have been looking at that. One of the difficulties is generating the appropriate data in order to answer the question. Conceptually we can show, in a theoretical sense, that you should need less collateral for a given volume of payments but just how much that saving amounts to is an interesting question. When we come with the data, we will be happy to share it.

Chair: I would now like to invite Mr John Veale to present on the operation of the Australian payments system.

## **Recent regulatory and operational changes in the Australian payments system: John Veale, Reserve Bank of Australia**

Thank you, Mr Chairman, for the opportunity to join you and our colleagues today to share some of our recent experiences in reforming Australia's payments system. I hope that some of our experiences, and the lessons we have learned, will be of use to others who are currently making decisions on some of the topics I will discuss.

The juxtaposition of presentations by Australia and Canada is particularly appropriate. Our countries have much in common - particularly our financial and banking systems - and we frequently find it useful to compare notes.

In the topics that I will cover today, there are some important differences between the Canadian and Australian approaches and I will try to draw some of them out.

As the title of my talk suggests, it is in two parts - the regulatory structure and operational developments. I will begin by dealing with regulatory structure because it provides background to operational changes.

### **Regulation of the Australian payments system**

The nature of payments system regulation or oversight is a question that many of us, particularly those working on the Principles and Practices Task Force, have been thinking about a good deal. I expect that John Trundle and Shuhei Aoki will say more about it later today, but the case study of marked change in Australia's arrangements might provide interesting background to their analysis.

When our first *Red Book* was published in 1994, we said that:

"The Reserve Bank's statutory responsibilities for the payments system are narrowly focussed, relating to the issue of currency notes and the accounts used for settlement of interbank obligations arising in the payments system."

This was a brave attempt to give authority to our role. The phrase about currency notes was irrelevant to the way most of us here today think about our payments system responsibilities. Only the section of the Banking Act that required banks to settle across accounts at the Reserve Bank was close to giving us any authority based in statute and it was never really clear just how we could leverage off it. Our public statements reflected this. In our 1992 Annual Report we said:

"Given its responsibility for the stability of the financial system as a whole, the Bank has a major interest in the integrity and efficiency of the payments system."

The objectives were clear, but the best we could claim was "a major interest".

In short, like many central banks, we simply asserted responsibilities for oversight of the payments system based loosely on a vaguely-defined responsibility for financial stability and backed up with the authority - at that time - of being the bank supervisor.

As many of you here today have found in your own countries, this fragile foundation did not stop us exercising a good deal of authority and getting results. We did so in two principal ways:

- one was by being an active member of the Australian Payments Clearing Association, the payments industry organisation owned by banks and other payment providers. We held a board seat (and still do) and, for some years, the chair of the Association; but
- on other occasions we stood separately as the central bank and dealt directly with the Association and individual banks.

This mixture of argument and assertion worked passably well, but was not without frustrations. These were most evident when we were dealing with questions of efficiency rather than risk and stability, where it was easier to assert moral authority. The banks were less easily persuaded when it came to efficiency questions that impinged on their business. Getting them to shorten the cheque clearing cycle and make funds available more quickly is the best example.

Then in 1996 the Australian Government established an inquiry into the financial system which covered, amongst other things, its efficiency and regulation. The payments system received a good deal of attention from the Financial System Inquiry, which concluded that there was considerable scope to increase efficiency in the Australian payments system without compromising its safety. It judged Australia as being in the middle of the field in terms of efficiency and saw the potential for substantial gains, especially from substituting electronic forms of payment for cheques. The Inquiry concluded that industry self-regulation arrangements were not necessarily conducive to innovation and entry of new participants.

In mid-1998 the Government implemented the Inquiry's recommendations that the Reserve Bank be given stronger powers to regulate the payments system and that a Payments System Board be established within the Bank as a policy-making body and to increase the Bank's accountability in this area.

The new Payments System Board determines the Reserve Bank's payments system policy. The Reserve Bank Act requires it to do so in a way that will best contribute to:

- controlling risk in the financial system;
- promoting the efficiency of the payments system; and
- promoting competition in the market for payment services, consistent with the overall stability of the financial system.

The Reserve Bank's statutory responsibility for safety of the payments system is in line with international trends and reflects increasing recognition by governments of the potential of the payments system, if not soundly constructed, to transmit destabilising shocks throughout the financial system more generally. Although its powers to deal with safety and risk issues are framed somewhat differently to those for Canada, the intent and effect are similar. They will become even more closely aligned next year under proposed legislation that will enable the Treasurer to declare that a clearing and settlement system (such as those for fixed-interest securities) is of such significance to the stability and integrity of the payments system that it should be regulated by the Payments System Board. This would give the PSB similar authority in this respect to the Bank of Canada.

It is the other aspect of our regulatory responsibilities and powers that distinguishes us from Canada. The Reserve Bank's legislative responsibility for efficiency of the payments system is unusual for a central bank and reflects the conclusion of the Financial System Inquiry that there was considerable scope to increase efficiency and that industry self-regulation seemed unlikely to achieve it.

The Bank has wide-ranging powers in the payments system, set out in the Payment Systems (Regulation) Act 1998 that can be used in pursuit of both the safety and efficiency objectives. It may:

- "designate" a particular payments system as being subject to its regulation;
- determine rules for participation in that system, including rules which govern access for new participants;
- set standards for that system relating to its safety and efficiency. These may include technical requirements, procedures, performance benchmarks and pricing; and
- arbitrate on disputes in that system over matters relating to access, financial safety, competitiveness and systemic risk.

The Act also gives the Bank extensive powers to gather information from a payments system operator or participant.

When it introduced the legislation, the Government indicated that it favoured a coregulatory approach, where the Reserve Bank would only need to exercise its powers if private sector initiatives failed to achieve standards of safety and efficiency that met the public interest. The Bank's approach so far has been to encourage and suggest. It has not yet used these formal powers; if it is satisfied with the performance of a payments system in improving access, efficiency and safety, it may not need to do so. That would clearly be the best outcome.

We are still feeling our way on how to pursue efficiency objectives. The first step has been to do a stocktake and focus on the sectors that look to be performing relatively poorly against world benchmarks. Cheque clearing times and relatively low use of direct debits to pay routine bills have clearly been weak spots. The Payments System Board has been busy during its first 12 months familiarising itself with the issues. Its more public initiatives have included:

- encouraging the payments association to complete its project for electronic cheque clearing on schedule and publicly urging banks to make complementary upgrades to their internal systems to make funds available more quickly;
- directly consulting billers, such as utilities, to identify ways of boosting direct debit usage in Australia; and
- approving both the RTGS System and related securities settlement systems for exemption from possible “zero hour” rulings.

I know that some of my Canadian colleagues are more than happy not to have some of these powers and responsibilities, but that is probably an issue better left to questions or informal discussion.

### **RTGS in Australia**

Let me turn to operational issues and the implementation of RTGS in Australia. Australia's RTGS System has been operating since June 1998, so our development covered much the same period as Canada's and was of course prior to the changes in regulation that I have just described.

Interestingly, we originally began to go down the same route as Canada with a plan to develop a high-value payments system based on netting, which would be Lamfalussy compliant. We abandoned that scheme in 1994 for a number of reasons. They included its complexity and cost, its limited scope in terms of securities settlements, a range of legal and contractual issues and the difficulties of managing the project.

By the beginning of 1995 the Reserve Bank had taken a clear decision to implement an RTGS System. We believed that RTGS was the most straightforward and effective way to address the question of settlement risk in the domestic payments system. When we went live almost a year ago, we were the 21st country to do so. I won't try to cover all the issues but will focus on a few key issues which the CPSS has highlighted in its report on RTGS Systems: scope, the technical network, liquidity and queuing, several of which were controversial.

Our system was built on the Reserve Bank Information and Transfer System (RITS), which settles trades in Commonwealth Government Securities and which was also the gateway to banks' settlement accounts at the Reserve Bank. Somewhat analogously to Japan's, it had RTGS capability which was little used. Building on a system we owned gave us control over design and technical production questions and allowed us to set the pace.

It also meant that the RTGS System was closely integrated with one of the securities settlement systems which underpins the interbank market. We also managed to integrate the other securities settlement system, Austraclear, which settles most other fixed-interest securities trades.

As a result, securities settlements account for around a third of the value of payments settled across our RTGS System each day (see table).

The remaining RTGS payments are predominantly the Australian dollar leg of foreign exchange settlements and high-value corporate payments. They are delivered to the RTGS System using the S.W.I.F.T. “Y-Copy” system under arrangements coordinated by the Australian Payments Clearing Association.

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**Value of interbank payments 1999 (%)**

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RTGS basis:		92
RITS (Commonwealth Government securities)	12	
Austraclear (other securities)	20	
S.W.I.F.T. PDS (foreign exchange, corporate)	60	
Net Deferred		8
<b>Total</b>		<b>100</b>

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How we got to S.W.I.F.T. is an interesting story. From the mid-1980s, our five largest banks had operated a system which used the same platform as the UK's CHAPS. Some of them wanted to use it as the gateway to RTGS with the other 50 banks accessing it through them. Our initial preference was for a simple "V" network which we would operate with a direct connection to each bank. Part of the debate was about who would control the network. The other was about whether we would have a "tiered" system, as in the UK, or one with direct access for all banks, as here in Hong Kong.

S.W.I.F.T.'s "Y-Copy" was a compromise. No one had complete control because S.W.I.F.T.'s standards had to be adhered to, but we ended up with direct access for all banks. But I'd have to say in retrospect, the decision to use S.W.I.F.T. was a very good one. It has allowed a good deal of standardisation and efficiencies in banks' processing and has been very reliable. Banks are using it more heavily than they had anticipated and have not been deterred by public network charges. Perhaps most importantly, it is ideally suited to provide remote access, which will be important as we prepare for the start-up of the CLS Bank.

The overall outcome is shown in the table above. Over 90 per cent of the interbank payments by value is now made in our RTGS System, with less than 10 per cent, predominantly cheques, still settled on a net deferred basis.

The experience of the countries that had introduced RTGS before us was very useful as we dealt with our banks' concerns about liquidity in an RTGS environment. It is my impression that commercial bank concerns about liquidity management dominate most RTGS projects. They certainly did in our case. To address these concerns we:

- encouraged banks to place payments in the central queue, rather than holding them back in their internal systems, and used an efficient queuing mechanism called "next down looping", which prevents large payments from blocking the queue. It took some considerable discussion - and some legal opinions - to convince banks that the queue did not need to be strict FIFO;
- paid a market-related rate of interest on banks' settlement balances at the Reserve Bank. This replaced long-standing but complex arrangements under which banks maintained interest-earning liquid balances with specialised intermediaries called official dealers. It took us two tries to settle on what seems to be the right formula for setting the rate, but there was no effect on our ability to implement monetary policy and little effect on our net income, since both sides of our balance sheet grew. But there have been considerable operational efficiencies for banks' within-day liquidity management; and finally we
- provided liquidity by intraday repos with only a transaction charge. The first step was to allow banks to use liquid assets already held for prudential purposes to fund within-day repos. Until fairly late in the project, it was our intention to levy an interest charge for this facility. But this proposal caused much angst amongst the banks and though it had theoretical appeal, it became harder to sustain once the UK and Hong Kong decided not to levy explicit interest charges. Once we followed suit, concerns about liquidity virtually disappeared.

Thank you, Mrs Suwannacheep, for the chance to highlight some of the recent developments in Australia. I look forward to discussing some of these issues during the panel session later this morning.

Chair: Thank you, Mr Veale. We can now look forward to the last topic of this morning, presented by Mr Mittal.

**Challenges from payment systems in transition:the Indian experience:  
Sita Ram Mittal, Reserve Bank of India**

Ladies and Gentlemen,

It is a great privilege for me to attend this workshop and to present the Indian experience in payment systems reform to this expert gathering. In the morning session, we have heard about the experience of economies where radical changes in payment and settlement systems have been effected in recent times - TARGET in the European Monetary Union, LVTS in Canada and RTGS in Australia. In this session, we shall be dealing with the opportunities available to developing countries in designing and developing payment systems, sharing each other's experiences.

Let me begin by briefly describing the challenges before the Indian policy maker dealing with payment systems.

Three major areas of challenge present themselves for our focused attention:

- The need to organise an efficient funds transfer mechanism to cover a large branch network spread over a vast geographical area.
- The need to provide payment services to the Government and the financial markets.
- The need to build a safe and technologically efficient payment and settlement system to cater to the needs of the major financial centres.

In addressing these challenges, we have to balance the objectives of wider access to payment services and efficient delivery of these services together with promotion of financial stability, through appropriate risk management practices.

The first challenge before us is the sheer geographical spread of the bank branches. India is a vast country and over the last three decades banks have successfully penetrated the length and breadth of its 3.3 million square kilometres with their branch network, with the result that bank branches are dispersed over a wide area, sometimes in remote and inaccessible terrain. At present we have 300 commercial banks with about 64,000 branches throughout the country, with another 2,300 cooperative banks. Almost 70% of these commercial bank branches are located in rural and semi-urban areas. The commercial banks in India cater to a clientele of an estimated 950 million people. To usher in a system that would serve the banks and their customers irrespective of geographical location means connecting all bank branches to such a system. Which in turn brings to the fore the issue of connectivity of communications or, rather, the lack of it.

A payment system is deemed to be efficient when payments are delivered with the least delay or without any lags. That is possible only when the transmission channel - the connectivity between parties - is secure, stable and effective. For effective communication, there should be inter-bank connectivity and the entire hierarchical structure of all individual bank-dealing branches, service branches, Regional 1 Zonal Offices and Head Offices should be connected as well. We have made a start in this direction, but given the huge branch network, a lot more remains to be done - the sheer magnitude of the task is overwhelming.

Traditional means of linking branches and banks - terrestrial phone lines - face a host of problems in our country: the inhospitable terrain in some areas and the havoc wrought by every monsoon in other parts of the country, to name but a few. For the communication backbone we have to look to other means of reliable communication. Today, the Reserve Bank and the banking sector in India have jointly set up a satellite-based network using VSAT technology, named the Indian Financial Network

or INFINET. The INFINET, supported by terrestrial lines, will provide the basis for integrating the banking system and enable the delivery of electronic services to a number of financial centres. The INFINET is soon to be commissioned.

The Reserve Bank of India has, by virtue of its concern as a central bank for strengthening the financial infrastructure, always taken a lead in initiating changes in payments infrastructure. A beginning was made in 1986 when the major cheque clearing centres were mechanised. Today, of the 745 million cheques amounting to Rs. 37,226 billion that are processed through clearing in a year, about 80% (in value terms) emerge in metropolitan centres where there is mechanised clearing based on MICR technology. Since 1986 a number of steps have been taken to improve the overall functioning of the payments infrastructure. Despite being largely paper based, same day settlement was introduced for large value and inter-bank payments by separating these payments from retail payments. Delivery versus payment in a limited way was introduced for the settlement of transactions in government securities. Simultaneously, we have been attempting - with a fair amount of success, I may add - to reduce the use of paper instruments by introducing a range of electronic payment services. The introduction of electronic credit transfers for repetitive bulk retail payments like dividend and interest payments by corporate, electronic debit transfers for payment of utility bills, retail EFT and the increasing use of debit cards, credit cards and smart cards are a part of that ongoing effort.

In recent years, the approach towards payment system reform has shifted from a purely technology oriented perspective to a more holistic approach. The Indian economy is slowly but surely integrating with the world economy. This change necessitates a great deal of adjustment by the banking and financial sector, including upgrading of the payment and settlement systems. A host of policy issues are involved. Changes in the legal and regulatory infrastructure, and structural reforms in the telecom policy to meet the requirements of the financial sector need focussed attention. To this end, a multi-disciplinary Payment Systems Group was set up in early 1998 to examine various issues and advise the management on the appropriate path for reform. An approach paper prepared by the Group laid down the main directions of change for the Indian payment systems. The Payment Systems Group is guided by a Payment Systems Advisory Committee headed by the Executive Director of the Bank. A National Payments Council has been set up recently. The Council is chaired by the Deputy Governor of the Reserve Bank of India and has representatives from banks, financial institutions, non-banking financial companies, information technology experts and the Government of India. It will help lay down policy at the macro level and formalise the broad policy parameters.

Three main directions have been spelt out: consolidation, development and integration. Consolidation of widely scattered clearing and settlement systems, development of electronic RTGS for some and integration of all the major financial centres in a single national network are the practical goals of reform. While it is customary for policy documents to spell out objectives in terms of key words such as efficiency or stability, this approach implicitly acknowledges these objectives and at the same time defines the specific actions that are required to achieve these objectives.

We recognise that the task before us is enormous. We have to perhaps attempt a step-by-step approach. Though we have a wide bank branch network, a very large number of branches are yet to be computerised and networked. The payment services are slow and not very reliable in many regions of the country. Improving the efficiency of these services is not only a social objective but also very important for all-round development of different regions, sectors and subsectors of the economy. At the same time we have to improve the connectivity among the major banking centres for the benefit of the participants in the financial markets. Finally, the major financial markets require on-line real time payment and settlement services.

A number of policy changes are required in attempting this framework of change. Enactment of new legislation and extensive amendments to existing laws are being examined to establish a legal basis for modern methods of payment. The Reserve Bank is examining a whole range of issues involving risk management practices, liquidity management, central bank credit, collateral requirements, conditions for participation in the system and the methods of governance of the system. I may add that contact with the BIS, the CPSS, the World Bank and other central banks, access to the mass of literature on

development of modern payment and settlement systems from these institutions as well as conferences such as this one have provided invaluable inputs to our internal efforts to design a suitable payment and settlement system for us.

Introduction of RTGS is an important objective of policy in India. This would provide a high degree of certainty to important inter-bank payments and would, from the perspective of the Reserve Bank, provide the much needed safeguard for the financial stability by lifting the duration of inter-bank credit exposure. This would also enable more efficient linkages with government securities settlement and provide concavity between major financial centres. It will be an effective means of ensuring efficient conduct of monetary policy. We are currently examining various options for finalising the blueprint for the implementation of RTGS in India.

In the Reserve Bank, our concerns extend beyond the need of the financial sector participants. We are deeply concerned with the protection of consumer interests of the ultimate users of the payment systems as well. A number of our initiatives are targeted to the improvements in retail payments. While the provision of services is the responsibility of commercial banks and other financial intermediaries, we are concerned with the need for improvement in these services. A number of factors including historical and cultural reasons as well as hesitation on the part of many economic agents to adopt new practices affect the process of change.

Managing change is a difficult process, including in payment systems. As the central bank, we are concerned with the need for stability and efficiency in the financial infrastructure. But these changes impose a cost on the banks: cost of risk management and cost of providing efficient service. While efficiency of payment systems can, to an extent, be market driven, the need for risk management for the system as a whole needs to be accorded due weighting. The Reserve Bank has to step in and, either through regulation or by moral suasion, ensure the implementation of standards and sound practices so as to extend cost efficient services, improve systemic efficiency and control the payment risks.

In this brief presentation, I have tried to outline some of the major issues before us in our attempts to reform the payment systems in a country as vast as India. The reform process takes time. We are confident that these challenges can be overcome by not only identifying the main issues in clear terms but also prioritising them and working out the processes through which the issues need to be addressed. In such an endeavour, we have to seek the cooperation of international institutional mechanisms such as the CPSS and follow closely international standards, principles and practices. I look forward to hearing from them and also the experiences of the participants in the workshop.

## **Discussion**

Chair: Mr Mittal has told us how he has been trying to strengthen the telecommunication infrastructure in the legal framework and also other infrastructures so that he can develop the integrated RTGS System in India successfully. So we wish you the best. At this moment India is quite happy with Y2K problems. I know, for the Y2K problems India may face are the same problems as we are having now. Any questions from the floor? I think we have time for a few questions.

Q (Gregor Heinrich): In this reform process which has been going on continuously for many years, what has been the biggest impediment to progress? What has been the biggest obstacle that you have faced in moving towards a modern payment systems infrastructure?

A (S R Mittal): India embarked on financial sector reforms way back in 1992-93. The main thrust of these reforms was macro level stabilisation and structural reforms. The power and telecom sectors, which, among others, provide the support for design and development of sound payment and settlement systems, needed structural changes. Further, 26 states in India have different levels of infrastructural development and associated problems. The low level of computerisation at bank branches, infrastructural weaknesses and legal hurdles have been other basic problems. The political system in India has firmly accepted the need to pursue financial sector reforms to ensure the self sustained growth of the economy.



Q: I would like to pursue how you contemplate organising the management of the current accounts of the banks and the books of your central bank. Do you contemplate having decentralised organisation, meaning that the current accounts would be open and the books of branches decentralised? Or do you envisage having a centralised type of organisation in the RTGS context?

A (S R Mittal): I should inform you that the way current accounts are maintained by banks in India with the Reserve Bank is slightly different from the position obtaining in other parts of the world. We have 15 offices of the Reserve Bank at the headquarters of major states. At these centres, the clearing house is managed by the Reserve Bank. Therefore, to give effect to the clearing at these centres, the member banks have to maintain a current account. The commercial banks/branches serve as agents of the Reserve Bank handling government business in different parts of the country where the Reserve Bank does not have an office. Therefore, the payments received and made by these banks on behalf of central and state governments are settled through these accounts. Further, the public sector banks in general and private banks and cooperative banks in some cases maintain the currency chests, where the currency is stored on behalf of the Reserve Bank. Any withdrawals from or deposits into the chests have to be settled through the current account maintained with the RBI. Incidentally, in India cash transactions still account for over 19% of broad money and over 11% of GDP as against 5-6% in most of the developed countries. In view of the above it would be appropriate in our case to settle RTGS transactions through the current account of the banks and fund it if need be by intra-day liquidity support which may be extended to the RTGS member banks.

Q: Could I ask you to comment on the situation with technology. This is a very large but also a new project. To what extent are you able to take advantage of off-the-shelf technology versus proprietary technology? What is the role of some of the newer developments such as the internet protocol and your thinking about the structure?

A (S R Mittal): We very recently decided to replace our IBM mainframe 4381 system with a Y2K compliant state-of-the-art IBM S/390 system and IBM 3890XP readers/sorters for MICR cheque processing applications in Mumbai, New Delhi, Calcutta and Chennai, the four metropolitan cities. In view of the large memory of DB2, CICS, RECF and other software on the machine and the spare capacity available, we have decided to use the IBM S/390 as gateway to the RTGS System. Even though this system is based on the X.25 communication protocol, it can support the TCP/IP protocol. Further, we intend to utilise various standard software packages and security architectures already successfully used by different countries after customising them to meet our requirements.

Chair: Any questions? They can be for Mr Goodlet, Mr Veale or Mr Godeffroy as well. Not only for Mr Mittal.

Q: I have a question for those panellists who are working with the National Payments Council in your country. What are the lessons that you have learned about how to structure the process of working through a Council, in particular whether the central bank should take a primary leadership role or whether it should be a more general participant in the process? And as a follow on: how do you think the structure of such a council ends up affecting the ultimate result of the payment system reform or changes to the payment system?

A (S R Mittal): The National Payments Council, of course, has recently been constituted by the Reserve Bank with memberships extending to the Government of India (Ministry of Finance), banks, financial institutions and mutual funds/non-banking financial companies. The intention is to associate different constituents of the financial sector with the design and development of the payment and settlement system. As central banks always command lot of respect, it was thought appropriate to have such a crucial body set up by the Reserve Bank. The payment and settlement system may include several deferred or discrete net payment and settlement systems and RTGS. The individual deferred/discrete settlements may be managed in due course by some independent company constituted by the members of the system, or by a designated bank/institution. However, bearing in mind the need to maintain the current accounts of banks with the Reserve Bank, the final settlement would occur in these current accounts with the RBI for both deferred/discrete net settlement and RTGS wherever the Reserve Bank has offices. To implement RTGS and other payment and settlement systems, the Reserve Bank set up a multi-disciplinary Payment Systems Group and Payment Systems

Advisory Committee in February 1998 to constantly review the progress made. An Indian Financial Network User Group of member banks has also been constituted to associate the users with decision making and progress in the projects.

Chair: That is an interesting case. If we have further questions for Mr Mittal, he is still available throughout the day. I think we should give the chair to the next session if the floor does not have any more questions to ask the speakers. One more question for other speakers please? No? Then I will say thank you to our speakers and to everyone in the audience for being patient. I give the chair to Mr Aoki.

## **Module 2: Central bank oversight/the Core Principles for Payment Systems**

**Chair: Shuhei Aoki, Head of the Payment System Division, Financial and Payment System Office, Bank of Japan; Member of the CPSS and of the CPSS Task Force on Core Principles**

### *Wendelin Hartmann*

Thank you very much for that very interesting first module. We are all of course satisfied to learn that central banks have a good reputation throughout the world.

The following module deals with central bank oversight and the core principles for payment systems. Yesterday we had quite an interesting and long lasting discussion about the interrelation between oversight on payment systems and banking supervision. This question is an everlasting one, and I am sure we will hear a lot of details about this interrelationship.

Ladies and gentlemen, may I now introduce the chairman of module 2. It is Mr Aoki from the Bank of Japan. Mr Aoki has been serving the Bank of Japan since 1981. He is a very experienced colleague and has been with the CPSS for a couple of years with some interruptions. Mr Aoki will lead module 2, and I am sure he will give us an interesting introduction.

### *Shuhei Aoki*

Thank you, Mr Hartmann, for this warm introduction. This module is about payment system oversight. First of all a payment system, I believe, is one of those important market infrastructures owned and operated by the private and public sectors, and central banks are doing two things. One is to own and operate the payment systems, and the other to induce or put pressure on the private sector payment systems to promote their safety and efficiency. The latter action by central banks for the private sector payment systems is referred to as payment system oversight, as I understand it. The oversight of payment systems is what most central banks are supposed to do or are actually doing. Discussions about what we are trying to achieve in more precise terms through oversight, or how we should manage and carry out oversight, have not been held often enough, at least until recently. So in this module John Trundle, who is Chairman of the Task Force on Payment System Principles and Practices at the CPSS, will make a presentation on core principles for design and operation as well as for oversight of payment systems. He is Head of the Marketing Infrastructure Division at the Bank of England. And then Mrs Nita Yosita, Bank Indonesia, will present her country's experience of payment system oversight. John, please.

## Panellists/Speakers

### **The perceived need for core principles: an update on the work of the CPSS Task Force on Core Principles: John Trundle, Bank of England**

Good morning, ladies and gentlemen. I'm delighted to have been asked to address this distinguished audience of international payment system experts today. I have been asked to talk in particular about the work of the Task Force. It has a mouthful of a name - the Task Force on Payment Systems Principles and Practices - and so we tend to call it the Core Principles work for short.

I thought I'd start by explaining why we are doing this work and then move on to the specific aims of the work. Then I'll say a little about the audience we are aiming at and the approach we are taking, and finally go through some of the principles. There are principles for the systems themselves, that is the design and operation of systems, and there are principles for the oversight of systems. Finally I will try to draw some conclusions.

I'd like to make some opening remarks and they are rather in the way of exclusions of liability. I want to begin by pointing out that this is work in progress and therefore what I'm telling you today is where we have got to in the Task Force. We are currently on our second draft. I don't know how many drafts we will have before we go firm, but I doubt whether we are half-way through the work, at least half-way in terms of the quantity of work if not in time. Secondly, a fundamental part of our approach is to try to make sure that the core principles are useful everywhere. We have a very grand ambition to produce global core principles and that has significant consequences for the way we do our work. We have to try to make sure that the principles are sufficiently general, sufficiently high level, that we have captured the real objective. A consequence is that the principles do not prescribe precise outcomes in any particular application. In particular they won't answer all the questions that members of this audience might reasonably have about what you would like to do with your payment systems. Our ambition on that score is much more modest. We hope merely to provide a framework that will help you frame the questions and then, I'm afraid, it's for you to find the answers.

Because of the very general, very broad nature of our work, we felt it necessary to restrict its scope in terms of the types of payment or settlement systems that we were covering. In particular we decided very early on in our work that we couldn't hope in this project to cover securities settlement systems. They have some overlap with payment systems but also have their own very distinct risk and efficiency issues that we believe are best dealt with separately. So in order to be able to define a task that was manageable, we decided to restrict our work to payment systems. Indeed we restricted it somewhat further. Our first inclination was to say that we were interested only in wholesale payment systems, large-value payment systems, because that's where the big risks are and that's where central banks traditionally have a main interest. But we found that the distinction between wholesale and retail was not a sufficiently precise or useful distinction to be effective in this context because large-value payments in some countries go through systems which are otherwise predominantly retail systems and therefore it is important that they too should satisfy the principles that we have been trying to develop. Even systems which deal only with relatively small-value payments can be of systemic importance if the cumulative total of the payments which go through the retail system are large in value in relation to the size of the participant, measured for example by their capital. Therefore we developed the concept of the systemically important payment system. We seek to define it as a concept rather than in a precise yes/no way. This is another area where the users of the core principles will need to exercise their own judgement. What we are seeking to do is to provide core principles for the top end of the payment system arena, the most important payment systems, but it would be for you to judge the extent to which the systems you are responsible for are systemically important.

But why did we start on this work? I think there are three reasons that particularly led to the establishment of this project. First, there was a clear demand from many countries which were embarking on significant projects to reform, develop, and modernise their payment systems; they had the opportunity to design afresh. We were hearing from Mr Mittal earlier about the project in India and that's a good example of an opportunity to affect the whole structure of the payments industry.

Secondly, there were concerns about financial stability risk and this is a part of general concerns about the ability of the international architecture to withstand different kinds of shocks. I hardly need to talk to an audience in Asia about the risks of financial instability. The international community has found it difficult to know how to respond to the sorts of shocks that we have seen in Asia and throughout the world. The approach that has been taken has been to try to do a rather large number of small things which cumulatively can help insulate countries from the effects of contagion. This has involved developing common standards, common approaches to a wide variety of infrastructure issues. It has included common approaches to supervision, common approaches to accounting issues, common approaches to disclosure in monetary and fiscal policy and, most relevant for today's discussion, common approaches to the design and operation of payment systems.

The third factor that led to this work was from discussions between central banks as overseers of payment systems about their own work and those discussions central banks found very valuable. There is a great discipline in trying to write down one's experiences and what is agreed amongst a group of fellow interested parties in sharing their experiences. A particular aspect of this was the work that had been done nearly ten years ago by the Lamfalussy Committee, which wrote down the principles for the oversight of multilateral netting systems, particularly multilateral netting systems that operated cross-border. That proved to be a uniquely useful tool and is still widely used. There was a feeling amongst many central banks that it could be used in a wider sphere than the purpose for which it was originally intended. The central banks of the CPSS discussed precisely this issue at an extremely useful workshop in Tokyo about 18 months ago. That was the third influence leading to the creation of the Core Principles work.

We have various audiences for this work. The core audience is the operators or designers of systemically important payment systems. In many cases that audience will be the central bank, but it's not the case in all countries. Particularly in richer, developed countries, large countries which have more than one systemically important payment system, they are quite often operated by private sector enterprises. Secondly, the overseers of payment systems, typically central banks, clearly have an interest in systemically important payment systems. We have an interest both in the infrastructure as a whole and in the effectiveness in each individual payment system. Thirdly, users, at least in the sense of participants in payment systems, should also have an interest in how well designed they are, how efficient they are and how the risks are managed.

So what are our aims? This is perhaps the simplest of all my slides in the presentation and yet the ideas behind it are perhaps the most complicated. We have spent a lot of time debating these precise aims. In some ways they are obvious. We are interested in risk as central bankers, especially systemic risk, that is domino risk that one participant in a payment system could fall over and as a consequence bring down other institutions. Systems which are prone to that sort of effect are badly designed and we need to try to create principles which prevent those sorts of risks. But that's not the only objective; we are also interested in efficiency.

Efficiency is one of those important terms where we need to understand the language. We can have great debates about what it means. We might come on to that later. But whatever it means, it's clear that we need efficiency to support the safety objective, because we can design the safest system in the world but if nobody uses it, it's not doing much good in reducing risk and therefore efficiency is at the very least a prop to the safety objective. But that's not the only reason for caring about efficiency; we care about it in its own right because we want to use resources in our economies as effectively as we can and not over-commit resources to any one part of the economy. In many cases these aims are complementary and you can make progress by better design of payment systems and get more of both of those objectives. But we also know that in the real world there are trade-offs and sometimes we do have to make a trade-off between safety and efficiency; and those are the critical judgements that central banks make. And so, in setting the core principles, we have set both general principles that we think all systemically important payment systems should be striving for, but we've also sought to set some minimum standards which should be achieved in all circumstances. That's the line in the sand where we are saying something about the trade-off between, for example, safety and efficiency and suggesting that the consensus in our group is that the choice should never be made on the other side of that minimum standard.

The approach we have taken has been very much to try to build on existing work and existing understanding. The BIS has been a major organisation in publishing the consensus of central banks on payment system issues. I referred earlier to the Lamfalussy Report and that has been a key influence on our work, as you will see when I go through the current draft of the principles. The Lamfalussy work was perhaps distinct from some of the other work of the G10 in that it was highly prescriptive, saying that particular payment systems ought to comply with a list of minimum standards. While the other work of the BIS has been more descriptive in nature, we have still found it useful to draw upon it in building our shared understanding of the approach to take to payment systems.

The second key feature of the Task Force is its wide global membership. There are 23 national central banks represented in the group, including the G10 central banks. There's also the European Central Bank and the IMF and the World Bank. In this part of the world we have representation from Hong Kong, from Singapore, from Malaysia, from Australia and from Japan, and in addition the secretary to the Committee from the BIS is on secondment from the Reserve Bank of India, a colleague of Mr Mittal, and so we have good representation from this part of the world. The approach is to try to achieve consensus on the key issues for systemically important payment systems and therefore we have to be careful to avoid areas where there are different interpretations or different solutions taken by different countries. In those cases, what we are trying to do is to describe the choices that central banks face and try to capture what the real aim is. And so, to echo Clyde Goodlet's talk earlier today, we don't say at any point in our draft of the core principles, nor do I expect us to in the final version, that every country in the world should have an RTGS System, but what we do is try to define some of the features of payment systems that we think should be achieved in systemically important payment systems. And it's certainly the case that RTGS Systems, if properly designed, will satisfy those requirements. There may be other ways of trying to reach those standards and Clyde described another such approach. Finally, as I've already hinted, we have to recognise the limits of what we can do and the point that I have already emphasised is that the principles can only be applied with judgement by the individual operator and overseer of payment systems.

I'd like to move on to the current draft of our core principles and although the draft that we have at the moment reorders some of the Lamfalussy principles, for the purpose of this presentation I have left them in the same order as they occurred in the Lamfalussy report and I'd like to discuss first of all those six standards that Lamfalussy required. The first thing to note, as I said earlier, is that many central banks have a lot of experience in trying to apply Lamfalussy. We've applied it in the specific context for which it was designed, but we've also found that it has been a useful tool more widely. We have found that we can keep the basic structure of the Lamfalussy principles, in the core principles. The first Lamfalussy principle is about the legal robustness of the payment system infrastructure. For the payment system infrastructure to be legally robust it has to operate in a legally well-founded environment. This is a hugely demanding general principle. If interpreted absolutely strictly, it is possible that there is no country in the world that can actually satisfy it. But I think it is a very useful ideal for us to bear in mind. We can go from one extreme to the basics. It is important to have the ability, for example, to contract. That means that countries need to have basic laws of property rights and freedom to contract before we can begin discussing rather more detailed concepts of law such as the treatment of insolvency. One of the key features of the legal robustness is the predictability of legal interpretations. That can be a problem not only in newly democratised countries but in well-established developed countries as well. To take my own experience, as an example in the European context, there are plenty of examples of uncertainty as to the interpretation of insolvency, for example, in cross-border systems. And so in Europe we have recently introduced a European-wide law, which is called a Directive, the Settlement Finality Directive, which is intended to underpin the nature of legal certainty in payment and settlement systems throughout the European Union. So we can all try to improve the legal environment in which payment systems operate.

Secondly, taking the next two principles together, of course what central banks talk about primarily is risk. Principles two and three about the understanding and management of risk are essentially about identifying first of all where risk can arise. You have to understand that there is a risk before you can do anything about it. Once you understand it, you can try to find a way to measure it. Once you have found a way to measure it, you need to find a way to monitor it and to monitor it as frequently as you

can in the ideal in real time. And once you can monitor it, you can then begin to control it. Once you can control it, you can reduce it or perhaps even eliminate it. That's the basic concept of those two principles which we think extends very well from netting schemes to all systemically important payment systems. In order to make sure that it is possible to do all those things, it is necessary to have the right disclosure of information about how the payment systems work and about the responsibilities and liabilities of participants. We need to make sure that there are the right incentives to the participants to measure, monitor, control and reduce their risks.

The fourth Lamfalussy principle is perhaps the most well known. I've described it as timely settlement in a crisis. The principle states that for multilateral netting schemes the system must be able to withstand the failure of the largest net debtor. Clyde referred this morning to the importance the Bank of Canada had attached to that principle in design and risk characteristics of netting systems. The minimum standard is precisely that. It doesn't mean that if the minimum standard is achieved the system is OK, it means the minimum standard is the least the international community thinks anybody should find tolerable. Many countries take the view that the minimum standard is not risk-proofed enough; the term Lamfalussy Plus is in widespread use for a more strict interpretation of the standard for netting systems, for example, being able to withstand the failure of the largest two net debtors.

The fifth Lamfalussy principle is about fair and open access, and here the fundamental thought is that there may be reasons for restricting access to systemically important payment systems but that the criteria that are used to restrict access should be objective and not be used to provide competitive protection to participants.

Finally, operational reliability is of course an issue with which all are concerned and it's clearly one of the core principles that should be applied to all payment systems. What the Task Force has done is to interpret this somewhat more widely than the original Lamfalussy work, where there was a heavy emphasis on the information technology issues. The principle is about making sure that the system works and that means having the right people at the right times; having the right procedures, and having adequate contingency plans. In our report we are saying rather more about those aspects of reliability.

So far I have said how we in the group have been extending, reinterpreting, explaining the Lamfalussy principles, but we have some further thoughts too. I warned you at the beginning that this was very much work in progress and these slides were prepared before the meeting of the Task Force earlier this week. If I could manage my slides in real time, I would have altered this slide slightly in the light of the discussion earlier this week. Nevertheless I think some of the ideas here still give the opportunity to discuss the work of the Task Force. We're developing a principle about the need for prompt final settlement in payment systems. In doing that, we will debate the nature of finality. There are various definitions of finality, including those which have been worked out by the BIS, and we will need to have some discussion of them in our report. Even as we struggle to get the precise words correct, we all share the view that finality is important and that systems need to know when they can draw the line and believe that the day's business is finished. There is a trend throughout the world towards faster settlement and, in particular, a trend towards real-time processing and real-time use of funds and that is clearly a desirable objective. We're inclined at present to set a minimum standard which means that systemically important payment systems should settle in a final way by the end of the day.

We've also had some discussion about the way that settlement can occur. At an earlier stage in our work we were inclined to say that there should be a system which settles in central bank money. The reason for doing that is to ensure that there is a system that offers a high level of security to its participants, one which allows the participant to take credit risks only on other participants in the system when it chooses to do so. Not all systems, however, actually use central bank money to achieve that aim. Some systems use techniques such as offsetting, where bilateral payment flows are matched and then settled perhaps in real time, which provide the participants with a high degree of certainty about the nature of settlement (provided the arrangements are legally robust). So this principle does link back to the first principle about legal robustness. Rather than say that every system *must* settle in central bank money, we are developing the concept of a safe settlement asset and having some discussion about different designs, recognising that there may be alternatives to central bank money,

but that nevertheless many countries have chosen to use central bank settlement as the method to achieve this core principle.

The use of liquidity is again a key part of the operation of any systemically important payment system. We're having some debate about the best way to present these ideas and our current thinking is that we can encompass them within principles two and three, which I referred to earlier, about the management of risk. We can describe the risk of the inefficient use of liquidity. Wherever we choose to put the idea, liquidity issues will be key.

One final principle that we are keen to introduce is about the governance of systems, that they should be effective, transparent and accountable. This is perhaps easiest to frame where the system is operated by the private sector but we are also trying draw up the principle in a way that includes central banks which operate payment systems. The purpose of this principle is, for example, about ensuring the decision-making structures of the payment systems are effective. They should make sure that the way that the decisions are made about the rules of payment systems adequately and appropriately take account for example of the risk issues and take account of the fair and open access issues. We think we can achieve that through a governance principle. Effective and transparent governance could also be important in ensuring that systems innovate and respond to the changing environment in which payment systems operate.

The remaining principle that we are in the process of trying to develop is to find some way of capturing the notion of efficiency which, as I said, we all recognise is an important aim. I'm sure I don't need to tell this audience about the importance of having efficient payment systems. But the precise way to define efficiency is quite tricky. We're talking about cost-effective use of assets and recognising the needs of users, but we haven't yet found the right language. I'm fairly confident that there will be some discussion in the final report on that range of issues.

Let me move on briefly to the second section of the report, which is about the oversight of systems and the infrastructure as a whole. Here we may have some debate in the discussion session in a moment. This is, as Mr Aoki said in his introduction, very much an evolving area with very different approaches in different central banks. John Veale described how the Reserve Bank of Australia had gone from one extreme to the other, from a system where there was a very informal, non-statutory approach to the oversight of payment systems, which is also the case in my own country, to one where there was an explicit statutory basis for oversight with the responsibilities and objectives clearly set out and statutory powers to back them up. Where we are in the Task Force is that, whatever the basis for oversight, the central bank itself should try to disclose and make clear what it regards as its responsibilities. If they are statutory, then it's easier to comply with this core principle because the statute itself will be part of the disclosure. In addition to disclosing the responsibilities, we suggest that central banks should explain to the relevant parties the approach they take to supervision. The party should understand the objectives and the way that the central bank will go about trying to achieve those responsibilities in order that their expectations will be consistent with the oversight approach.

The third core principle is perhaps obvious and that is that one of the essential purposes of oversight is to try to ensure that the payment systems, in our case systemically important payment systems, comply with internationally accepted principles for the design and operation of those payment systems. That's what we've been trying to develop in the first part of the report. Finally, in the oversight section, we note the importance of cooperation of the overseer with various other parties at home and abroad. Domestically there may well be other agencies with an interest or responsibilities in payment systems. These might include the competition authorities, the law enforcement authorities in trying to prevent money laundering, for example, or other criminal use of the payment system and the supervisors, as we heard earlier when Wendelin Hartmann introduced this session. In some cases the supervisors may be separate, in other cases they may actually be part of the central bank. Supervisors will very clearly have an interest in the operation of the payment system because of the risk it can create for participants, the banks in the system. It is clear that there needs to be close cooperation between the payment system overseers and the supervisors of the institutions participating in it. Internationally too there is a crucial need for cooperation between the relevant parties. That will particularly include



central banks, especially where the system is in some sense cross-border, either because it operates cross-border or because the membership includes non-domestic institutions.

I began at the beginning with a health warning: this is work in progress. I would like you all, if you remember only one or two things from this talk, to remember that fact. And please remember that the principles will not be detailed blueprints which can be taken off the shelf and applied in every country without further analysis but I hope that they will be helpful in the search for solution.

I would suggest that good principles should sound obvious. I would suggest that good principles should last and I would suggest that good principles should help provide answers. It is clear to us that the Lamfalussy minimum standards satisfy all three of those requirements. We hope that the work that we are doing will have that characteristic too. But there will be real choices left; judgements that individual central bank overseers will need to make. So the application of the core principles will only be as good as the individual operator or overseer applying them. It will depend upon their judgement. There will be trade-offs, for example, between safety and efficiency. But we hope that, if we get our work right, those judgements, those choices about the trade-off, can be made in an informed way.

Finally I hope that the Task Force has recognised the real world environment in which we operate. We will be making some suggestions about how to implement the core principles and describe some approaches that have been taken without trying to suggest there is only one model. The implementation section is essentially about how any one country gets from A to B. If we can contribute in that way, the work of the Task Force will indeed have helped promote the objectives of safety and efficiency, which we set ourselves for payment systems internationally.

Thank you all very much, ladies and gentlemen.

Chair: Thank you, John. Before asking Nita to start, I think I can ask if there are any questions or thoughts, very briefly though. Let me ask one question myself if I may: as I was listening to John's presentation on the design and operation principles, it seemed to me that they can be applied not only to private sector systems but also to the public sector systems, namely central bank payment systems. Is that understanding right?

A (John Trundle): Yes, very much so. There is a wide variety of approaches in different countries but the intention is that the core principles are universal, not only between countries but also between the ways systems are operated. In most cases the issues are virtually identical whether it is a private system or a public system. For example principle one, the need for legal certainty, and principles two and three about the identification and management of risk. There are some principles that may need to be elaborated in different ways, for example the issues about governance may be tackled in different ways, but the underlying thought in all the principles is that they should apply in both the private and the public sector.

Chair: Thank you, John. Any questions, clarifications please?

Q: John, one of the things we are doing here in Asia, quite often, is explaining the core principles to central banks, and the core principles that spring immediately to my mind are the core principle for banking supervision. Are attempts being made to coordinate these core principles with the core principles from one of the other Basel committees, and how would you briefly compare the approaches (perhaps it is unfair to put you into a position of knowledge on the Basel Committee on Banking Supervision)?

A (John Trundle): Thank you very much. One of the first documents that we circulated when we started our work was the Basel Committee on Banking Supervision draft of the core principles. It was then, I think, a draft. Clearly it is important that these two approaches should be consistent and again the underlying objectives are very similar. It is about, as I said at the beginning, providing a stable international infrastructure, including through such rules. But there are differences too. The differences are about the type of approach that is taken for banking supervision and for payment systems. I think that, in virtually every country in the world, there is a formal approach to banking supervision, a statutory basis. Banking supervisors can set rules explicitly and they need to set rules to avoid arbitrage, for example between regulations in different countries because businesses can move from one place to another. Therefore they need to agree on things like capital ratios and liquidity rules. I

think the core principles for payment systems are somewhat different (though there are some similarities). There is less an issue of arbitrage between systems, even though there may be some examples. It is more about sharing the understanding of the objectives and the ways of achieving the objectives. So I hope they will be complementary and there are aspects of the language which have echoes from one to the other but there are also, I think, distinct differences between those two forms of core principles.

Chair: Thank you, John. I will ask you to leave any other questions until later maybe. Sorry about that, but I would now like to ask Nita to give the next presentation, on the Indonesian experience.

**Oversight of payment systems: Indonesia's experience in reforming payment systems:  
Nita Yosita, Bank Indonesia**

Thank you, Mr Chairman. I shall talk about Indonesia's oversight of payment systems and its experience in reforming the main system. There are six parts to my paper; background, Bank Indonesia's work, current conditions, some regulatory aspects of payment system oversight, future plans and conclusions.

1. Background. The new Central Bank Act and the core responsibilities of the central bank. The government released a new Central Bank Act, number 23, 1999, in May. This new Central Bank Act makes the central bank independent. It means that Bank Indonesia reports to the House Representative, and the Governor is no longer a member of the cabinet. It also gives the central bank more power in the payment system sector. Like many central banks we have three central bank responsibilities: to stipulate and conduct monetary policy; to regulate and maintain the smooth operation of payment systems; and to regulate and supervise the banking sector. Banking supervision will be entrusted to a new body at the end of the year 2002.

2. Bank Indonesia's work: to establish a new department, to revise all existing payment system regulations and to issue new payment system regulations. The new department has been named the Payment Systems and Accounting Department, containing the National Payment System Development Bureau, which is comprised of three teams, covering: large value payment systems, the retail payment system and payment system regulation and oversight.

3. Current conditions. In Indonesia right now there is no payment system oversight, no specific payment system regulation and no national payment system council, and other parties do not realise the function of Bank Indonesia. Sometimes it makes it hard for Bank Indonesia to get any information or data about the payment systems. There are some aspects of regulation that cause confusion for us. And then the scope of regulation is simply general or more detailed and how we should consider the matter of authority of the central bank or commercial banks. Although it's different within banking supervision and the payment system, where at least we have some people with broad experience.

4. Future plans. Introduction of a National Payment Council; implementation of the RTGS project. We realise that a large value transfer system can cause systemic risk for the whole economy, so this is an important focus for the central bank.

5. In our National Payment Council we have representatives of all parties involved in the payment system sector, supported by communities and working groups, and chaired by the central bank. The RTGS project will be implemented against a background of new regulations in three parts. Starting in May 1999, seven regulations are being issued, covering: the operation of payment system services, credit cards, clearing house operations, semi-automatic local clearing house operations, credit card clearing, non Bank Indonesia's clearing house, and banks' debit balances. And starting in August we will be issuing five regulations, covering: RTGS, the electronic clearing system, the automated clearing system, the manual clearing system, and back-end switching. Yet there are parts with no priority for Bank Indonesia, regarding the regulation of the cross-border clearing system and foreign exchange transfer.

6. Conclusions. To reform its national payment system, Indonesia requires a well-founded legal framework, a well-designed internal structure and good communication between internal and external parties and direct involvement from top management.

Thank you.

## Discussion

Chair: Thank you, Nita. And now I would like to open the floor for questions.

Q (Carlo Tresoldi): I have a question for John Trundle. More and more now in the world, the efficiency of the activity that you mentioned and the activity of the overseer is not only a problem linked to the activity of the supervisor but also with the activity that is anti-trust, which is not anti-trust at all. So how does your group see this problem and how do you believe it can be managed?

A (John Trundle): I think we certainly recognise the tension that you describe between, if you like, a natural tendency towards agglomeration, towards bigger size, and the risks that that can create. There are monopolistic tendencies. That's one of the reasons that the fifth Lamfalussy principle is so important, about fair and open access. Again we need to debate what the word access means but it's about having effective use of the payment system without being disadvantaged unreasonably by virtue of the size or status of the member. Equally, it's not the task of our Task Force to try to prescribe how those trade-offs should be struck or indeed the structure by which they should be resolved because the role of different agencies in different countries will vary. So in some countries where there is a statutory basis for oversight, as in Australia it may include, efficiency and competition concerns. Therefore the central bank will internalise that issue and have to make the trade-off itself. In other countries there will be other agencies involved. For example in my own country, it's accepted by custom and practice that the Bank of England is the overseer of payment systems and the way that we interpret that is purely by being concerned about systemic risk. There are other agencies which have responsibility for competition policy. I have for example met our Office of Fair Trading and debated some of the rules of our payment systems, about whether they are appropriate or not, and I've pointed out the risk advantages of some of the rules and they've pointed out the anti-competitive aspects of some rules and we've come to an agreement. So different countries have different approaches but the point you highlight is absolutely right, there are trade-offs like that to be reconciled.

Q (Peter Ledingham): Another couple of comments and perhaps a question for John. I was actually reflecting on George's question, about the Basel Capital Accord, and I think there are some, one or two, quite interesting restrictions worth reflecting on here. The Basel Capital Accord starts with the notion that all banks must be supervised. I take it from what John has said that the intention of this work is not to say something like that but rather to seek to define a class of systemically important entities or arrangements that need to have something done with them. And that leads me to the second point, that the Accord says that supervision ought to be adequate, but here we are talking about a form of monitoring or oversight or something of a more elastic kind of nature. Now I'd just like to make the comment on this, that I think the Task Force has got this more right than the Basel Committee did. That this is actually a much more sensible way to approach those kinds of issues. A second one is rather more interesting and I don't know how much opportunity you have had to think about this but the Basel Committee's work has developed along fairly clear lines of home country and host country responsibility. The focus of what the Task Force has done appears to be on domestic payment arrangements on the whole, but the Chairman mentioned earlier this morning that you've already had a discussion about S.W.I.F.T. this week and I'm wondering if there are a bunch of global payments arrangements out there that involve risk concentrations which I certainly don't understand very well, that I am in no position to manage or oversee and yet have the potential to cause significant problems to some of the institutions under my care and I am thinking about obviously credit card networks, S.W.I.F.T. networks, the developments of internet banking and even little things like Mondex which are trivial enough in the way they operate but have the potential, if there's a major security problem, to become a systemic threat to quite a large number of people. I think I'll stop there. Thank you.

A (John Trundle): Well there's a great deal in those comments and I think I agree with all of them. Let me address the second point about cooperation and the home/host distinction. We have gone less far than the supervisors in defining universal codes in that way. I don't think that we have the ability to do so at present although this arena is evolving all the time. It's certainly the case that a lot of the focus of our work is on domestic systems, but it is intended to apply to cross-border systems too and one can look at what has actually been done with cross-border issues to date. You cited S.W.I.F.T. as an example. S.W.I.F.T. is a nice example of the movement from the relatively informal to the somewhat more formal and it's still evolving. I think it's almost a microcosm of what is going on in the payments industry oversight more generally. Some years ago the G10 central banks, under the auspices of the parent committee of the Task Force, the CPSS, now chaired by Mr Hartmann, decided that S.W.I.F.T. was so important and of systemic importance that central banks should take an interest, notwithstanding that none of us had any direct statutory basis for doing so. We achieved some cooperation from S.W.I.F.T. and we asked various questions about the issues that were of particular concern to us at the time, particularly about technical issues, security issues, just the sorts of things you've raised in the context of electronic money. We thought that was constructive. We could also see that it had its weaknesses and that it needed to evolve. More recently in Belgium, where S.W.I.F.T. is based, they now have a law which perhaps Marc Hollanders or Johan Pissens would speak about. As I understand it, it is a law which enables them to look at any systemically important institution and their advice is that they can interpret S.W.I.F.T. as being within that category. The result is that the National Bank of Belgium now has statutory ability to require information from S.W.I.F.T. and to look at it. So the process of looking at S.W.I.F.T. has evolved; the National Bank of Belgium is in the lead doing the oversight but still with the support of the G10 central banks standing behind it we hope adding moral authority to what the National Bank is doing, providing technical help where we can. Perhaps that approach is going to evolve still further as the oversight of payment systems more generally becomes more formalised. My expectation is that on average there will be a move towards a greater statutory basis for the oversight of payment systems rather than in the other direction. But the extent of that interest varies. I was very interested in Nita's presentation to hear that in Indonesia they have responsibility not only for the systems which I might call systemically important, but also for a whole range of more retail systems, credit cards, the clearing arrangements, the ACHs. I don't know whether she would like to comment about the purpose of that oversight and what Bank Indonesia looks for in carrying out that oversight, and how she thinks it might evolve.

Q (Shuhei Aoki): Of course the oversight is an activity directed to private sector systems, so the importance of oversight depends on the importance of private sector systems, of course. So that is also my question: what is the importance of the private sector payment systems in your country?

A (Nita Yosita): Actually there are two parts in Indonesia: there are paper-based instruments and card-based instruments. All paper-based instruments have to be cleared and settled in the central bank. For the small cities, we have no central bank representative office. The state-owned banks run the clearing house and as a settlement bank as well. And for the card-based instruments, like credit cards and ATMs, we said that we also have three groups of banks involving more than 3,000 ATMs, where they are cleared among them, with each group choosing one bank among the member as a settlement bank.

Q (Darryll Hendricks): Thank you. I have a question that I think relates to both panellists. It seems to me that there are still quite a lot of features of an RTGS System on which there is not universal agreement. I think about the way in which credit may or may not be granted in the system. If it is against collateral, then what type of collateral prices for the credit, whether there are queuing mechanisms used, whether the queue is transparent to the users? All of these issues were raised in a prior report by the CPSS under the chairmanship of Mr Lucas. I wonder, one, if Bank Indonesia has reached any decisions at this point about its approach to these issues with its RTGS System that it is building. And I would also like to ask John whether he sees these questions evolving to the point where there can be core principles that give more settled answers to some of these questions over time, even if not in the first stage of this work.

A (John Trundle): Shall I give my response first? You are absolutely right that the choices are set out in the report that Yvon produced and we would refer people to that as the locus classicus about how to

think about these choices. I think what we would say is that, in making those choices, as described in the report, the guiding principles should be those we have set out so that the designers of the system should ask how taking collateral or charging for collateral affects the amount of risk, the disposition of risk, and the management of risk, for example. They should also ask whether it has any impact on the legal certainty of the system, whether it influences fair and open access, whether it ensures prompt settlement. That is the approach we would expect people to follow. We may be able to say something about choices.

As part of one of our exercises in our group, we had what I thought was an absolutely fascinating paper, in fact largely by John Veale, I think entirely by John Veale, who is a member of the group to whom we set the following task: if you had to design a bad RTGS System, how would you design it? And he produced an awful RTGS System. It was a brilliant paper. I have to say, it made us think quite hard about a number of issues and it actually revealed that although we could not agree on any one set of characteristics that an RTGS System should have, we could agree on a great many characteristics that they should not have. So I hope that we may be able to get some of the flavour of that in our report.

A (Nita Yosita): In the Indonesian experience, in the designs of the RTGS project the banks can choose whether they go through the RTGS project or the next settlement. We also have queuing. Then about the collateral, because we do not have the government securities, the bank has to keep central bank securities. Something like that.

Q (Jean-Michel Godeffroy): I had a very similar question to Mrs Yoshita concerning her RTGS System and she has already answered most of it; the only point, perhaps, is whether it is a decentralised system or a centralised system. I mean, will the bank access your RTGS System only in your head office or will it be able to access the RTGS System in the provinces of your country?

A (Nita Yoshita): The RTGS System is only in the head office of Bank Indonesia, so that for the purpose of this project we also put together the bank's account at head office. Right now the banks have their account in each central bank representative office but before we implement RTGS, they are put together in the head office and RTGS office, so only in Jakarta.

Q (Wendelin Hartmann): Thank you, Mr Chairman. I have a question to John. The UK has been very progressive in bringing together, a couple of years ago, the supervision of financial markets in one institution. And we are faced with the situation now, when exercising oversight on payments, that we are more and more aware that a lot of risks exist. The question of interrelations with other markets like securities markets has come up. Is that relief for your oversight task executed by the Bank of England, having just one partner on the banking supervision side? Is it something you could recommend to other countries? In Germany, for instance, suddenly a discussion has come up over whether to follow the example of the UK. Would you repeat this exercise if you could?

A: Thank you, well that's a splendid question of course. The answer is that the jury is still out on whether it's an effective reorganisation of our infrastructure and there are inevitably pros and cons. I will try to answer it both from the perspective of the Bank of England as an institution and also from the perspective of the country as a whole to the extent that I am capable of doing that. I think from the point of view of the Bank of England it has some significant advantages. It does actually mean that we now have a very clear focus on what payment system oversight means and what we're trying to do. I have to say it has been relatively vague to date and when we had the supervisors as part of the Bank of England we could essentially hide behind their responsibilities and we were in some ways a service function, telling the supervisors about payment systems and thinking about payment systems more generally. We now have an explicit request from the government to think about the financial stability of the system as a whole. When, in detailed explanations of financial stability or in parliamentary debate, they say, "What does that mean?", the example that's always given is payment systems. Now, I have to tell you, as the Head of the Payment Systems Division, this is terrific for motivating my staff because I hope every member of my division knows that their work is core in the Bank of England. We do monetary policy and we do financial stability, which means payment systems as far as the outside world is concerned. That has led to quite a lot of heart searching about systemic risks and how they arise and it's also led to a more acute discussion between the Bank and my colleagues in the

Financial Services Authority who have the responsibility for individual institutions because we do approach questions with different hats on. I think the debates that we have are actually better now that we are separate. But I would add that there are risks of separation and the risks are those to which you allude. Clearly there's a risk of institutional rivalry as with any reorganisation of that kind. I would like to think that so far we've avoided that not least because our former colleagues in the Bank remain good friends and so, at the personal level, there are now very strong relationships between the supervisors and the central bankers and that's something we will have to make sure lasts over time.

But there are also risks because of the need for common understanding which may again pull apart over time precisely because of the importance of payment systems in other fields, notably securities settlement. We have a specific example of that at present which is that the Settlement Finality Directive in Europe, to which I alluded earlier, has a mechanism where individual institutions have to be designated as being covered by the Directive. One needs an authority to designate payment and settlement arrangements. The current proposal of our Finance Ministry is that the Bank of England will be the designating authority for payment systems and that the Financial Services Authority, which has statutory responsibility for supervising securities systems, will designate securities systems. But as we know, securities systems don't just involve the transfer of securities free of payment, they typically involve rules or even systems relating to payments, what we would call imbedded payment arrangements, and it's clear the Bank of England has an interest at the very least in the payments arrangements for the movement of our government securities, which is a key part of the payments infrastructure. In the US, for example, the term "Fedwire", as I understand it, applies not only to funds transfer but also to the movement of government securities through that efficient real time system. Those two markets for cash and government bonds are very closely related. So we are having to develop rather ad hoc mechanisms to bridge that divide. Whether to recommend it for other countries is difficult because I think there is a continuum of issues beginning with monetary policy. I always used to say that payment systems are the glue between monetary policy and supervision and you can draw the line where you like.

The Financial Services Authority is responsible for supervision of banks, supervision of other deposit taking institutions, of insurance companies, of securities companies and the number of institutions is growing, it's currently 8,000 institutions. There's also a management issue, of whether in a country of our size, with as big a financial sector as we have, whether it is manageable to put them all together. There are synergies, but there are also inefficiencies, and so I think we will have to watch that space.

(Clyde Goodlet): Perhaps if I could just add a small comment to that: I think the other trend that is going on here is, I know in Australia it's occurred to a certain extent, but in some of our countries where there is a supervisory agency covering multiple types of institutions, it's in part because we're starting to think about financial service providers and not thinking about banks as being so special anymore. In Canada, for example, we have debates, ongoing debates right now about the nature of participation in payment systems and other major clearing and settlements systems that extend beyond banking kinds of institutions, for example insurance companies, securities dealers, potentially mutual funds, so that some of the sort of specialness of banks in the past is probably not as prevalent as we've seen and so there's a stronger desire to put all of that supervision in one body and think about them as financial service providers.

(Yvon Lucas): Thank you. If we look at the evolutions, in developing countries and in particular in Europe, we can see that there is a striking increase in the use of RTGS procedures, and in the field of netting systems we see that more and more systems for large-value payments are in the process of transforming their organisation in order to be able to provide for an intraday early finality. It is the case in France, where we have transformed our netting system in order to obtain an early finality by injecting central money into the system. I see a new appetite on the part of the banks for an early finality for large-value payments and this evolution is very new. I wonder if some of the principles that are being defined in your Task Force could perhaps appear a little bit loose for those countries that are presently transforming their procedures in order to obtain systematically an early finality and I think that perhaps this tendency for increasing the roll of early finality is due to the competition between netting systems and real-time gross settlement systems. Real-time gross settlement systems offer an

early finality and the banks also want the netting system to provide for this possibility and this pushes towards evolutions.

(John Trundle): Well, I think it's an essential judgement that the Task Force needs to make and I certainly recognise the picture that Yvon has described. The way that we've tried to tackle it is to distinguish rather directly between the minimum standard and the core principle which should apply for all time and to include in the core principles exhortation to the readers not to stop at minimum standards. Our basic approach is to try to provide core principles which are universally applicable. We have to be cautious in setting minimum standards at a level where there are minimum standards higher than can reasonably be achieved. We have not sought to change the Lamfalussy minimum standard about surviving failure of the largest net debtor as the minimum. But it is, if you like, the bare minimum and we will say that many countries view this as inadequate and expect to do better than the minimum. This is a trade-off that we all have to make. Of course one end of the trade-off is to be able to withstand the failure of all participants – well, that's an RTGS System. I also recognise your description of the demand for early finality and I find that a very encouraging development. We seek to capture it under the principle about prompt finality and there we will say that the minimum standard which we believe should be achieved everywhere is end of day settlement. But we will say that we think it should be faster than that wherever possible and indeed the best standard is real time continuous settlement. Thank you.

Chair: Are there any other questions? The last question?

Q: Yes, I have one question for John about fast moving e-money. What's your oversight about the effect of this payment system on the American industry because in a way it would affect central banks?

A (John Trundle): Well, can I answer that both as Chairman of the Task Force and perhaps also as the Bank of England payment systems person? As Chairman of the Task Force, the question I would ask is, are these arrangements systemically important? And that means thinking about the ways in which risk might arise in the system and how that risk might be distributed. And I certainly don't want to say that there are no circumstances in which electronic money arrangements would be systemically important or to make that sort of claim for electronic commerce. But we are not seeking to provide core principles for all payment arrangements, we're trying at least at this stage of the work of the CPSS, the specific project that we've agreed to undertake is, if you like, the apex of the pyramid of payment and settlement arrangements. If we get that far, then it will be for others to consider what needs to be done next. But if I might answer the question also as a Bank of England payments expert, it's an issue that we debate ourselves about the way in which risks and efficiency issues might arise in electronic money arrangements or in electronic commerce. I think in electronic commerce we would focus on the payment aspects of electronic commerce; it's clearly a very much bigger issue than for central banks alone and indeed I've had discussions with our Department of Trade and Industry about our shared interests in electronic commerce developments. In many ways the issues that are most pressing, or that are driving these developments, are the efficiency interests. For example in our country we've been thinking quite hard about the way in which our legal structure inhibits the move away from paper-based structures towards electronic structures; so, for example, we've been looking at our law about share certificates and seeing whether we can allow shares to be moved electronically through all stages of processing. We've also been looking at the use of digital signatures. We need to change our law, which currently requires certain documents such as share transfers to be physically signed. So I think the motivation for most of those issues tends to be on the efficiency side and the central bank often does have an interest in that. But I think the core interest of the central bank, which would be common to all central banks, would be the risk issues and there you can use the framework of the core principles to ask questions. But I don't think, however, there are yet many cases where I would automatically say that the framework of the core principles clearly applies.

Chair: Thank you, John. I thank you all for asking lots of valuable questions. I think that it is very difficult to establish a set of core principles, but the central banks have things in common like efficiency and safety. So I think it is very necessary to have some feedback, some input from different

central banks, present here or not present here. So could I put a final, final question to John on whether there is a possibility of non-Task Force members inputting their thoughts or opinions?

A (John Trundle): Thank you, Shuhei. We would very much value the input of other central banks.



### **Module 3: Foreign exchange settlement – a progress report**

#### ***Wendelin Hartmann***

Starting the afternoon session, the two following speakers will have the difficult task to keep us awake and active. I am sure they will manage this because both of them are really experts and very experienced in payment systems.

Darryll Hendricks is excellent in dealing with the issue of foreign exchange settlement risks. 25 years ago it occurred for the first time although it had existed of course before that time. Now we are very active in reducing, if not finally removing, this risk. I am indeed looking forward to what the next 25 years will bring us.

Daniel Heller is a representative of the Swiss National Bank. As you know, the Swiss franc is a major currency in the world, and, not to forget, there are two big Swiss banks that are global players. In this respect Daniel Heller is also an experienced man, and he will bring us along his view of foreign exchange settlement risk. We are all looking forward to learning from your experience.

## Panellists/Speakers

### **Recent efforts in the markets and by central banks to reduce foreign exchange settlement risk: Darryll Hendricks, Federal Reserve Bank of New York**

Thank you very much for that introduction. I would like to start by taking the opportunity to say thank you to the BIS Asian Office, to the CPSS Secretariat, and to the audience here for coming to this workshop. I certainly have enjoyed it very much and hopefully you will get something out of what I have to say.

June 25 in fact marks the 25th anniversary of what we call the Herstatt episode. I could try to talk about my experience with the Herstatt episode, but I assume that most of you would quickly see that I was not personally involved in the Herstatt case. However, my role in tackling foreign exchange settlement risk has gotten me quite interested in this episode and I actually had our archivist at the Federal Reserve Bank of New York pull out a number of files relating to the correspondence that went back and forth and summaries of G10 governors' meetings that were attended at the time. I think it is fair to say that it was an extremely disruptive event. There were very significant concerns raised both in the few days right after the failure and then continuing on for quite a long period. For a number of months, the interbank credit market was significantly impaired. Many small and medium-sized banks had a difficult time obtaining credit and continuing their normal trading and market activities. There were also very significant issues related to the functioning of the CHIPS system at the time. The CHIPS system, as many of you know, is a private sector US dollar payment arrangement in New York widely used for foreign exchange transactions. It was really just getting going in 1974 and the Herstatt episode caused a major rethink among the principal banks about how it was going to operate. Many of the banks were very reluctant to use CHIPS for a number of days and even weeks after that.

I think it is fair to say that the Herstatt event lives on in the consciousness of central bankers as the kind of disruption that we would not like to see today, particularly in the context of the spectacular growth in the volume and the number of currencies that are traded actively in the interbank foreign exchange market. Preliminary data from the latest BIS survey show that there's approximately one and a half trillion dollars in daily turnover in this market. This suggests that before any netting that may take place, more than three trillion dollars in daily settlements flow through the various payment systems around the world to support this volume of foreign exchange trading. In addition, greater use of automated systems in many cases forces banks at the centre of this market to submit their payment instructions into the payment systems in an irrevocable way sooner than perhaps they used to do in order to support that volume of activity. If you think about these things in combination - the kind of event that Herstatt was at the time, together with the very large volumes that now flow through global payment systems - the concerns of central bankers are quite apparent.

Foreign exchange settlement risk is perhaps the most significant remaining source of principal risk associated with financial market settlement arrangements. That is, the entire principal amount of the transaction is at risk, not just the market value of the underlying foreign exchange trade that is the objective of the transaction. Over the last several years, central bankers have concluded that it is time for this risk to be addressed in a comprehensive fashion. In every stressful episode in financial markets today, the issue of foreign exchange settlement risk comes up. If Bank X is looking like it might be in trouble or there's a concern about it, then the questions arise: what is Bank X's foreign exchange exposure, how does Bank X settle its foreign exchange, what are the issues associated with these arrangements, will it bring a halt to the foreign exchange market if in fact Bank X goes down in a surprise fashion? Coupled with this is the fact that foreign exchange settlement losses are not imaginary. Most banks are not very forthcoming in talking about foreign exchange settlement losses that they may have experienced, particularly in the last few years, but banks tell us that there have been some. They just don't want to tell anyone else about it.

Although a large, unexpected failure is admittedly a low probability event, if such an event were to occur there is a real concern that its consequences could be very, very significant. This was underscored in the work that was done by the CPSS steering group on foreign exchange settlement

risk, chaired by Peter Allsopp of the Bank of England. Many of you may be familiar with their report, often referred to as the Allsopp Report and known by its bright orange cover. That report signalled a major change in the emphasis of the G10 central banks on the need to do something about this particular risk.

A couple of key points from the Allsopp Report are worth repeating. One is that settlement risk in foreign exchange is not simply an intraday phenomenon. There has been a widespread view that bank supervisors around the world could address foreign exchange settlement risk by closing insolvent banks at the right time of the day. But the analysis in the report made very clear that is not the case; there is no single point in time when a bank could be closed that would reduce the potential for this risk to zero. There are a number of reasons for that: one is the increasing extent to which payment systems operate during long periods of the day; another is that the payment instructions become irrevocable in many cases long before they are actually made, implying that the risk is there for a much longer duration.

The Allsopp Report also showed that the amounts at risk are very large. Even for some of the largest banks in the world, the amounts at risk to a single counterparty can exceed their capital. This is something that very much got the G10 governors' attention when they read through this report. Their response, as embodied in the public version of the report, was to adopt a three track strategy to reduce foreign exchange settlement risk. The private sector was given the primary responsibility for addressing this risk. Individual banks were called on to measure, manage and control the risk in a more significant way than they had been doing. Second, the report called on industry groups to do their part to develop multi-currency solutions, if possible, to address this risk. And third, central banks were going to do their part to cooperate with private sector efforts and in other cases to extend their operating hours or to establish RTGS Systems to support risk reduction initiatives.

In 1998, a progress report was issued by the CPSS, with the endorsement of the G10 governors, looking at the efforts that had been made since the publication of the Allsopp Report in 1996. This progress report suggested that there had been significant progress at the level of individual banks. Several surveys were conducted on bank behaviour and these suggested that awareness of the issue was now at a much higher level within banks. There had also been some progress in reducing and controlling the exposures involved but a great deal more still needs to be done at the individual bank level. That was one of the key lessons of this progress report. It is important to emphasise that the multi-lateral initiatives, and of course I am going to talk about CLS in a few minutes, do not mean that individual banks should not do their own part in order to address foreign exchange settlement risk. Daniel Heller, who will follow me, is going to talk in more detail about some of the steps that individual banks and their supervisors may want to take in thinking about FX settlement risk.

The progress report also noted that central banks have made a number of improvements to wholesale payment systems, including the extension of operating hours in several cases and the move to RTGS in many countries. In addition, we cooperated with industry initiatives and are now working with the Basel supervisors to develop supervisory guidance on FX settlement risk. Of course, we also want to work with other central banks to spread the message that FX settlement risk needs to be addressed, and that if central banks work together with the private sector we have a good chance of substantially reducing it. We are now working on a toolkit of practical suggestions to help central banks around the world approach the issue of FX settlement risk and get the message across to the private sector.

Let me turn to the CLS Services project. CLS Services is developing a bank - CLS Bank - that is intended to be a payment versus payment solution to foreign exchange settlement risk. Let me first say a few words about the ECHO project. ECHO was a multi-lateral netting system for foreign exchange. It was purchased a year ago by the holding company CLS Services, which is also developing the CLS Bank. They found that they could not get sufficient volumes in the system to really make a go of it, economically. So, earlier this year, CLS Services suspended the ECHO service to focus and concentrate their efforts on getting CLS Bank off the ground. This obviously means that the market focus and our focus as central banks in terms of the industry initiatives are now primarily on the CLS Bank project.

CLS is a collective effort by a number of the largest participants in the global foreign exchange market. It currently has over 60 shareholders. I think it represents a clear response to the call to action issued by the G10 governors with the Allsopp Report. The CLS Bank is going to operate on a payment versus payment principle so that, if you pay, you will either get your money back or you will get paid in the currency that you wanted. There are two approaches to ensure payment versus payment. One is guaranteed refund: you will get your money back if the other side does not pay. The second approach is guaranteed receipt: if you pay, you will get the currency you wanted even if the other side does not pay. The banks that are developing CLS Bank looked at a variety of approaches to developing a payment versus payment solution to foreign exchange settlement risk. They studied this for some period of time and came to the conclusion that the CLS Bank approach will be a mixture of guaranteed refund and guaranteed receipt. This was seen as the most practical and economical approach to offering a payment versus payment service. CLS will have offices in the three major time zone areas in the world: London, New York, Tokyo. CLS Bank will be chartered by the Federal Reserve, who will serve as the primary regulator, although I think it is fair to say that, consistent with the Lamfalussy principles, all the central banks whose currencies are going to be involved in the system will also play a very significant role in regard to cooperating with CLS Bank and cooperating with us in a regulatory capacity.

CLS is a complicated project. There are a number of different parties that are going to have to work together to make the project come off successfully. First, there are the central bank RTGS Systems. Private firms will perform several different roles, including liquidity providers, settlement members, or user members. There will also be nostro banks, who will be the main conduits between the CLS Bank participants and the national RTGS Systems. In addition, several companies are helping to build the CLS Bank system from an IT point of view. IBM is the major contractor for the project while S.W.I.F.T. is heavily involved in developing the network architecture. CLS Bank is the first project that will use S.W.I.F.T.'s next generation technology, which is an interactive network approach different from its standard store and forward messaging. CLS will therefore take advantage of the latest attempts to provide interactive, real-time communications facilities between the banking community and the industry utilities.

In terms of the structure for CLS Bank, the private banks that will have accounts directly on the books of CLS Bank are referred to as settlement members. They will have one account on the books of CLS although this will be broken into sub-accounts for each of the currencies involved in the system. The CLS Bank itself will maintain accounts on the books of all the central banks in which it settles foreign exchange transactions. In many cases, as I mentioned, CLS is not going to have a physical presence in those countries. Thus, CLS is also breaking new ground in having remote access to a number of the relevant central banks.

Five currencies are going to be settled initially by CLS - the US and Canadian dollars, the British pound, the euro, and the Swiss franc. The Japanese yen and the Australian dollar are going to move into the CLS project very rapidly in the months after it begins operation. The target date for beginning CLS Bank operations is the early fourth quarter of next year, the Year 2000. There is a substantial amount of pressure to bring CLS Bank into operation. Many banks are eager to use it to reduce their risk. They want to get the project off the ground and commercially viable as soon as possible.

I don't want to go into all the details of the CLS processing cycle here, but I will highlight a few of the key points. Most of the trades that CLS Bank will settle will be entered into the system on the day prior to settlement. The key operating times of CLS Bank itself are going to be in the late afternoon and early evening in the Asian time zones; early morning to late morning in the European time zones; and very early morning, essentially the middle of the night, in the North American time zone. Clearly, this is a challenging and unique project that is going to require CLS Bank to work in tandem across the entire globe.

The settlement cycle is composed of three distinct stages. The first stage is the pay-in stage, in which money comes into CLS Bank from the central bank accounts of the banks which are participants in the system. The settlement phase is the second phase and this is where the payment versus payment actually occurs. The crediting and debiting of one currency against another currency is going to occur

over the books of CLS Bank, which maintains sub-accounts for their participants in these different currencies. CLS Bank will achieve payment versus payment at this stage because transactions will occur only if all the relevant risk controls are satisfied. The third and final stage of the CLS Bank processing will consist of the net proceeds being paid out to the settlement members in the system.

The key point to think about in the first stage is that the payments are sent through the national RTGS Systems to which CLS is connected and these payments fund CLS Bank with those currencies. The key aspect of the CLS Bank design that really made it work from an efficiency point of view is the self-collateralising nature of foreign exchange transactions. Since there are always two sides to a transaction, funding one side of the transaction means that you have provided value to CLS Bank that it can use to provide you with credit in the other currencies in the system. This provides a great deal of liquidity overall in the way that CLS Bank will process transactions.

As my time is growing short, I would like to point out briefly that CLS Bank is going to have a number of key risk management tests for the transactions it will settle. These tests will keep the credit risk that CLS Bank itself bears from its participants to a very low level. CLS Bank hopes to maintain itself as a source of strength during stressful market conditions and the risk management tests that it is establishing are critical to its ability to do that. The risk management features of CLS Bank are an ongoing focus of discussion within the FX subgroup of the CPSS.

Obviously the major potential benefit of CLS Bank is its ability to reduce principal risk in foreign exchange transactions: assuring that, if you pay, you will either get that money back or you will be paid the currency you are owed. CLS Bank may also be able to reduce liquidity risk in the foreign exchange market by increasing the chance that you will receive the currency you expected in case of a default. In terms of the challenges for the project, I have talked about several of them already. One of them is the fact that it is a complex operational and technical project - they have some of the world's experts of course working on that. There is also the commercial challenge that every kind of private sector system faces.

In concluding, I want to emphasise again the conviction from the G10 central banks that foreign exchange settlement risk needs to be substantially reduced. This message is coming from the top. The primary responsibility, as I indicated earlier, has been placed on the private sector. Their transactions give rise to this risk, and as my colleague Larry Sweet has aptly put it, "They brought FX settlement risk into this world, and so they should take it out". CLS Bank is an ambitious and challenging response by the private sector to this call to action. The design of the project is very innovative and has a lot of appealing features both for the banks involved and from a risk management perspective. Thus, from a theoretical perspective, there should be nothing stopping this project. The key issue is whether the private sector is going to follow through and complete it. I have a great deal of confidence this will happen and I hope that by the next time I come to Hong Kong we will be talking about the successful launch of CLS Bank.

Thank you.

***Daniel Heller, Swiss National Bank***

I would like to talk to you about two major projects of the subgroup on foreign exchange settlement risk, namely the supervisory guidance and a toolkit for risk reduction in FX risk.

The supervisory guidance is the product of a close cooperation between the risk management subgroup of the Basel Committee and the CPSS subgroup on the reduction of foreign exchange settlement risks. If everything goes well, it should be released next month.

The toolkit provides practical assistance to central banks on how to deal with and measure foreign exchange settlement risk. It is still at the draft stage. We hope it can be released in the fall of this year. I would like to point out that both of these initiatives are just an extension of the work that the CPSS has done over several years. For instance, the Allsopp report and the progress report written under the chairmanship of Larry Sweet.

Let me now turn to the supervisory guidance. The goal of the guidance is to provide a consistent framework for the further attention that banks pay to foreign exchange settlement risk. The scope of it is global since it addresses supervisors not only within the G10 countries, but also outside the G10 countries. One of the additional reasons we thought such guidance was necessary was to maintain the momentum there has been over the last several years. Taking this issue to the level of the supervisors is something we at the CPSS could not do on our own, especially since we think that the supervisors play an important role in the reduction of settlement risk.

The content of the supervisory guidance can be broken down, roughly, into two parts. The first part addresses risk management considerations. The risk management section itself can be divided into two parts. The first centres on organisational aspects, the second focuses on procedures. At the organisational level, it recommends that the senior management takes responsibility for monitoring and measuring foreign exchange settlement risk. In addition, it suggests that foreign exchange settlement risk has to be integrated into the risk management of the entire bank. Then, at the procedural level, it says that the exposures should be accurately measured. In a minute I will show a method by which this can be done. There should also be contingency planning and stress testing for risk management. Banks should, for instance, improve, where possible, the arrangements with their correspondent banks and, among other recommendations, they should use netting facilities.

This is the first part of the supervisory guidance, with a focus on risk management considerations; as I said, the second part describes the role that supervisors play in implementing this guidance. First of all, they should evaluate the banks' risk management as an entire programme. In the part that analyses foreign exchange settlement risk, they should or can use the benchmark rules which were defined as part of the work of the CPSS. Where necessary and possible, it is recommended to do onsite reviews.

Throughout the work of the CPSS in this area, we always wanted to convey the message of "speak softly and carry a big stick". The big stick is the threat that if you do not do anything, if there is not enough progress, we can resort to capital charges on these exposures. This threat is repeatedly stated in the guidance.

Now I would like to illustrate how risk reduction can be achieved. I assume many of you are familiar with what is up there on the screen. We have on the horizontal axis time and on the vertical axis the exposure, or in this graph the value of the transactions. Then where the red block starts, it says "unilateral cancellation deadline". This is the latest point in time at which you can take your payments out of the system. It does not mean that this is the time when settlement occurs because usually you cannot intervene in the system just before settlement occurs. Especially if you use a correspondent bank, the latest point at which a payment can be revoked will be several hours or even a day before settlement occurs.

In the centre of the rectangle where it changes from red to uncertain, this is the point in time when the currency that you bought is finally credited to your account. But even when final settlement has occurred it does not mean that you already know that settlement has occurred. It will take a while until you get the notification and know that the transaction was successful. This is what the yellow part shows. This is the time of uncertainty when you do not know whether you really received the money you bought or not.

The guidance mentions methods to reduce these risk exposures. One is to improve the arrangements you have with your correspondent bank. This means that you can move the latest point in time at which you can take a payment out of the processing cycle towards the right, i.e. you move closer to the settlement of the payment and this reduces your time of exposure. Of course if you have direct access to a payment system you can move even more to the right. At the same time, the guidance recommends some internal optimisation processes which usually mean faster reconciliation. This is a movement from the right to the left, i.e. the yellow area becomes smaller. The decrease in the yellow area does not mean that your actual exposure becomes smaller because your actual exposures stops when final settlement of the bought currency occurs.

Another recommendation in the guidance is that banks use bilateral netting. Through bilateral netting they simply reduce the principal that is at stake, which means that the top of the rectangle moves

downwards. Just by doing netting or bilateral netting we do not change the duration of the exposure. We reduce the size of the exposure.

As a little side note, one of the advantages of RTGS is that a PVP mechanism can be implemented fairly easily. I think it would also be possible with hybrid systems but it just becomes way more complicated. In an RTGS environment it is relatively easy to implement a PVP scheme.

Let me now turn to the toolkit, which in some sense bears a great resemblance to the supervisory guidance. However, its aim is different. It includes material to help central banks understand foreign exchange settlement risk. It also helps them implement a strategy to reduce foreign exchange settlement risk. In this context I would like to make a reference to the Core Principles on Payment Systems that John Trundle mentioned this morning. You cannot take the principles and apply them as they are to every country. Some flexibility is needed in applying them. With the toolkit, it is the same. In applying the toolkit, you need to adapt it to the circumstances of the country and take them into consideration. All the countries are a little bit different in terms of market structure and foreign exchange deals, etc. The toolkit will have, if there are no major changes, two sections. The first one is addressed directly to the central banks. It contains examples and helps them understand and assess foreign exchange settlement risk. The second part recommends what central banks should do vis-à-vis the commercial banks in their country. In the beginning the central bank should, of course, start a dialogue on foreign exchange settlement risk with the banks. The central bank should make the commercial banks familiar with the problem; it should try to find out how much the commercial banks already know about this issue. A good way of assessing the exposures is doing surveys. That is what the G10 countries did in the two reports that were published. As in the supervisory guidance, there are some steps recommended that commercial banks can take to reduce the exposure through bilateral netting and through the relationships with their correspondent banks. The toolkit recommends that the entire problem be incorporated into the supervisory process using the supervisory guidance. It also recommends that the central banks monitor the progress that banks make in reducing foreign exchange settlement risk. This can be done, for instance, by repeated surveys every year or every two years. This gives the possibility to compare outcomes and measure progress. If you do just one survey you do not really know where you stand. As soon as you have two surveys over the course of time you can really see what is going on, what is changing and what did not change. Finally, this is also part of a strategy alluded to by Darryll before; publicising is an important task. It means that central banks and their exponents address this issue in public, give speeches and write articles. In this way, more and more people become familiar with this important topic.

## **Discussion**

Q: The CLS Bank will only reduce the settlement risk. Don't you think it would be necessary to reduce the counterparty risk as ECHO intended to do?

A (Darryll Hendricks): Yes, I think that's a very good point. I think just to expand on that a little bit, the key additional source of risk that the ECHO and other multilateral netting systems sought to reduce was the pre-settlement risk, particularly for forward foreign exchange transactions so that the net mark-to-market amount of those transactions was also protected in case of a counterparty default. And I think that that's the kind of additional service that I do think the CLS Services initiative is seeking to come back to and I think that the central banking community will strongly encourage them to come back to that issue as well. I think it's a natural follow-on to the protection of principal risks that occurs through the payment-versus-payment settlement procedure and I do think that the goal is to someday get a complete solution that works through matching of the transactions and protects the forward transactions and then goes on through the settlement process as well.

(speaker): Can I add to this that I think it's a very good question. Some people think once you have PVP you know everything is resolved and counterparty risk is just not taken seriously anymore. This should be kept in mind once CLS is running.

Q: I thank you Darryll, you mentioned the 60 shareholders in the CLS Bank project. Do you know more or less how many of these shareholders, how many banks, come from the Asian and Pacific region, more or less?

A ( Darryll Hendricks): I think there's somewhere in the neighbourhood of 10. Certainly, five to 10 I would think, not quite 20% but probably close to that. I mean, that's a guess to some extent. I've seen the list and sort of absorbed the material but I don't have the exact figure in front of me.

Q: A follow-up on the issue related to the 60 shareholders. Can you elaborate a little bit on whether there are plans to expand beyond those 60 institutions for settling trades, because certainly if you look at the FX market and you think about the fact that you mentioned that there were six or seven currencies from the start that CLS would settle and only around 60 banks, that's only a relatively small share of all FX trading.

A: Thank you. I think that's a good question, it's important and I didn't go into it in the presentation. CLS has a plan to have a membership both at the level of firms that have accounts directly at the CLS Bank and then also a class of member, what they call a user member, which will transmit its trade details directly to CLS Bank but will use the account of a settlement member for the purpose of settling with CLS Bank. So I think they try to expand membership at the settlement member level to any additional firms that are interested in making that kind of commitment to the project, but beyond that they expect to have a substantial number of firms become user members and then beyond that there is the ability of banks to come into the project as third party, of course using one of the settlement members as a correspondent for them to settle through the system, and that in turn expands the normal correspondent services that are commonly used today for settlement of those and many other types of payments. I think it's fair to say that we at the central banking community within the G10 in particular have made a strong pitch to CLS to be as inclusive as possible both in terms of the currencies it's going to try and include, the timetable for bringing additional currencies into the system, and in the way it deals with banks and in trying to expand the range of settlement members and bring other banks into the system. I think that's good risk reduction on our part, the central banks, it gets more transactions into the system sooner and reduces the risk, and I think it's also important to maintain the sense that this system is going to be inclusive, it's not going to be something which is there for the benefit of the few, it's really a utility for the entire global financial market and foreign exchange market and therefore it really needs to play a key role in servicing that entire market.

(speaker): I would like to add that CLS will start pretty slowly. At the outset when CLS goes live, there will be around 10 settlement members only and then it will probably take several years until many of the more than 60 banks will participate.



**Module 4: Securities settlement infrastructure – a central bank perspective**  
**Chair: Patrick Parkinson, Associate Director, Division of Research and Statistics, Board of Governors of the Federal Reserve System, Member of the CPSS**

*Wendelin Hartmann*

Thank you very much for these interesting presentations on foreign exchange settlement risk. I think it is clear for all of us that there is still a lot of work ahead of us.

It is now time to move to the last module of the workshop, which will give a central bank perspective on securities settlement infrastructure. Let me introduce the chairman of module 4, Mr Parkinson from the Board of Governors of the Federal Reserve System. Mr Parkinson is a long-time member of the CPSS and an expert in securities settlement systems. He chaired the CPSS working groups on delivery versus payment, on cross-border securities settlements, on clearing arrangements for exchange-traded derivatives and on OTC derivatives settlement procedures and counterparty risk management. So we have a very experienced person to introduce the last session.

*Patrick Parkinson*

Thank you, Mr Hartmann, for your kind introduction. I have the pleasure of chairing the session on securities settlement infrastructure, which is a very important topic.

We have two very interesting speakers: Mr Lucas from the Banque de France and Mr Oh from the Bank of Korea. Mr Lucas is Head of the Payment Systems Division and he will talk to us about linkages versus centralisation in the context of the European Union. Especially since the introduction of the euro, this has become a very relevant issue. Mr Oh, who is Chief Manager of the Payment Systems Department, will tell us about the development of securities settlement systems in Korea.

## Panellists/Speakers

### **European securities settlement systems: linkages versus centralisation:**

**Yvon Lucas, Banque de France**

Ladies and gentlemen, the topic that I have been asked to address tonight - linkages versus centralisation - is very topical. When I prepared this handout a fortnight ago, I wondered if I should insist more on linkages or more on centralisation. Today, after a recent announcement of an agreement between some very large securities settlement systems in Europe, I am more inclined to insist on centralisation.

Since the launch of the euro, we have seen a large number of very important developments in the field of payment systems and securities settlement systems. The driving force is evidently the growing competition between the banks and between the financial centres. An important factor is also the necessity for the European System of Central Banks to build the infrastructure for the monetary policy of the single currency and the need to improve the organisation of payment systems and securities settlement systems in Europe. The integration of the money market has been fast after the launch of the euro, which has led to the implementation of the Target system. Banks have learned very rapidly to manage in an efficient way their liquidity in Europe. On the other hand, with securities settlement systems there is not for the moment what we could call a monetary union-wide financial market as there is currently a union-wide money market.

I will divide my presentation into three parts. In the first, I will devote some time to describing the context in which the securities settlement systems are operating in Europe today. Then I will describe the needs of the Eurosystem in this field. I will end my presentation with some considerations on the future evolution of the securities settlement systems in terms of links and centralisation.

#### **1. The European context**

Today, there are more than 30 securities settlement systems (SSS), including two international central securities depositories (ICSD). Securities settlement systems are fairly diverse: they use different standards and different types of organisation; this is one reason for the large number of SSSs. In certain countries there has been a consolidation. This is, for example, the case in France, where there is now only a single SSS, and also Germany. Such a consolidation is planned in the UK. But it is still not the case in Belgium, where there are three securities settlement systems, one of which is managed by the central bank, or in Spain, where there are still six or seven securities settlement systems.

These systems operate under specific conditions. There are differences in national regulations, laws, tax regimes and even market conditions. We can say that all SSSs respect the DVP principle, which stipulates that unconditional and irrevocable delivery of the securities occurs if and only if the cash payments are also irrevocably settled. However, in some cases there might be a fairly long lag during the day between the processing of the securities, which are usually provisionally transferred, and the final settlement of the cash leg. Most securities settlement systems have no link with other systems and where links do exist, they can take many forms, some of which are not sufficiently robust.

But the European financial market is changing rapidly. The average size of bond issues since the launch of the euro has considerably increased. The same phenomenon has been observed for trades in the money market. The total amount of issues of euro-denominated bonds accounted for around 50% of the total issuance in the first quarter of 1999, exceeding the total amount of dollar-denominated bonds. For the former European currencies, the amount of bonds accounted for only 24% of the total. The redenomination in euro of existing outstanding government bonds at the outset in a number of European countries has probably been a key factor that helped the integration and development of this market. Competition to obtain benchmark status as far as government bonds are concerned depends on the duration of the issues: for certain types of duration French bonds are the benchmark, for others it is German bonds. Nevertheless, private bond and equities markets are still fairly segmented.

We are currently seeing a rapid increase in the concentration of back offices. According to a recent survey by KPMG of a sample of international banks, 23% have already centralised their back offices and 50% plan to do so. There is also a very clear need for mobility of securities. In this context, the European scene is moving rapidly. There have been discussions for several months between some European stock exchanges about a possible integration of their respective markets. Last year saw an agreement between London and Frankfurt aimed at opening up possibilities of cross-border membership in the two stock exchanges and contemplating the creation of a unique trading platform. More recently, eight European stock exchanges, including Frankfurt and London, decided to forge a new alliance and to open up the possibility of cross-border membership.

## **2. Eurosystem needs**

One of the building blocks of the organisation of the Eurosystem is the principle of decentralisation of monetary policy implementation. The Governing Council of the ECB is the only centre of decision for a euro area monetary policy, but monetary policy operations are carried out by the national central banks on a decentralised basis. It is important to bear this in mind in order to understand what the relations of the Eurosystem with the securities settlement systems could be.

Credit operations, intraday or overnight, have to be based on adequate collateral. The Eurosystem has defined a unique list of eligible assets, divided into two tiers. Roughly, tier one assets are the most liquid and marketable assets while tier two are non-marketable and more domestically oriented assets. Given the principle of equal treatment between the banks located in the different European countries, it was necessary both to stick to this principle of uniqueness of the list and to provide for the cross-border use of collateral, as there were very few efficient links between the securities settlement systems existing in Europe.

The central banks are free to choose the method of collateralisation they prefer, either the pledge technique or the repurchase agreement technique.

Lastly, the European central banks decided in January 1998 to define and make public a list of nine minimum standards for SSSs. In doing so, the Eurosystem has adopted mainly a user approach rather than a regulatory one, which means that we consider compliance with the standards mainly in our role as central banks having to mobilise collateral to back our credit operations.

I will not go into a lot of detail on these standards. I will focus only on the first three standards. The first deals with the legal framework. It is a similar approach to Lamfalussy standard one: the SSSs have to function in a legally robust environment. In the field of SSSs this is a very difficult question. There are, in particular, some risks of conflict of laws. But great improvements in this situation are expected with the implementation of the European finality directive that was recently passed by the European Commission. It is expected that this directive will solve most of the problems due to the differences in national legislation.

Standard two requires settlement to take place in central bank money. This does not mean that we require from the securities settlement system that every transaction be settled in central bank money. But we require at least that those transactions in which the Eurosystem is a counterparty be settled in central bank money.

Standard three, no undue custody risk, means that the securities settlement systems that are used by the Eurosystem must have a direct and unique relationship with the SSS in which the securities were issued. If this is not the case we might accept the securities provided there are some arrangements to mitigate the risks due to the intermediation of the other agents in the chain between the entities where the securities are located and the SSS which is used by the Eurosystem.

I have to say that these principles were very well received by the market in Europe and accepted without major difficulties. After the publication of the standards, an assessment of 29 securities settlement systems was carried out. All of these systems were declared eligible, but with some limitations in their use for most of them. This means that for a limited number of systems we decided

to use them intraday in full DVP mode, but for the other systems we limit our use to free-of-payment operations or we require pre-deposit of the collateral.

The Eurosystem standards have prompted a number of reforms in the organisation of SSSs. A report presented yesterday to the Governing Council of the ECB states that there are now five securities settlement systems that comply in full with the standards. There was only one last year. For 10 other securities settlement systems, the progress towards full compliance has been very substantial.

There has been a need to provide for the cross-border use of collateral for the Eurosystem. Last year there was no efficient and secure enough link between the European SSSs. Therefore, we had to devise a specific scheme to allow for this cross-border activity. Thus, the Correspondent Central Banking Model (CCBM), which is an interim solution, had to be implemented by the central banks themselves. The model is relatively simple. Each central bank has opened a securities account in favour of each of the other central banks. For example, NCB A in country A has a securities account on the books of NCB B in country B. Imagine a monetary policy operation or a payment system credit operation processed by NCB A, which is in a relationship with a counterparty located in its country. This counterparty will instruct its custodian in country B to transfer the securities in SSS B in favour of NCB B. The latter will immediately inform NCB A that it has received the collateral allowing it to securely credit the counterparty account with cash. This model is relatively simple for the central banks and it changes nothing in terms of the organisation of the securities settlement systems. But it is more complex for the banks to use. Another restriction which is not due to the model itself but to the organisation of some SSSs is the impossibility in certain countries of transferring the collateral intraday with finality. But of course the model cannot remedy this drawback; that could only be solved by an improvement in the organisation of some SSSs in line with the Eurosystem standards.

Nevertheless, the use of cross-border collateral is fairly substantial. For example, in France since the launch of the euro, foreign collateral has accounted for about 30% of the collateral for monetary policy operations and 11% of the collateral used for credit operations in the payment system.

### **3. Future trends**

I move on now to future developments, in particular links and consolidation trends.

The domestic securities settlement systems created, in 1997, the European Central Securities Depository Association (ECSDA). They were gently advised by the central banks to do so in order to create a representative body that could liaise with the Eurosystem to discuss issues related to the organisation of SSSs. One of the main objectives of the association is to facilitate the creation of links. Indeed a number of links have been implemented or improved by its members. The Eurosystem has carried out the assessment of 34 bilateral links. Of these 34 bilateral links, 24 have been considered to be in compliance with the standards and declared eligible by the ECB Governing Council. Therefore, these links can now be used by the Eurosystem to mobilise foreign collateral in parallel with the CCBM, and could in the future even replace the CCBM.

By means of a link, a bank or central bank can use an SSS for the mobilisation of both domestic assets and assets located in SSSs abroad with exactly the same procedures and the same conditions. Two banks participating in this SSS can exchange foreign assets like domestic assets. Therefore, some foreign securities transferred in an SSS via a link could remain permanently in this foreign SSS and be exchanged locally between the local banks. This phenomenon will probably depend mostly on the efficiency of the host SSS and on the liquidity of the local market for a particular type of security.

A further step will be the creation of real DVP links between the securities settlement systems (a transfer of securities with a transfer of cash). But DVP links are much more complex and more costly to build than bilateral free-of-payment links. Therefore, we think that such a development will be limited to those SSSs that have enough traffic to cover the implementation costs. DVP links are important for the safety and efficiency of the operations of banks, and the banks will probably not accept in the longer term the existence of only free-of-payment links and will require the establishment of DVP links, if the consolidation of SSSs does not render these links unnecessary.

Last Friday, three securities settlement systems announced their intention to create in several steps a new entity, the European clearing house. These three SSSs are among the four largest in Europe: the DBC system in Germany, the Cedel system in Luxembourg and the SBF/SICOVAM group in France. These three entities decided to consider three building blocks. The first is the creation of a single platform for IT clearing and settlement. The second is the adoption of common standards and conventions. The last is the selection of the most effective system in use in these three entities for the delivery versus payment of securities and also for the clearing and netting of market operations. They intend to proceed in three steps. Cedel and DBC merge and establish a new entity called Cedel International, located in Luxembourg. Later on, SICOVAM and SBF could take a stake in the new company and it is understood between the three partners that the shares of the three will be equal. And perhaps more importantly, this new organisation will be open to new partners.

I think it will be interesting in the coming months to see how the market reacts to this announcement. Euroclear for its part has proposed a “hub and spoke model” and it invited securities settlement systems to join. We could imagine in fact three models in the future. I think that the “spaghetti model”, the establishment of a complete network of links between all securities settlement systems, is not very likely. The hub and spoke and the European clearing house proposals are to different degrees centralised systems with a marginal or complementary use of links.

These developments are very important and the European central banks will have to look at them carefully. We have in particular to focus our attention on the consequences for the way monetary policy operations are executed and on the management of the cash legs of the operations. I think it is a very crucial issue for the organisation of the Eurosystem. Thank you very much.

Chair: I know there may be a lot of questions about the very interesting developments in Europe. But I think we are running a little behind our schedule, so I think it would be more prudent to let Mr Oh give his presentation and hold questions until after he has spoken.

### **Introduction of DVP settlement systems for securities transactions: recent developments in Korea: Wang-Keun Oh, Bank of Korea**

Thank you, Mr Chairman. It is a great, great pleasure for me to have the opportunity to speak at this meeting of eminent central bankers on the development of securities settlement systems in Korea.

#### **Introduction**

Rapid development, in terms of both volume and quality of services, has taken place in the Korean payment system since the mid-eighties, when the interbank financial information network was launched. New horizons for further development of the system were opened up by the construction of BOK-Wire, an interbank RTGS system operated by the Bank of Korea. Although for some years development efforts were concentrated mostly on the construction of additional payment systems, more recently the Bank of Korea has given greater attention to ways of making transfers and settlements faster and more secure.

In line with this policy thrust, the Bank of Korea has sought to find a way to improve the securities settlement system in Korea, and it recently decided to introduce a DVP settlement system for securities transactions. This is because of the rapidly growing need for an efficient and secure settlement system, mainly due to the expansion of trading as well as of the volume of securities issued in the course of the rapid quantitative growth of the domestic securities market since the mid-eighties. Introduction of such a system was considered possible as the securities traded have long been transferred through the books of the KSD, the central securities depository in Korea, and as the launch of BOK-Wire has enabled funds to be transferred in RTGS mode. Considering these conditions, in addition to recommendations from the BIS, the Bank of Korea concluded that a DVP settlement system for securities transactions was essential for the development of the securities settlement system in Korea.

My presentation will start with an introduction to the current securities settlement system in Korea and its problems, followed by a brief explanation of our DVP settlement system now under construction, and of the remaining tasks to be tackled.

### **Structure of current securities settlement system**

The present securities settlement system in Korea can be separately classified as two systems: a bond settlement system and a stock settlement system. On the one hand, in the case of bonds, most bonds, including corporate bonds, are deposited with the KSD. Therefore, bond transfers are executed by the KSD, while funds transfers are made separately by the BOK or correspondent banks. Both transfers are made on a gross basis.

On the other hand, in the case of stocks, both funds and stocks are cleared at a designated time on T+2 on a DVP basis, with stocks being transferred under the book-entry system of the KSD and funds settled through commercial banks designated by the KSD. In the case of on-the-floor transactions, the KSD raises from each member a kind of fund (called the "Joint Compensation Fund") in preparation against settlement failure, while in the case of over-the-counter transactions, the principal measure against settlement failure is loss-sharing among the participants.

Given this situation, the current securities settlement system involves some problems, including that of settlement risk. In the case of bond transactions in the OTC market, which covers almost all bond transactions, one party may be exposed to principal risk arising from its counterparty's default, because of the free-of-payment practice. And with regard to stock transactions, for which settlement is classified as DVP, their actual settlement procedure does not exactly correspond to the DVP principle because funds settlement is executed by the commercial banks, independently of securities settlement.

In view of such problems, the Bank of Korea came to promote a DVP settlement system for securities transactions, in order to remove the principal risk in bond transactions, to secure timely funds settlement in stock transactions and to enhance settlement finality.

### **Basic plan for the DVP system project**

The Bank of Korea plans to construct a DVP settlement system by interlinking BOK-Wire and the computer system of the KSD. However, this will be done in two stages, considering the prerequisites involved, such as revising related institutional devices.

For the first step, the Bank of Korea is to construct a DVP settlement system in RTGS mode for OTC bond transactions. This will be similar to the Model 3 system recommended by the BIS. This is being done first because it is more urgent to introduce a DVP settlement system for OTC bond transactions than for stock transactions, not only because OTC bond transactions account for about 85% of the overall settlement value of the Korean securities market, but also because the current settlement procedure for bond transactions is exposed to principal risk. Moreover, it is relatively easier to introduce such a system for bond transactions, in that there is no need for a new settlement guarantee facility, as bond transactions are already settled on a gross settlement basis, and most fund transfers linked to bond transactions take place through BOK-Wire.

For the second step, the Bank of Korea plans to develop a DVP settlement system on a net basis, similar to Model 2 of the BIS, for stock transactions. But as stocks are to be settled in multilateral netting mode, complementary measures are needed to cope with delays in funds settlement. Therefore, the second-stage project will be implemented after the first-stage project and complementary measures are accomplished. Currently, the Bank of Korea is in the process of developing the computer systems needed to launch a DVP settlement system in RTGS mode for OTC bond transactions this year.

## **Operational structure of DVP settlement system for over-the-counter bond transactions**

The DVP settlement facility for OTC bond transactions will be composed of systems for two processes: one for trade confirmation and the other for settlement of securities and funds. Eligible participants will be those who have deposit accounts at the KSD and those who have current accounts with the Bank of Korea.

A trade confirmation system will be used to match trade details forwarded by buyer and seller. Once confirmed, the matched details will form the basis of DVP settlement for securities and funds. Participants who have entered into transactions on the OTC bond market will notify trade details such as issue type, quantity, buy/sell and so forth through the KSD network, or the SAFE system. Matching of forwarded trade details will be done automatically at the KSD. If the details can be matched, reports on trade confirmation will be delivered to each related participant through SAFE.

The settlement system for securities and funds will be used for settling securities and funds between trade counterparties based on the details matched under the trade confirmation system. A CPU-to-CPU linkage between the BOK and the KSD will process data transmission and funds transfer on a real-time basis for simultaneous settlement of securities and funds.

### **Further tasks**

A few obstacles have to be negotiated before DVP settlement can become firmly established.

First, there could be gridlock when a participant experiences a liquidity shortage because the Bank of Korea does not allow intraday credit for its current account holders. To prevent such gridlock arising from a liquidity shortage, several options are under consideration.

Secondly, the liquidity situation in the bond market raises the necessity for T+1 settlement as a solution, though OTC bond transactions are currently settled on T+0.

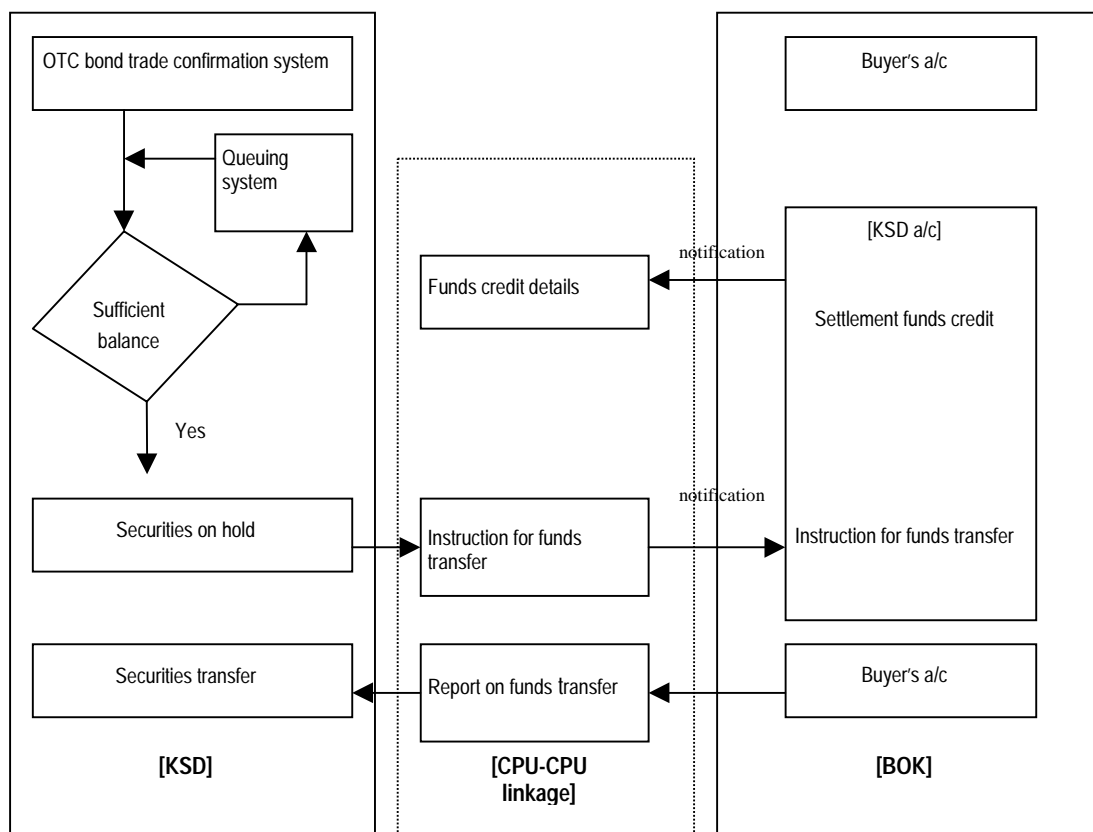
Thirdly, the securities lending and borrowing market has yet to mature in Korea. Repos among financial institutions also need to become active. Regarding this problem, the revision of tax provisions and the creation of a standard agreement for repo transactions are under consideration. If all goes well, the relevant applicable systems are expected to be up and running by the end of 1999.

Apart from securities settlement on a DVP basis, there is a strong need to set up a linkage between the KSD and foreign central securities depositories (CSDs). At the moment, the KSD offers securities deposit and settlement services through Euroclear for Koreans investing in foreign securities, while foreigners participate in the Korean market with custodians serving as their channel for investment. It is now necessary to improve investment facilities for these foreign investors by forming bilateral linkages with foreign CSDs.

I would like to thank you all for having listened so attentively to what I have said. Thank you very much.

### DVP settlement of over-the-counter bond transactions

- a. Trade counterparties inform The KSD of trade details through SAFE.
- b. The KSD matches details and issues a settlement number to identify the particular transaction, before delivering a report on trade confirmation to the related traders.
- c. The buyer transfers funds to the KSD's current account with the BOK through BOK-Wire.
- d. After notification by the BOK on the funds credit, the KSD checks the securities balance in the relevant account and puts the securities on hold for delivery.
- e. Funds are transferred from the KSD's BOK account to the seller's account. After funds transfer is confirmed, bonds are transferred automatically to the buyer's account.
- f. If either traded securities or funds are inadequate to settle a transaction, that transaction remains in the queuing system. If this situation continues until the cut-off time, a default will be declared and the traders will be notified.





## Discussion

Chair: Thank you, now I think we have time for a couple of questions.

Q (Darryll Hendricks): I have a question on the first presentation and the recent news about the developments. Do you have any sense of how the money settlement side will work in the new arrangement? Will it flow through the central bank in Luxembourg?

A (Yvon Lucas): I am not surprised by this question. It is truly one of the most important questions for the central banks and I hope that the agreement between the three systems will not result in a concentration of all this payments activity in one country, for example Luxembourg. But I think we could imagine conceptually that it depends on the model. We are looking to a model 1 system with intraday finality. That means that we have to use in the securities settlement system central bank money in order to attain this intraday finality. We could consider that there are two models. First, the Segal model, where there is a link between the securities settlement system and the real-time gross settlement system. The securities are blocked in the securities settlement system, which asks the real-time gross settlement system to transfer the funds if possible. Secondly, you have the system that exists in France, an RTGS system for securities where the central bank has open accounts in central bank money directly in the securities settlement system. And it is not necessary to have an inquiry to the real-time gross settlement system for each securities transaction. It is possible to settle the cash leg in central money directly in the securities settlement system. I think that in both models we could conceive that the securities settlement system could be in a relationship with several central banks for the cash leg. In both models we could imagine efficient solutions and I think it is very important to find these solutions in order to maintain the current framework for the execution of monetary policy operations in Europe. That is a decentralised implementation of monetary policy.

Q: If I could follow up on that; you've just been focusing on the settlement of euro obligations. Cedel, I think, currently settles in 30 different currencies. Do you know whether they intend to continue to offer those services? Some services involve nine euro-denominated securities and other currencies. If so, how do you see the euro arrangements being integrated with those other payment arrangements?

A: I would imagine that the systems could offer services in all these foreign currencies and the euro. For the time being, it is not planned that Cedel and Euroclear will stop supplying their services in foreign currencies. The corresponding trades will be settled as today through correspondent banking relationships.

Q (Nita Yosita): One question for the first speaker. You said that the Eurosystem sets the standards as a user and not as a regulator. However, these standards have become one of the driving forces for change, towards more secure securities settlement systems and reduction of risk, typically one of the objectives of oversight. Do you see any evolution in that field as a result of the developing market?

A (Yvon Lucas): Yes, I think it was a rule from part of the European central banks to consider mainly - not only, but mainly - that the standards were developed by the central banks as users of the securities settlement systems, but I have the impression that the system also established general standards of safety for securities settlement system in Europe and they tried to adapt the organisation rather rapidly in order to be in conformity, to move towards full conformity with the standards, and I think this standard was a very important driving force for the whole securities settlement system in Europe. We also avoided to say that these standards were developed by the central banks and regret that there was some uncertainty at least in certain countries about the power of the domestic central banks vis-à-vis securities settlement systems. The situation varies from one country to another and it was preferable at the beginning of last year to focus on this role of the central banks as users of the SSSs.

Q (Daniel Heller): I have a question for Monsieur Lucas. As you pointed out, there are a lot of mergers going on in Europe now and many amongst CSDs and among exchanges and it seems to me that those countries that merge in the CSD area don't merge in the exchange area; for instance, the exchanges of Germany and the United Kingdom work together but on the CSD side they are not cooperating. Do you think this is a problem or will this all be resolved at some point?

A (Yvon Lucas): Yes, I think that one year ago the market began looking at the possible merger of the stock exchanges. Perhaps at policy level it was not realised how complex the organisation behind the stock exchanges was. Today I have the impression that there is a new message: we are now discussing the possibility of merging or linking the securities settlement systems and in parallel there are discussions about the organisation of global stock exchanges for Europe.

## C. Conclusions, outlook

*Chair: Wendelin Hartmann*

Ladies and gentlemen, I am sure most or all of you will agree when I say that the workshop was of considerable value for all of us. We have presented a lot of approaches and solutions from the European, American and Japanese markets, and we have received a lot of input from participating countries here in the East Asian region. So the big question is: what will we do in the future?

Yesterday we had a long discussion on this in the CPSS. It was already mentioned at the beginning of this workshop that similar developments have to take place in South America, Africa and eastern Europe. All the central banks are more or less faced with the same problems and work in a similar way. They have to promote safe and efficient settlement procedures for cross-border foreign exchange transactions, they have to ensure that adequate collateral can be made available for monetary policy activities and they have to provide intraday facilities. These three topics have been touched on today. They show that there is a need to continue worldwide cooperation between central banks. The CPSS would like to take the initiative and plans to hold meetings with the regional initiatives on payment systems such as the EMEAP in South-East Asia. As the financial markets have grown together to form one single worldwide market, we all benefit from these initiatives. All the central banks assembled here and the rest of them all over the world have to contribute to a sound transfer of money. Whatever occurs in the real economy will finally result in payments, and the more payments we have, the more successful our economies will be. In addition to that, we have a lot of payments stemming from mere financial transactions, whether from the very well known hedge funds or from mere foreign exchange operations. Sound transfer and storage of payment transactions have become of paramount importance. It is our duty to ensure that this major part of the worldwide economy remains sound and reliable, and this is in fact what we intend to do.

Let me finish by thanking you all for this excellent workshop. Special thanks to Gregor Heinrich, who was the main organiser of the whole workshop and who did an excellent job. I wish all of you all the best and every success with your work and for you personally.

## List of participants

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