

**UNCITRAL  
LEGAL GUIDE  
ON  
ELECTRONIC  
FUNDS TRANSFERS**



UNITED NATIONS

**UNCITRAL  
LEGAL GUIDE  
ON  
ELECTRONIC FUNDS  
TRANSFERS**

*Prepared by the Secretariat  
of the  
United Nations Commission on International Trade Law*



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NOTE

Symbols of United Nations documents are composed of capital letters combined with figures. Mention of such a symbol indicates a reference to a United Nations document.

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## PREFACE

1. This Legal Guide has been prepared to aid legislators and lawyers considering the rules for particular networks. Since the Guide is intended to be of practical value in a number of countries, there has been a conscious effort not to rely upon or to discuss legal theories or to consider problems which arise only in a small number of countries. On the contrary, there has been a deliberate effort to find the common elements in the law and the banking practice of funds transfers so as to ease the process of adapting the law governing paper-based transfers to the requirements of electronic funds transfer techniques. Although the greatest use of electronic funds transfer techniques is to be found at present in the economically developed countries, this Guide may be of most value in the developing countries, where the need is being felt to modernize their funds transfer systems for both domestic and international purposes.
2. Computers first entered the backrooms of banks as a means of handling more efficiently the increasing volume of paper-based funds transfers. The introduction of magnetic ink character recognition (MICR), and later optical character recognition (OCR), on both debit and credit transfer instructions permitted the automated processing of standardized paper documents. This development increased the efficiency with which clearing-houses and individual banks were able to cope with the increased number of funds transfers, and often caused a wholesale reorganization of the clerical operations of the banks. The creation of computer centres by banks led some of them to centralize the record-keeping of customer accounts at the computer centre rather than to continue the previous decentralized record-keeping of accounts by each branch.
3. Once many banks were equipped with computers to handle paper-based funds transfer instructions, it was possible to devise means to exchange funds transfer instructions in electronic form, either by the physical exchange of computer memory devices or by telecommunications. In some countries it has been possible to take this step with no fundamental change in the established institutional structure. In other countries new institutions have been created to operate inter-bank telecommunications facilities, message switches and electronic clearing-houses. Computer memory devices can be submitted by banks to automated clearing-houses for sorting the funds transfer instructions contained on those devices and redispaching to the receiving banks.
4. Funds transfer instructions have long been sent by telegrams and telex. The international teletransmission of computer-to-computer funds transfer instructions is now available through connection to the Society for Worldwide Interbank Financial Telecommunications (S.W.I.F.T.) as well as through the internal telecommunications systems of banks with multinational branches. Several of the consumer-oriented debit card and credit card networks are developing international telecommunications systems for purposes of authorization of transactions, transmission of funds transfer data and the linking of automated cash dispensers and automated teller machines. International point-of-sale systems are expected to follow soon. In a related development, Eurocheque is moving towards truncation in the country of deposit, with electronic presentment to the transferor (drawee) bank in its country.
5. Several international organizations have undertaken projects to explore the significance of these developments. The Bank for International Settlements (BIS) published in 1980 a monograph entitled Payment Systems in Eleven Developed Countries, which looks into the payment systems in operation in those countries

and the possible changes these systems may undergo with the increased use of automated data processing techniques. A new edition was published in 1984 with statistical data to the end of 1983. It also published in 1983 a monograph entitled Payments Systems: a Case for Concern by David Hopton. The Organization for Economic Co-operation and Development (OECD) published in 1983 a monograph by J.R.S. Revell entitled Banking and Electronic Funds Transfers. The monograph describes the nature of electronic funds transfer systems which have been introduced into OECD member States and the impact that those systems have on banking and on monetary policy, although legal factors are not considered in depth. BIS has also published a monograph entitled Security and Reliability in Electronic Systems for Payments, 3rd ed., 1985.

6. In a broader context of automated data processing, several other organizations are active in the field. For example, the Working Party on Facilitation of International Trade Procedures, a subsidiary organ of the Economic Commission for Europe that works closely with UNCTAD's Special Programme on Trade Facilitation (UNCTAD/FALPRO), is responsible for facilitating international trade and transport by promoting rationalization of trade procedures and the effective use for this purpose of electronic and other forms of automated data processing and the teletransmission of trade data. Among the recent activities of the Working Party has been the identification of legal issues arising out of the use of these new procedures.

7. The Council of Europe adopted in 1981 the Convention for the Protection of Individuals with Regard to Automatic Processing of Personal Data. The Convention entered into force on 1 October 1985, after ratification by France, Germany, Federal Republic of, Norway, Spain and Sweden. The OECD in 1980 also adopted "Guidelines Governing the Protection of Privacy and Transborder Flows of Personal Data". The Council of Europe adopted in 1981 a recommendation to its member States concerning the conditions under which computer records would be admissible as evidence in a court or arbitral tribunal. The Customs Co-operation Council adopted in 1986 a resolution concerning the use of computer-readable data as evidence in court proceedings. A recommendation on the same subject was adopted by the United Nations Commission on International Trade Law in 1985.

8. Work is progressing in other international organizations such as the International Maritime Organization and the International Civil Aviation Organization on legal aspects of automatic data processing arising out of the special concerns of those organizations. Although of no direct relevance to electronic funds transfers, the solutions adopted in one context are apt to be of significance in other contexts. The United Nations Commission on International Trade Law, as the core legal body in the field of international trade law, serves as the central forum for co-ordination of these various efforts.

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## INTRODUCTION

1. The United Nations Commission on International Trade Law (UNCITRAL) at its fifteenth session in 1982 requested the secretariat to begin the preparation of a legal Guide on electronic funds transfers in co-operation with the UNCITRAL Study Group on International Payments. 1/ Several chapters of the draft Legal Guide were submitted to the Commission at its seventeenth session in 1984 (A/CN.9/250 and Add.1-4) and the remaining draft chapters were submitted to the Commission at its eighteenth session in 1985 (A/CN.9/266 and Add.1 and 2).
2. At its eighteenth session the Commission requested the Secretary-General to send the draft Legal Guide on Electronic Funds Transfers to Governments and interested international organizations for comment. 2/ On the basis of the comments received, the secretariat proposed to the Commission at its nineteenth session in 1986 a number of modifications to the draft chapters (A/CN.9/278, annex). Other modifications of an editorial nature, as well as the modifications necessary in the annex to chapter IV on experience in the United States in reducing system risk, were not set forth in that report.
3. At its nineteenth session the Commission authorized the secretariat to publish the Legal Guide as a product of the work of the secretariat. 3/ It was suggested in the Commission that in setting forth the various practices worldwide with respect to electronic funds transfers and in pointing out the legal issues arising from those practices, the Legal Guide would itself promote the international harmonization of practices and legal rules with respect to such funds transfers.

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1/ Report of the United Nations Commission on International Trade Law on the work of its fifteenth session, Official Records of the General Assembly, Thirty-seventh Session, Supplement No. 17 (A/37/17), para. 73.

2/ Report of the United Nations Commission on International Trade Law on the work of its eighteenth session, Official Records of the General Assembly, Fortieth Session, Supplement No. 17 (A/40/17), para. 342.

3/ Report of the United Nations Commission on International Trade Law on the work of its nineteenth session, Official Records of the General Assembly, Forty-first Session, Supplement No. 17 (A/41/17), para. 229.

## TERMINOLOGY USED IN THIS GUIDE

### Introduction

1. With the exception of negotiable instruments, where the three parties on the face of a bill of exchange or a cheque are consistently referred to as the drawer, drawee and payee, there is no generally accepted terminology in use to describe the parties or the activities involved in a funds transfer. In each country terms have developed which have reflected the realities of the funds transfer system in use in that country. It has also been true within many countries that bankers and lawyers have used different terms to describe the same party or the same activity, or that the same term has had different meanings depending on the circumstances.

2. The problems arising out of inconsistent terminology in funds transfers have become serious only in recent years. The rapid switch to electronic means of data transmission between banks, coupled with the use of computers for processing funds transfer messages, has called for the standardization of the content of the messages and their formats. This in turn has required standardization of the terms used to describe the data elements in each type of funds transfer message.

3. To remedy this situation, the Banking Committee of the International Organization for Standardization (ISO, TC 68) is developing international standards for various aspects of automated banking operations and has prepared a Draft International Standard (DIS 7982) in English and French for data elements and terms used in describing, processing and formatting messages relating to credit transfers transmitted over computer-to-computer telecommunications networks. The terminology in DIS 7982 has been followed closely in the preparation of DIS 7746 on telex formats for inter-bank funds transfer messages. The development of these international standards and general adherence to them by banks making international funds transfers should have the effect of reducing the number of errors and loss suffered. However, the terminology used in other international standards which have been adopted or are in preparation by the ISO Banking Committee and by the other ISO committees whose work is relevant to electronic funds transfers have defined some terms inconsistently with the definitions in DIS 7982. Therefore, the Banking Committee has compiled a list of all such terms defined by ISO committees in published documents. The compilation, which also contains terms defined by other organizations interested in electronic funds transfers, has been used as the basis for a draft bank data elements directory (ISO/TC 68/N 265 (May 1986)).

4. The terminology in DIS 7982 has generally been established from the viewpoint of the bank which receives a funds transfer message, "since it is incumbent upon the receiver of a funds transfer message to interpret and understand the full intent and meaning of funds transfer messages received through a variety of services or systems". This reflects the purpose of DIS 7982, which is to aid in formatting individual funds transfer messages.

5. However, the decision to identify and define terms and data elements used in individual credit transfer instructions sent by computer-to-computer telecommunications in order to eventually establish an international standard for the format of such instructions and to establish mapping conventions to help translate funds transfer instructions from one network to another makes it inevitable that the terminology chosen for that purpose will be oriented towards the message passing between any given pair of banks. Such a terminology emphasizes the instruction for a funds transfer as the central

element at the expense of the entire funds transfer. Therefore, given the purpose of the terminology, it is unlikely to be appropriate for other kinds of funds transfers for which it was not intended, such as batch mode credit transfer by means of exchange of computer memory devices or debit transfers of all types.

6. The terminology as used in this Guide starts from that in DIS 7982. However, in spite of the general desirability of international agreement on terminology for use in all contexts to describe the parties and the activities involved in an electronic funds transfer, the terminology used in this Legal Guide sometimes deviates substantially from that found in DIS 7982, since the primary orientation of this Legal Guide is to describe parties and actions in relation to the funds transfer rather than to the funds transfer instruction.

7. In this orientation the principal parties are the "transferor" of the funds, his bank (the "transferor bank"), the "transferee" of the funds, and his bank (the "transferee bank"). If there are any banks between the transferor bank and the transferee bank, they are "intermediary banks". The transfer may be either a "debit transfer" or a "credit transfer", and the "funds transfer instruction" may be further described as either a "debit transfer instruction" or a "credit transfer instruction". The principal terms used in this Guide are defined in the glossary that follows.

## Glossary

Authentication: The identification of a message in a physical, electronic or other manner which permits the receiver to determine that the message comes from the source indicated. For the purposes of this Guide it is immaterial whether authentication may also permit the receiver to determine that the message has not been deliberately or inadvertently altered. The authentication of a message does not necessarily indicate that the message as received was authorized or that the person sending the message had authority to do so. (Compare the definition of "authorisation" in the draft data elements directory: "Signature or other means included by the sender to verify the validity of a message." ISO document TC 68/N265. Compare also the definition of "authenticator result" in DIS 7982: "A code in a message between the sender and the receiver used to validate the source and part or all of the text of the message. The code is the result of an agreed calculation".)

Automated clearing-house: See "electronic clearing-house".

Bank: A financial institution which as an ordinary part of its business engages in funds transfers for itself or other parties, whether or not it is recognized as a bank under the relevant law.

Clearing-house: An institution which effects the exchange of funds transfer instructions between participating banks and performs the accounting to enable settlement. (See also "electronic clearing-house".)

Closed-user network (for funds transfers): A paper-based or electronic clearing-house, a communications service or a switch which is restricted to the banks or their customers who agree to adhere to particular technical standards and banking procedures.

Communications service: A service that moves messages, including funds transfer instructions, among subscribers but which does not perform the accounting to enable settlement. (Similar to definition of "communication service" in DIS 7982.)

Computer memory device: An external support on which data in computer-readable form can be stored.

Credit transfer: A funds transfer where the account of the originating bank or its customer is to be debited and the account of the destination bank or its customer is to be credited.

Debit transfer: A funds transfer where the account of the originating bank or its customer is to be credited and the account of the destination bank or its customer is to be debited. (Compare to definition of "debit transfer" in DIS 7982.)

Destination bank: The bank to which the chain of funds transfer instructions is ultimately addressed. In a credit transfer, the transferee bank is the destination bank. In a debit transfer, the transferor bank is the destination bank.

Destination party: The customer of the destination bank.

Electronic clearing-house: A clearing-house for funds transfer instructions in electronic form. An electronic clearing-house may be either on-line or off-line. An electronic clearing-house operating in batch mode is also referred to as an automated clearing-house.

Entry date: Date on which entries are made in the records of an account. (Identical to DIS 7982.)

Funds transfer: Movement of funds between the transferor and the transferee. (Almost identical to first sentence of DIS 7982. Compare definitions of "funds transfer transaction" and of "payment" in DIS 7982.)

Funds transfer instruction: A message or that part of a message that contains the instruction and required details for a funds transfer. A funds transfer instruction may be further indicated to be a debit transfer instruction or a credit transfer instruction. (First sentence almost identical to definition of instruction in DIS 7982. Second sentence is new. Compare definition of "payment order" in DIS 7982. This term is not used both because it seems to duplicate "instruction" and in order to avoid use of the word "payment" in regard to the inter-bank funds transfer.)

Interest date: Date as of which funds credited to an account begin to earn interest or funds debited to an account cease to earn interest.

Intermediary bank(s): Bank(s) between the originating bank and the destination bank through which a funds transfer passes. (Compare to definition in DIS 7982.)

Originating bank: The bank which transmits the first of a chain of funds transfer instructions to another bank. In a credit transfer, the transferor bank is the originating bank. In a debit transfer, the transferee bank is the originating bank.

Originating party: The customer of the originating bank.

Pay date: Date on which the funds are to be freely available to the transferee for withdrawal in cash. (Almost identical to DIS 7982.)

Personal identification number (PIN): The secret code used to authenticate funds transfer instructions initiated through a customer-activated terminal. (Based on definition in ISO 4909 "Bank cards - Magnetic stripe data content for track 3".)

Receiving bank: The bank to which a message, including a funds transfer instruction, is delivered. (Almost identical to DIS 7982.)

Sending bank: The bank which sends a message, including a funds transfer instruction, to a receiving bank. (Based upon DIS 7982. Has been modified so that a bank sending a funds transfer instruction by transmission of a computer memory device or by sending a paper-based funds transfer instruction is also a sending bank.)

Settlement: A transfer of funds from a bank with a debit position to a bank with a credit position or an agreed accounting entry between them to cover one or more prior funds transfer transactions. (Based on DIS 7982.)

Standing authorization to debit: Authorization given by transferor to the transferor bank, the transferee bank or the transferee authorizing the transferor bank to honour debit transfer instructions presented in accordance with the terms of the authorization.

Standing instruction to credit: Funds transfer instruction given by transferor to transferor bank to transfer a specified sum to the account of a specified transferee at regular intervals.

Switch: A mechanism which receives, sorts and directs messages, including funds transfer instructions.

Transferee: The customer of the transferee bank. (Compare to definition of "beneficiary" in DIS 7982.)

Transferee bank: The bank which credits the transferee's account as a result of a funds transfer. (Compare to definition of "beneficiary bank" in DIS 7982.)

Transferor: The customer of the transferor bank. (Compare to definition of "originator" in DIS 7982.)

Transferor bank: The bank which debits the transferor's account as a result of a funds transfer. (Compare to definition of "originator's bank" in DIS 7982.)

Chapter I

ELECTRONIC FUNDS TRANSFER SYSTEMS IN GENERAL

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A. Enhanced role of the system

1. The funds transfer system as a whole refers to the total set of institutions and banking practices which permit and facilitate inter-bank funds transfers. Until recently this system was essentially paper-based. As it developed over time, it became increasingly standardized for both domestic and international funds transfers as a result of the efforts of banking associations, clearing-houses, and other bodies representing the banking industry and the State. Nevertheless, while the funds transfer system as a whole provided the structure within which individual banks executed funds transfers, until recently in most countries the system did not restrict significantly the judgment of banks as to the methods by which funds transfers were made.
2. This situation began to change when the essential data on paper-based funds transfer instructions was encoded on the instructions in machine-readable form, i.e. magnetic ink character recognition (MICR) or optical character recognition (OCR). The technical requirements of these procedures called for a further standardization of the size of the funds transfer instructions, the location of the data fields, their length and the characters to be used.
3. Associated with the need for increased standardization has been the development of closed-user networks for funds transfers. Closed-user networks have existed for a long time in the form of clearing-houses for paper-based funds transfer instructions to which some, but not all, banks had access as direct participants. However, beginning in the 1960s a new type of closed-user network for paper-based funds transfers appeared in the form of bank credit cards and of Eurocheque. In both cases essentially all banks within the countries where the network existed were permitted to become members. However, if they became members, they had to conform to its technical standards and banking practices. While these requirements were not excessively stringent, the individual banks relinquished a degree of autonomy in order to participate. The system itself had become a more active participant in effectuating the funds transfers and in establishing the technical and banking standards to which the individual banks had to adhere.
4. The development of efficient computer-to-computer transmission of funds transfer instructions, whether by physical transmission of computer memory devices or by telecommunications, has further enhanced the active role of the system. New closed-user networks for electronic funds transfers have been created. The technical requirements of these networks have led to more stringent requirements for the formatting of messages and the operating and emergency procedures to be used. The vulnerability of electronic funds transfer systems to fraud has led to mandatory security procedures. By the present time the quality and security of inter-bank funds transfers have become a function of the quality of design and of operation of these closed-user networks as well as of the quality of operation of the banks involved. Furthermore, banking standards and practices first developed within the closed-user networks are being adapted by national and international standards bodies concerned with banking to the broader needs of the funds transfer system as a whole.
5. The design of the system determines whether funds transfers can be made promptly, accurately and securely. The legal rules should include provisions determining who bears the responsibility when the failure of that design leads to loss for individual banks or their customers. On a number of occasions throughout this Legal Guide, attention is drawn to the need to reconsider the currently existing rules in the light of the fact that many of the important technical and banking decisions that were previously the sole province of the individual banks have become matters of concern for the system as a whole.

## B. Two types of funds transfers

6. An electronic funds transfer, as the term is used in this Guide, is a funds transfer in which one or more of the steps in the process that were previously done by paper-based techniques are now done by electronic techniques. The replacement of the physical transportation of a paper-based debit or credit transfer instruction between the banks involved in the funds transfer by the sending of an electronic message between them and the processing of debit or credit transfer instructions by a computer is the most obvious and most important change. By combining the various electronic techniques it has also been possible to create new electronic systems which are not simply modifications of earlier paper-based systems.

7. It would be possible to consider the banking and legal problems which arise in funds transfers conducted in a purely electronic environment without reference to funds transfers using paper-based techniques. It would not, however, be useful to do so. Many funds transfers contain elements of both electronic and paper-based funds transfer techniques. Moreover, the basic patterns for funds transfers are the same whatever may be the means of transmission of the instruction between the banks or the manner in which the accounts of the banks are kept. This chapter will describe the basic procedures for executing funds transfers in general, with special reference to electronic funds transfers.

### 1. Credit transfer

8. A credit transfer is often described as one in which the funds are pushed from the transferor to the transferee. Where both the transferor and the transferee maintain bank accounts, the transferor instructs his bank to debit his account and to credit or to cause to be credited the account of the transferee at the same or at a different bank. Where the transferor does not have an account to be debited, he may pay the transferor bank in cash the sum to be transferred. Where the transferee does not have an account to be credited, the transferor bank may undertake to pay the sum to the transferee in cash, as is often done by the postal service. The instruction may pass between the transferor and the transferor bank in writing, by telex, by telephone, by submission of a magnetic tape containing a series of accounts to be credited or by any other means agreed on by the parties. Upon receipt of the instruction from the transferor, the transferor bank would normally authenticate the instruction and check the balance in the transferor's account before acting upon the instruction to transfer funds to the transferee's account.

9. A credit transfer instruction directing credit of an account at the same bank as that of the transferor may be completed by a book transfer whereby the account of the transferor is debited and the account of the transferee is credited. When a credit transfer instruction directs that an account be credited at another bank (the transferee bank), the transferor bank debits the transferor's account, passes the instruction to credit the transferee's account through an appropriate channel to the transferee bank, and reimburses the transferee bank for the amount of the transfer. Reimbursement of the transferee bank by the transferor bank is referred to as settlement.

10. In some cases the credit transfer instruction from the transferor is in a form which can be passed directly to the transferee bank unaltered. This is most common in domestic paper-based systems, where the original form completed by the transferor can be sent to the transferee bank. It can also occur if the transferor (i.e. the customer) prepares magnetic tapes or other computer memory devices where all of the instructions on the device call for crediting

accounts at the same transferee bank. In other cases a new credit transfer instruction directed to the transferee bank (or to an intermediary bank) must be prepared based upon the instruction received from the transferor. In either case the receiving bank (i.e. the transferee bank or intermediary bank) can verify only that the instruction came from the transferor bank. It can neither verify the authenticity of the transferor's original instruction nor ascertain whether the transferor bank has been or will be reimbursed by the transferor.

11. Although a credit transfer is generally described in this Guide as a complete movement of funds between the transferor and the transferee, a credit transfer need not involve any customers of the banks, or there may be a transferor but no transferee or a transferee but no transferor. For example, S.W.I.F.T. and ISO in DIS 7746, the draft international standard setting forth uniform telex formats, distinguish three types of credit transfer instructions, only one of which is directly applicable to a transfer for a customer. DIS 7746 describes these three types of credit transfer instruction as follows (the terminology used in this Guide is inserted in the description in square brackets):

<u>Number and name</u>	<u>Description</u>
100 Customer Transfer	A payment order [credit transfer instruction] in which either the originator [transferor] and/or the beneficiary [transferee] are non-banks.
200 Bank Transfer for Sender's Own Account	A payment order [credit transfer instruction] in which the sender [transferor bank] orders the transfer of funds from its account serviced by the receiver to its account serviced by another bank.
202 General Bank Transfer	A payment order [credit transfer instruction] where the sender [transferor bank] and the beneficiary [transferee bank] are banks but not the same bank. Such a transfer is always in relation to some other transaction.

12. The credit transfer is particularly well suited to the use of electronic means of communication. In the normal case neither the transferor nor the transferee has any reason to object to such use and, since negotiable instruments are not used in credit transfers, the legal problems which must be overcome to collect negotiable instruments electronically do not arise. Credit transfers in electronic form have been widely used for over a hundred years in the form of telegraphic transfers. Telex payment instructions and computer-to-computer links are but modern versions of this venerable device. Even in countries in which the majority of domestic inter-bank transfers are made by debit transfer using cheques, electronic credit transfers are often used for business payments. In some of these countries the electronic funds transfer facilities have been substantially improved in recent years, and the majority of large-value business payments are made in this way.

13. A recent development has been the payment of such obligations as salaries, pensions and monthly social security benefits to the transferee's bank account, a service available only by virtue of the increasing number of individuals who maintain accounts in banks. This type of credit transfer is particularly suited to computer processing. Large-volume transferors who possess equipment compatible with that used by the banks may be encouraged to prepare themselves the magnetic tapes or other computer memory devices with the necessary funds transfer data for use by their bank.

## 2. Debit transfer

14. A debit transfer is often described as one in which the funds are pulled from the transferor to the transferee. In a debit transfer the transferee instructs his bank to collect a specific sum of money from the transferor. The transferee's instruction may be accompanied by a debit transfer instruction signed by the transferor, such as a cheque or a promissory note payable at the transferor bank, which directs the transferor bank to transfer the sum to the account of the transferee and to debit the account of the transferor. The transferee may also be able to receive the sum in cash by presenting the debit transfer instruction over the counter to the transferor bank for immediate honour. Alternatively, the transferee may attach to his instruction a bill of exchange which he has drawn himself calling on the transferor or his bank to pay the sum indicated. The drawing of a bill of exchange by the transferee would normally have been previously authorized by the transferor, for example, in a sales contract or by a letter of credit which the transferor had opened for the benefit of the transferee.

15. In order to avoid problems arising out of the collection of bills of exchange, problems arising not only out of the legal régime of negotiable instruments but also out of stamp taxes and other considerations, an increasing share of debit transfers in international trade involve a claim made by the seller-transferee without the use of a bill of exchange. Such claims are suitable for transmission by electronic means so long as they do not have to be accompanied by commercial documents in a paper-based form. The most difficult problem for the international use of electronic debit transfers has been to devise means of carrying out commercial letter of credit transactions and bank financing without resort to a paper-based bill of lading.

16. In addition to debit transfers arising out of specific transactions, debit transfers may be instituted in favour of a transferee to whom large numbers of parties are indebted on a regular basis. Debit transfers based on standing authorizations to debit are particularly susceptible to electronic processing, and large customers with their own computer facilities may themselves prepare the magnetic tapes or other computer memory devices with debit transfer instructions on them.

## C. Routing of funds transfer instruction

17. There are several standard patterns for routing funds transfer instructions between the banks concerned. These patterns are the same whether a single funds transfer instruction is sent as a discrete item or whether a number of items are sent as a batch. The routing patterns are also basically the same for debit transfers and for credit transfers, although the nature of the instruction differs. These standard routing patterns can be described as one-bank, two-bank and three-bank transfers. In some countries legal rules governing such matters as finality of honour depend on the number of banks involved in the funds transfer. The routing of debit and credit transfers in certain standard situations, the type of message sent between the parties and the bookkeeping entries by the different banks are shown in figures 1 to 4.

1. One-bank transfer

18. When the transferor and the transferee have their accounts at the same bank, both debit transfers and credit transfers are executed by debiting the account of the transferor and crediting the account of the transferee. The distinction between the two types of transfer is that the transferor gives the bank a credit transfer instruction while the transferee gives the bank a debit transfer instruction. If the accounts are kept at more than one record-keeping centre of the same bank (which might be a branch or a regional data processing centre of the bank), the instruction must be transmitted between those centres in a manner similar to the transmission of an instruction between separate banks. In a one-bank funds transfer, the bank serves both as transferor bank and as transferee bank, and has separate obligations in these two roles.

Key to symbols used in figures 1 to 4

Tr - transferor  
 TrB - transferor bank  
 IB - intermediary bank  
 TeB - transferee bank  
 Te - transferee

Figure 1a

One bank holding accounts of transferor and transferee

Credit transfer

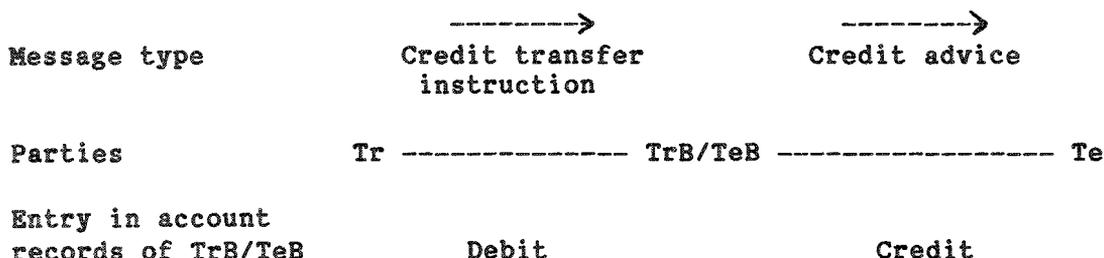
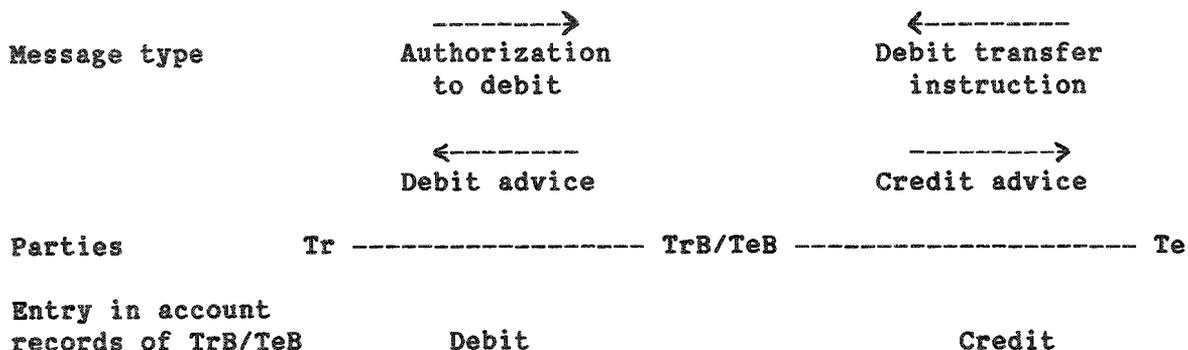


Figure 1b

One bank holding accounts of transferor and transferee

Debit transfer



## 2. Two-bank transfer

19. Many funds transfer instructions calling for the transfer of funds between accounts in two different banks are transmitted directly between the two banks concerned. This most often occurs when the two banks are geographically close to one another, when they have a high volume of instructions to transmit to one another, when one bank acts as a clearing agent for the other, when the amount to be transferred is very large or when the transfer must be executed promptly. Before any two banks begin direct transmission of funds transfer instructions, they reach prior agreement to do so, exchange signature lists, test keys or other means of authenticating funds transfer instructions and make arrangements for settlement of the funds transfers.

20. Direct transmission of funds transfer instructions from one bank to another may be accomplished by the physical transmission of paper-based funds transfer instructions or of computer memory devices such as magnetic tape. Direct transmission is also considered to have taken place when the funds transfer instruction passes between the two banks with no intermediaries other than a communications service or a clearing-house.

21. A communication service by which funds transfer instructions are transmitted may be available for public use, as is the postal service or a telex service, or it may be restricted to the transmission of messages between the members of a group of banks, as is S.W.I.F.T. In either case the communication service carries the instructions and sorts or "switches" them to the correct addressee. In some electronic on-line clearing-houses, the funds transfer instructions are carried on the public facilities of the telecommunications carrier from the banks to a "switch" owned by or operated for the banks participating in that particular network.

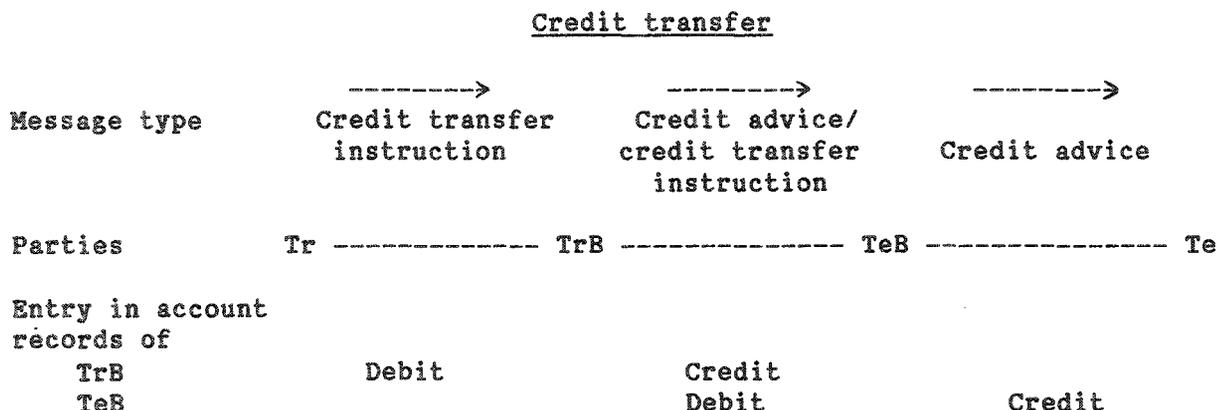
22. Whether the transmission facilities and the switch are public or are owned by or operated for the banks, and without regard at this point to the party who bears the loss in case of late or non-delivered instructions or of fraud or error in the content of an instruction, the communications service does not affect or take part in the banking relationship. The banking relationship exists only between the sending and the receiving bank.

23. To the extent that an electronic clearing-house, like a communications service, switches funds transfer instructions to the correct addressee and, in some cases, carries the instruction from transferor bank to transferee bank, it is as transparent to the transmission of the instruction as is a communications service. Even when a clearing-house establishes net balances for the participating banks, it does not affect the relationship between sending and receiving banks except as to the means of settlement and the consequences of a failure to settle.

24. Figure 2a, therefore, represents a credit transfer where the transferor bank has sent the funds transfer instruction to the transferee bank either by physical transmission or by a communications system, but not through a clearing-house, and where the two banks can settle by debits and credits in the accounts they hold with each other. The message from the transferor bank to the transferee bank serves both as an instruction to the transferee bank to credit the account of the transferee and as an advice that the account that the transferor bank services for the transferee bank has been credited. This message also serves as the authorization for the transferee bank to debit the account of the transferor bank.

Figure 2a

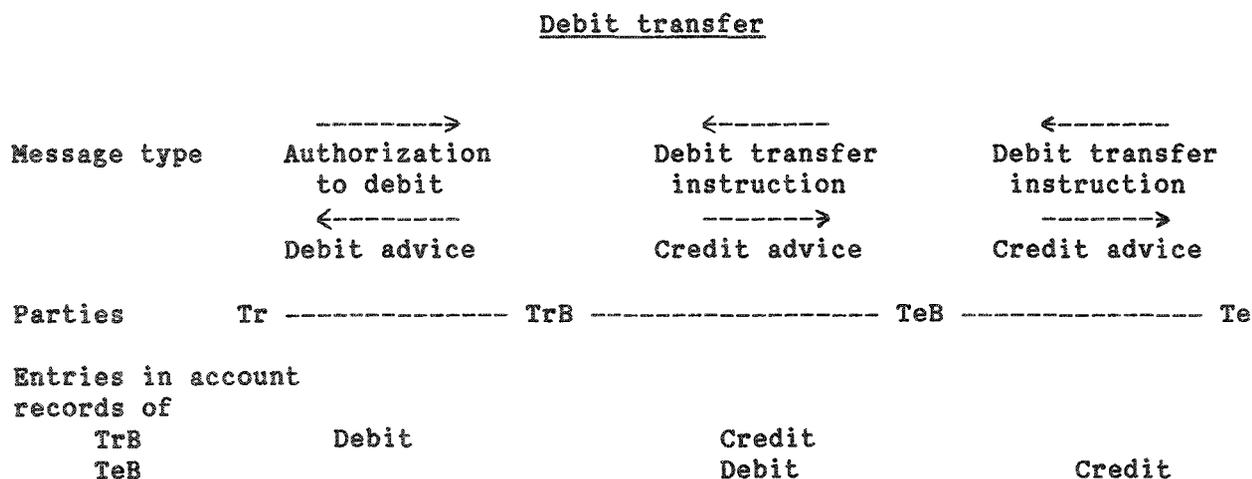
Two banks in direct relation, each holding account of the other



25. Figure 2b represents a debit transfer made under the same conditions as the credit transfer in figure 2a. The arrows indicate that the debit transfer instruction is given by the transferee to the transferee bank and by the transferee bank to the transferor bank. The authorization to debit given by the transferor to the transferor bank may be incorporated in a cheque drawn by the transferor in a standing authorization to debit, or it may be requested by the bank after presentment of the debit transfer instruction.

Figure 2b

Two banks in direct relation, each holding account of the other



3. Three-bank transfer

26. If the two banks are not in a direct relationship and are not both participants in the same clearing-house, the funds transfer instruction may have to pass through one or more intermediary banks which are the correspondent bank of both. The effect of using a correspondent bank on the relations of the parties to a funds transfer is not always well understood.

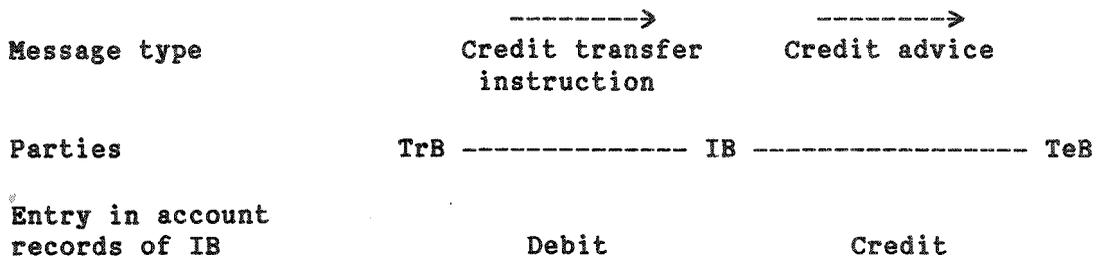
27. When a credit transfer is not a customer transfer, i.e. when a message type 200 or 202, as described in paragraph 11 above, is appropriate, the banks

are in exactly the same banking and legal situation as are two non-bank customers of the same bank. In both cases the funds transfer is carried out by debiting the account of the transferor (bank) and crediting the account of the transferee (bank). In the context of funds transfers, banks offering a correspondent bank service include not only commercial banks but also any central bank which holds accounts of other banks and which accepts instructions to transfer balances from the account of one bank to that of another for general banking purposes.

Figure 3

Correspondent bank holding accounts of two other banks

Credit transfer - message type 202

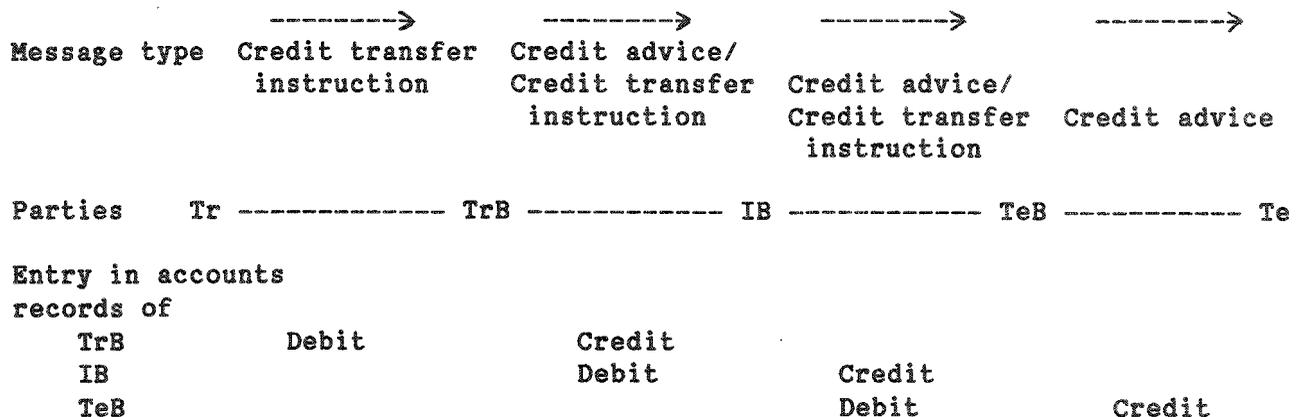


28. When a credit transfer is made at the request of a customer of the transferor bank for the benefit of a customer of the transferee bank, the funds transfer involves five parties. There are three separate credit transfer instructions and two separate inter-bank funds transfer transactions, in addition to the funds transfer from the transferor to the transferee. Although for some purposes the entire funds transfer may be treated as a single banking and legal activity, for other banking and legal purposes it may be necessary to treat separately each pair of relations, and especially each inter-bank funds transfer transaction. The messages between transferor bank and intermediary bank and between intermediary bank and transferee bank serve the functions described in paragraph 24.

Figure 4

Correspondent bank holding loro accounts of two other banks

Credit transfer on instructions of transferor for benefit of transferee



29. In a second commonly used pattern, the inter-bank relationships are in the form of a triangle. The transferor bank instructs the transferee bank to credit the transferee's account and informs the transferee bank that it will be reimbursed by credit to its account with intermediary bank. By a second message, transferor bank instructs intermediary bank to debit its account and to credit transferee bank's account. The inter-bank messages are completed by a credit advice from intermediary bank to transferee bank, with appropriate references to the prior messages permitting reconciliation of the accounts.

#### D. Settlement

##### 1. In general

30. A transferee bank which credits the account of the transferee increases the obligation it owes to the transferee or decreases the obligation owed by the transferee to the bank. It must either reduce a corresponding obligation or receive value equal to the amount of the credit. When the transferor and the transferee both hold their accounts with the same bank, the bank receives value for the credit to the transferee's account by debiting the transferor's account. When the transfer is between banks, the transferee bank must receive value from the transferor bank in settlement.

31. Settlement may be made between the banks either item by item or by batches of items. The choice depends in part on the nature of the funds transfer, the size of the individual transfer and the funds transfer mechanism used. A documentary draft would normally be treated as a special item throughout the entire period of its collection, and settlement for that specific funds transfer instruction could be expected. In many countries it is typical to settle for batches of cheques, but cheques for a large sum may be transmitted to the transferor (drawee) bank, or to one of its correspondents, outside the normal collection process and settled individually. In general, electronic funds transfers made by exchange of computer memory devices are settled on the basis of all the instructions contained on the memory device, but large-value electronic funds transfer instructions sent by telecommunications are often settled individually. However, large-value transfers which pass through certain electronic clearing-houses such as the Clearing House Interbank Payment System (CHIPS) in New York or the Clearing House Automated Payment System (CHAPS) in London are settled on a net (or net-net) basis for the day's activities, as described further in paragraph 38.

32. For all practical purposes settlement will usually be effected by appropriate bookkeeping entries in accounts of one or the other of the two banks or in appropriate accounts of a third bank. This basic concept of inter-bank settlement is simple, but there are many possible variations. The sending bank or the receiving bank may keep a deposit account with the other bank or both may do so. In such a case, settlement for any instruction or group of instructions may be made by an appropriate debit or credit to the account. A frequently encountered variation is that neither bank keeps a deposit account with the other, but both banks keep an account in the name of the other bank. As individual instructions or batches of instructions are passed between the banks, each bank enters appropriate debits and credits. Settlement for the individual instructions or batches of instructions in question is completed by the entry of the debits and credits. The banks keep the net debit or credit balances within agreed limits by periodically transferring the necessary funds. In yet another variation, the banks might agree that the net balance at the end of the day's activities should always be zero. In that case, settlement would not be complete until the bank with a debit balance transferred sufficient funds to cover the debit balance.

International funds transfers involving the use of two currencies are settled by debiting and crediting loro and nostro accounts which the banks keep with one another. In the case of Eurocheques, each day every national Eurocheque centre debits the nostro account of each of the other national Eurocheque centres for the total amount of Eurocheques drawn on banks in that country plus the standard commission, with an interest date of two days later.

## 2. Settlement through a third bank

33. In many cases settlement for individual instructions or batches of instructions is made by a transfer of the necessary amount in the accounts of a third bank. The third bank may be a correspondent bank of both the sending bank and receiving bank or it may be the central bank of that country. When settlement is to take place by entries on the books of a third bank, the transferor bank must notify the third bank to debit its account and to credit the account of the transferee bank. This is accomplished either by a message by telecommunications from the transferor bank to the third bank (e.g. a message type 202 as noted in paragraph 11, above) or by a paper-based transfer instruction. In case of settlement by use of a debit transfer instruction, the transferee bank must present the instruction for honour to the third bank for settlement to be completed.

## 3. Settlement through a clearing-house

34. A clearing-house serves not only as a message switch, as indicated in paragraph 21, above, but also as a means to aid in settlement between the banks. Periodically, the total amount of transfers submitted to and received from each of the participating banks is totalled and settlement is made by those banks with a net debit position in favour of those banks with a net credit position. The clearing-house, therefore, aids the settlement function by permitting settlement to be made on the net position of each bank rather than on the basis of its gross value of transactions.

35. There are several possible variations on settlement in a clearing-house having to do with the frequency with which the transactions are netted, the period of time after netting within which settlement of the net balance is made, whether netting and settlement is by pairs of banks or for the clearing as a whole, and the means of settlement for the net balances.

36. First, there are two possible approaches to the time at which a clearing-house can net the funds transfer instructions which have been submitted. A clearing-house for funds transfer instructions submitted in batches, whether paper-based or on computer memory devices, may net the value of the instructions submitted before any bank is permitted to withdraw the instructions addressed to it. If there are several clearings per day, there would be as many nettings. Alternatively, the value of the funds transfer instructions may be netted once a day or after any other longer or shorter period of time. Periodic netting can be used in any form of clearing-house. A paper-based or electronic off-line clearing-house with multiple clearings per day may establish net balances at each clearing but also establish net balances for the entire day preparatory to settlement for the day. Periodic netting is, however, the only practicable form for an electronic on-line clearing-house such as CHIPS or CHAPS. The significance of periodic netting is that some or all the instructions are released to the receiving bank for further processing prior to the netting and settlement for those items. In theory, it is irrelevant when netting takes place. However, the longer the delay, the more danger there is that a bank in a net debit position will fail to settle and that the transferee banks will already have made the amount of

the transfers available to their customers. One way to reduce this risk is to net and settle as frequently as possible, to the point where each individual transaction could be settled individually. While this would eliminate the credit risk, it would also change the electronic clearing-house into a communications service.

37. Closely associated with the time when netting occurs is the time when settlement takes place. Some clearing-houses in which netting before the withdrawal of instructions from the clearing-house is insisted upon involve banking systems in which the failure of a bank to settle is a significant risk. In those clearing-houses prompt settlement would also be expected. Conversely, where the concern over a bank failing to settle is not as great, both periodic netting and a more relaxed attitude to the time of settlement could be expected. However, since the time of settlement has an effect on the amount of money available to the individual banks for investment and, in some countries, on their reserve position, a long delay in settlement would still be of significance.

38. Normally, it does not make much difference whether netting is by pairs of banks or for the clearing-house as a whole. In some clearing-houses the net position of each pair of banks is first established and then the net-net position of each bank as against all other banks in the clearing-house is calculated. If netting is by pairs of banks, settlement can also be by pairs of banks. One effect of settlement by pairs of banks could be that each bank would need to have immediately available enough cash or credit to cover all its net debit positions. A more substantial consequence of netting by pairs of banks is that if a bank fails to settle, the loss will be suffered by the individual banks with which the failing bank has a net debit position. On the other hand, if the position of each bank is determined by its net-net balance, the loss arising out of the failure of a bank to settle must be spread among the banks participating in the clearing-house by some formula which should have been previously established, or it must be absorbed by some other group or body, such as the central bank.

39. A bank's debit position must be covered in cash or its functional equivalent. Most clearing-houses probably settle on the basis of appropriate entries in the accounts of the participating banks on the books of the central bank. Positions may also be covered by appropriate entries on the books of one or more large banks.

40. In a number of countries the inter-bank settlement is of interest to the non-bank transferor and transferee as well as to the banks themselves. Where the transferee bank runs a significant risk that the transferor bank will fail to settle, or, in the case of a clearing-house, that any one of the participating banks may fail to settle, the transferee bank may delay crediting the transferee's account or otherwise making the funds available until it is satisfied it is not at risk. Furthermore, if settlement is delayed for any appreciable period of time, the loss of interest which ensues may be sufficient to cause the transferee bank to delay crediting the transferee's account for an equivalent period of time.

#### E. Credit cards and debit cards

41. The origins of credit cards and debit cards lay outside the banking system. As a result, they took on certain special characteristics which continue to apply today. The most evident of these characteristics are the names given to the two types of cards, the confusion over the proper distinction between them and the fact that the clearing channels are distinct from the clearing channels for other payment mechanisms.

42. Credit cards evolved from the credit tokens or cards issued by certain merchants to identify customers who were authorized to purchase on credit. The distinguishing feature of the travel and entertainment cards, which first appeared in the 1950s, and the bank-issued credit cards, which first appeared in the 1960s, was that the cards could be used with a large number of merchants. However, those cards retained the important characteristic that they gave access to a line of credit and the debit was not made to the customer's current account in a bank. Therefore, in order for the customer to discharge his obligation arising out of use of the card, a separate funds transfer in favour of the card issuer had to be made.

43. If the debit arising out of use of the card is made to a current account in a bank rather than to a separate credit card account, the transaction is usually referred to as a debit card transaction. Since the use of some cards can give rise to a debit to either type of account, depending on varying circumstances, it can be difficult at times to distinguish between a debit card and a credit card. The legal significance of distinguishing between them normally lies in the fact that credit card transactions may be subject to provisions of consumer credit legislation whereas debit card transactions are usually treated as funds transfers. In those countries where this distinction is made, a statutory definition of the two terms can be expected.

44. When first developed, credit cards were used to create paper-based debit transfer instructions, and this use is still common for both credit cards and debit cards. These paper-based debit transfer instructions are usually transmitted between banks and other financial institutions by special clearing channels. It is common for them to be truncated early in the clearing process and for only the essential data to be sent forward to the institution holding the customer's account. The addition of magnetic stripes to the back of cards and, more recently, the addition of micro-circuit chips have permitted them to be used as access devices to various forms of electronic funds transfers.

#### F. Some particular features of electronic funds transfers

##### 1. Replacement of one or more paper-based steps

45. The most elementary, but perhaps most widespread, use of electronic funds transfer techniques is to replace one or more steps in a funds transfer process that remains basically paper-based. A paper-based funds transfer system is characterized by the fact that the funds transfer instruction is prepared and submitted to the banking system in a paper-based form and often passes from bank to bank through the system in that form. There may be no reason, however, why a bank which receives an instruction in a paper-based form cannot transmit the information contained in it to the receiving bank in electronic form. This is most easily accomplished in domestic credit transfer systems. The transferor normally neither knows nor cares how the credit transfer instruction is passed between the banks so long as the transfer is accomplished promptly and accurately. Banks may therefore be able to convert paper-based instructions to magnetic tape or other computer memory devices and to exchange them directly between themselves or through automated clearing-houses or to send credit transfer instructions by telecommunications if that proves more efficient.

46. Essentially the same technical process can occur in respect of paper-based debit transfer instructions, such as cheques and bills of exchange. The instructions can be retained at the transferee (depository) bank and the essential data can be transmitted to the transferor (drawee) bank by exchange of computer memory device or by telecommunications, i.e. the paper-based

cheque can be truncated at the transferee bank, allowing for its electronic presentment to the transferor bank. However, the law relevant to negotiable instruments would continue to apply to debit transfer instructions issued in the form of cheques, bills of exchange or promissory notes, with some potential consequences if the law is not modified to accommodate electronic processing. <sup>1/</sup>

## 2. Telecommunications

47. Even though large-value telegraphic and telex transfers by banks became routine long ago, until recently the largest proportion of large-value transfers continued to be made by paper-based funds transfer instructions sent by mail. No need was seen in most countries to codify the banking law and practice of telegraphic or telex funds transfers since they remained an exceptional form of funds transfer. The consumer-oriented electronic funds transfer service offered by many postal services has been largely ignored in discussions of electronic funds transfers. However, detailed regulations have long been in existence governing domestic and international telegraphic money orders (when the transferee has no account with the postal giro system or bank) and international giro transfers (when the transferee has such an account). Among the interesting features of the regulations are a prescribed format for the telegraphic funds transfer instruction and a requirement that the text be in French, unless otherwise agreed between the two postal services.

48. These two electronic funds transfer systems have historically serviced different markets and have had as little to do with one another as have their paper-based counterparts. However, they have shared one characteristic. Although the postal giro had a procedure for sending lists of accounts to be credited, both systems could fairly be characterized as available for the sending of individual funds transfer instructions. They were not designed for the batch movement of funds transfer instructions.

49. The decreasing cost of telecommunications and the increasing cost of ground and air transportation has made it less expensive for banks to transmit large numbers of funds transfer instructions of large and small value in a batch-mode by telecommunications, particularly when lower tariffs are offered during the night and other periods of under-utilization of the telecommunications system. S.W.I.F.T. in particular has signed agreements for the batch transfer of details of certain credit card transactions. Furthermore, in many cases it currently costs the customer no more to send an individual funds transfer instruction by telecommunications than to use a paper-based instruction. It used to be possible to classify a "wire transfer of funds" as a transfer containing elements of urgency to it, whether the transfer was for large-value through the banking system or for low-value through the postal system, and rules of law developed in some cases reflecting the urgency of acting promptly in response to the message. However, as the use of telecommunications for the transmission of funds transfer instructions has become more routine, it has lost its special character. The use of telecommunications can now be described only as another means by which the funds transfer instruction passes from sending bank to receiving bank.

## 3. Batch transmission

50. Most paper-based as well as electronic inter-bank funds transfer instructions are of neither a value nor an urgency to justify the cost of

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<sup>1/</sup> See the fuller discussion in chapter II, "Agreements to transfer funds and funds transfer instructions".

transmitting them individually between banks. Therefore, the instructions are accumulated and exchanged in batches. Batch transmission of electronic funds transfer instructions is usually accomplished by the physical exchange of computer memory devices. The computer memory devices containing the funds transfer instructions are usually prepared by the banks themselves. The major types of transactions recorded are paper-based funds transfer instructions submitted to the bank, transactions by customers of other banks recorded in off-line automated cash dispensers or automated teller machines, standing authorizations to debit and standing instructions to credit.

51. Customers of the banks which have the necessary facilities and which send a large number of debit or credit transfer instructions may prepare the computer memory devices themselves. In most systems, bank customers submit the memory devices to their bank. In some systems, customers are allowed to submit memory devices directly to the automated clearing-house. In either case the bank is responsible to the clearing-house for the value of the funds transfer instructions contained on the memory devices submitted by its customers and for their technical quality.

52. As with batch transmission of paper-based funds transfer instructions, computer memory devices can be exchanged directly between the participating banks. If there are too many banks for this to be feasible, the instructions can be exchanged through an automated clearing-house. An automated clearing-house furnishes almost identical services to those furnished by a clearing-house for paper-based instructions. If the banks submit funds transfer instructions already sorted by receiving banks and each batch is on a separate memory device, the banks can simply exchange the memory devices. More often the banks submit memory devices on which the individual instructions are not sorted by receiving banks or, although sorted, instructions addressed to more than one bank are on the same device. In either case the automated clearing-house would sort the instructions using its own computers and prepare new memory devices containing the instructions addressed to each receiving bank.

53. Although batch transmission is usually accomplished by the physical exchange of computer memory devices, it has already been noted in paragraph 49 above that, as the cost of teletransmitting data has been reduced, batch data is being increasingly sent by telecommunications.

#### 4. Customer-activated electronic funds transfers

54. The electronic aspect of most electronic funds transfers is activated by an employee of a bank who receives an instruction from a responsible official of the bank (in the case of a transfer initiated by the bank), from the customer or from another bank. However, an increasing number of electronic funds transfers are initiated on a customer-activated terminal. Customer-activated terminals include cash dispensers, automated teller machines, point-of-sale terminals, home banking terminals and on-line computer terminals located in the business establishment of commercial customers. The category of customer-activated electronic funds transfers might also be considered to include the preparation by the customer of computer memory devices containing debit or credit transfer instructions and the lodgement of those devices with the bank or, where permitted, directly with the automated clearing-house.

55. A large number of funds transfers which are initiated on customer-activated terminals pass through the entire funds transfer process with no human intervention on the part of the banks concerned. The computers of the banks verify that the technical norms required to make the transfer have been met, that the proper authentication for the transfer has been given and that

the account of the transferor has a sufficient balance to support the debit to the account. In some cases, especially those involving large sums, an official of the sending bank may need to authorize the funds transfer before the instruction is acted upon, even though it has been initiated from a customer-activated terminal.

56. Electronic funds transfers which can be initiated by use of a plastic card with a magnetic stripe on the back containing information for identification of the card holder and his account, including either the personal identification number (PIN) or the information by which the bank's computer can derive the PIN by use of the proper algorithm, constitute a special sub-set of customer-activated electronic funds transfers. The concerns over the use of magnetic stripe cards as access devices arise in large part because of the technical problems in achieving an adequate level of security against fraud. These concerns have been highlighted by the fact that the vast majority of magnetic stripe cards are used for the initiation of consumer funds transfers, giving rise to concerns for consumer protection.

57. With the advent of microcircuit technology on a silicon chip, it has been possible to create a plastic card containing a microprocessing device. This offers additional possibilities for storing and processing information relevant to the card-holder, introducing among other features a higher level of security. Microcircuit cards are being considered for use in banking applications, especially in the field of customer-activated electronic funds transfers. The expectation is that they will find their widest application in point-of-sale systems, where the concerns with security are the most serious.

Chapter II

AGREEMENTS TO TRANSFER FUNDS AND FUNDS TRANSFER INSTRUCTIONS

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A. General agreement between bank and customer to transfer funds

1. Funds transfers are executed by banks under the terms of agreements between the banks and their customers. The contracts governing cash in-payment or out-payment transfers are rudimentary, while those governing transfers to and from accounts are more complex.

1. Contract for cash payment

2. A cash in-payment transfer occurs when a person pays to the transferor bank in cash the sum to be transferred plus service charge and the bank undertakes to transfer that sum to the transferee in cash or to the credit of his account. The contractual obligation of the transferor bank is limited to the specific transaction in question.

3. A paper-based debit transfer cash in-payment service is offered by banks and some other financial organizations which provide the transferor either with a demand payment instruction, which might be a cheque, drawn by the bank on itself or on another bank, or with some other form of debit transfer instruction which the transferor can mail or otherwise transmit to the transferee. The obligations of the transferor bank are based upon the law of cheques or, when the debit transfer instruction is not in the form of a cheque, on the law governing the paper-based instruction in question.

4. A cash out-payment transfer occurs when the bank, postal service or private telecommunications company undertakes to pay the transferee in cash. This service is often associated with a consumer-oriented cash in-payment service. The obligation of the transferee bank, including the receiving office of the postal service or telecommunication company, may be either to seek out the transferee at an address given by the transferor, or to hold the funds awaiting the transferee to present himself. Although the transferee bank holds the funds for the benefit of the transferee, there is no contractual relationship between the two, and it is not clear in many legal systems what right, if any, the transferee has in the funds until the time they are handed over to him.

2. Agreement for transfer to or from an account

5. At the time an account is opened, the bank and its customer will enter into a contract governing the services the bank will perform. The contract will often be in writing, although in some countries it is normal for there to be no written contract between the bank and its customers. As regards funds transfers, the contract will distinguish between the services the bank will provide as a transferor bank and the services it will provide as a transferee bank. In those countries in which there is typically no written contract, the implied terms of the contract are found in banking practice. In many countries the basic terms of the contract are found in the general conditions of the bank, which may be uniform throughout the country. The contract governing an important commercial account may be individually negotiated, and while its terms could not call for changes in funds transfer procedures that would be disruptive to the operations of the bank, it may contain significant special provisions, particularly in regard to the types of transfers that can be made, the authorization and authentication necessary and the time at which the customer's account will be debited or credited.

6. The arrangement between the bank and its customer may provide that on his credit transfer instruction or on his authorization to honour the debit transfer instruction of a transferee, the bank will transfer funds to the

accounts of the indicated transferees. The arrangement will also provide that the bank is authorized to take steps to reimburse itself for the sums transferred. The first step, and usually the only necessary step, for the bank to reimburse itself is to debit the account of the transferor.

7. The contract will normally specify the types of funds transfers which the bank is authorized to make against that account as well as the authentication required before the bank is authorized to act upon a funds transfer instruction. The contract may specifically or by implication permit all forms of funds transfers generally available through that bank. Certain forms of funds transfers may be permitted only by special agreement. In particular, a bank should be sure it has proper authority, including a resolution of the corporate board of directors, before it installs at the place of business of a customer a terminal by which funds transfer instructions can be sent directly to the bank.

8. Until recently, in many countries any customer could deliver any form of debit transfer instruction to the bank and the bank would transmit it through the clearing or collection arrangements available to it for presentation to the transferor bank. There would probably have been standard provisions as to the time when the customer's account would be credited with the proceeds and the amount of discount, if any, from the face amount of the debit transfer instructions received, although special arrangements with particular customers would also have been common.

9. That situation no longer exists, except for cheques. Only those bank customers who have signed special contracts with the bank are permitted to submit such debit transfer instructions as bank credit card vouchers, and the amount of discount charged by the bank can vary considerably between different transferees. In some countries only certain categories of transferees may be permitted by law to submit debit transfer instructions under a standing authorization to debit and, even where there are no such legal restrictions, banks will allow only customers of established integrity and financial standing to do so.

10. An account to which entries are made reflecting funds transfers may be of a type that normally carries a credit balance or of a type that normally carries a debit balance. It is not important for the funds transfer process whether or not the transferor receives interest when the account is in credit or is charged interest when it is in debit. Nor is it important for the funds transfer process whether the account is of a type which is normally used to make or receive funds transfers. However, many countries restrict the types of accounts which can be debited for the amount of funds transfer instructions. Moreover, in some countries there are legal restrictions on the extent to which an account of a type expected to carry a credit balance may be allowed to carry a debit balance. In any case, all banks will eventually place a limit on the extent to which they will allow a customer to be in debit to them. When that limit is reached, the bank will no longer honour funds transfer instructions issued by the customer until the customer has taken remedial action.

11. In countries where the normal method of funds transfer has been by credit transfer, the opening of an account automatically gives the bank the right to receive credit transfers to that account. There are few restrictions on the type of account which can be credited with a funds transfer. However, in some countries where the normal method of funds transfer has been by debit transfer, particularly by the collection of cheques, it has been suggested that no person other than the owner of an account should be allowed to deposit funds to the

account. If a bank has doubts as to its authority to receive a credit transfer to an account, specific authorization from its customer might be necessary before it credits to the customer's account sums received by credit transfer.

B. Authority to transfer funds and to debit transferor's account

1. Debit and credit transfer instruction issued by transferor and presented to transferor bank

12. A funds transfer instruction issued by the transferor and transmitted or presented to the transferor bank serves as an authorization to the transferor bank both to transfer the funds to the account of the transferee at the same or a different bank and to debit the transferor's account. In all paper-based and electronic credit transfers, the credit transfer instruction is delivered by the transferor to the transferor bank. In some paper-based debit transfers, especially those involving the traditional collection of a cheque, the debit transfer instruction issued by the transferor is presented for honour to the transferor bank. In both cases, so long as no question is raised as to the authenticity of the debit or credit transfer instruction, the transferor bank has clear authority to act based upon the funds transfer instruction in its possession.

2. Debit transfer instruction truncated at transferee bank

13. Rather than physically moving the paper-based debit transfer instructions such as cheques from the transferee (depository) bank to the transferor bank in order to present them for honour, in many cases it would be less expensive for the transferee bank to keep the debit transfer instructions and to forward to the transferor bank by electronic means the necessary funds transfer data for presentment, i.e. to truncate the instructions. Furthermore, it would usually take less time to present the cheque electronically to the transferor bank than to present the cheque itself. This would allow the transferee bank and the transferee to receive value sooner and would shorten the period of uncertainty as to whether a cheque might be dishonoured. Truncation of the instruction and its electronic processing is used with a number of newer forms of debit transfer instructions signed by the transferor, such as credit card receipts and some cheque-like or bill-of-exchange-like instruments not subject to the law of bills of exchange or of cheques. It is also followed in respect of cheques in an increasing number of countries, including Belgium, Denmark, Germany, Federal Republic of and Sweden, while other countries, such as Australia, France and Switzerland, are planning to introduce this procedure.

14. The right of the transferor bank (drawee bank) to require physical possession of the cheque before honouring it is designed to provide it with an opportunity to examine the signature or other authentication on the cheque, to examine the cheque for its accord with the formal requirements of law, to assure itself that the cheque has not been altered and to assure itself that the cheque cannot be presented a second time. In a few countries, but not in most, the transferor bank is also expected to verify that the cheque has not been presented prior to the date on the cheque and, conversely, that the cheque is not so old as to have lost its validity. These verifications are intended to ensure that the transferor bank is properly authorized by the transferor before it transfers the funds and debits the transferor's account. Since the policies in favour of the physical presentment of the cheque are in large measure for the protection of the transferor (drawer), they cannot be waived on his behalf by the transferor bank. They can, it would seem, be waived by the transferor himself, and some experiments with truncation of cheques have been based on customer agreement.

15. In addition, in some countries a dishonoured cheque must be protested by notation on the cheque itself in order for the depositor to charge a prior endorser, a rule which requires the physical availability of the dishonoured cheque. Although banks no longer return cancelled cheques to the transferor in several of the countries in which this practice previously prevailed, in at least one country (the United States) the law governing the collection of cheques provides that the time-limits within which a transferor can raise certain defences against the debits to his account commence on his receipt of the statement of account activity and of the cancelled cheques which authorized the debits. Banks in that country are reluctant to engage in cheque truncation which might extend inordinately the period during which the debit to the account may be questioned. Furthermore, as a result of extensive advertising by banks that cancelled cheques returned to the transferors were particularly good evidence of payment of the underlying obligation, many bank customers no longer keep other receipts and some companies no longer furnish receipts when payment is by cheque.

16. The experience with credit card receipts and the cheque-like debit transfer instructions not subject to the presentment requirement, as well as the experience with cheque truncation and electronic processing in those countries where it is practiced, has shown that it is an acceptable banking procedure for the transferor bank to debit the transferor's account on the basis of a statement by the transferee bank that it has in its possession an authorization from the transferor. If the transferor claims that he did not give any such authorization, the transferee bank must of course be prepared to produce the original cheque, credit card receipt or other debit transfer instruction. If the transferee bank cannot produce the original, or a legally acceptable copy, or if it is shown that the transferor bank would not have been authorized to debit the transferor's account if the original had been presented to the transferor bank, the transferor bank must be required to re-credit the transferor's account in such a way as to eliminate any consequences in respect of interest, fees or the like arising out of the mishandling. The applicable rules must in turn provide for the transferor bank to be reimbursed by the transferee bank for the amount in question and for the transferee bank to be reimbursed by the transferor. If the law regarding cheques was modified in this manner, the truncation of cheques and their electronic processing would be greatly facilitated.

17. As a partial step towards cheque truncation, in several countries the essential data on the cheques is captured and forwarded by telecommunications to the transferor bank for debit to the transferor's account. Although the debits are provisional until the cheques are received by the transferor bank for verification, the transferor's available balance is immediately reduced and the banks in the collection chain are assured that, if there are insufficient funds, notice will be received promptly. On the other hand, provisional debit may not terminate any right the transferor may have to revoke the bank's authority to debit his account. This procedure is used in some countries for all cheques, in others for only those over a certain value.

18. Cheques, cheque-like instruments and bank credit card vouchers are the principal forms of debit transfer instruction which authorize the transferor bank to make the funds transfer to the transferee and to debit the transferor's account. In the forms of debit transfer described in the following paragraphs, the authorization is separate from the instruction.

3. Paper-based debit transfer instructions not issued by the transferor

19. An example of the separation of the debit transfer instruction from the authorization is the bill of exchange drawn by a seller (transferee) on the buyer (transferor) payable at the buyer's bank (transferor bank). Before the transferor bank honours the bill of exchange, it must receive an authorization from the transferor to do so. The authorization may be in the form of an acceptance of the bill; it may have been given by the transferor in anticipation of the presentment of the bill; it may have been given in a general authorization to pay bills of exchange drawn by a particular transferee or it may have been requested by the transferor bank after presentment to it of the bill. In all of these cases, the transferor bank's authority to honour it arises out of the transferor's separate authorization to the transferor bank.

20. A specific authorization to honour the bill may not be necessary where the context in which it was issued gives sufficient assurance that the debit to the account would be authorized. Under the General Conditions of Delivery for trade between the member States of the Council for Mutual Economic Assistance, payment is made by the buyer's bank (transferor bank) without prior authorization from the buyer (transferor) upon receipt of the seller's claim for payment, accompanied by the necessary documents. The buyer has the right for fourteen days from the receipt by his bank of the seller's invoice to demand return of all or part of the amount paid if the payment was not in conformity with the contract. Authorization to honour the bill is assumed in the absence of a claim by the transferor to the contrary.

4. Electronic debit transfer instructions not issued by the transferor

21. The development of electronic funds transfer capability has given new life to transfers made pursuant to a standing authorization to debit. Such transfers are particularly useful for the collection of large numbers of periodic payments, which may be of a constant amount, such as for rent, in which case a standing instruction to credit would serve the same purpose, or they may be of a fluctuating amount, such as for telephone service. The debit transfer instructions can be prepared on a computer memory device by the transferee or by the transferee bank and presented by the transferee bank to the various transferor banks either directly or through an automated clearing-house. Some automated clearing-houses permit transferees to submit the computer memory devices directly to them.

22. Since electronic debit transfer instructions by their very nature cannot be issued by the transferor, the authorization given by the transferor to debit his account is separate from the debit transfer instruction prepared by the transferee or the transferee bank. A standing authorization to debit, which would usually be in written form signed by the transferor, may be given to the transferor bank. In this case the bank would notify the transferee that it had received authorization from the transferor to honour claims made against it for the indicated purposes. If the authorization is given by the transferor to the transferee, the transferee could keep it or give it to the transferee bank. In either of the latter cases the transferor bank, not having the authorization, would honour the claim on the strength of a representation by the transferee, or by the transferee bank, that a proper authorization existed.

23. The public attitude towards standing authorizations to debit varies widely from country to country. Its efficiency as a means of collecting relatively small amounts from large numbers of transferors has led to its widespread use in some countries. In other countries there is a concern that transferees may

become arrogant towards their customers if they can too easily reach into their customer's bank accounts to secure payment. These concerns have led to restrictions in some countries on the extent of the authorization to debit which a transferor can give. Furthermore, when the amount to be debited varies from one period to the next, it is felt that the transferor should be warned of the amount of the forthcoming debit. One technique has been to require that the transferor be given a notice that a debit of a specified amount would be made to his account on a given date in the future. It might also give him the opportunity to withdraw the authorization to debit his account, though that would not eliminate his obligation to pay the sum due.

#### 5. Authority of one bank to debit account of another bank

24. It is common practice for banks to debit the account of another bank on their books for the amount of the debit transfer instructions which have been sent to the receiving bank for honour. One example is that under the Eurocheque Package Deal Agreement the clearing centres in each of the participating countries send once a day to the clearing centres of each of the other participating countries the Eurocheques drawn on banks in the receiving country which were cashed in the sending country. The sending clearing centre is authorized under the Package Deal Agreement to debit the account of the receiving clearing centre for the total amount of the cheques plus the standard commission charged on all Eurocheques cashed abroad. The debit is made with an interest date of two working days after the date of dispatch.

25. This practice of authorizing the sending bank to debit the account of the receiving bank greatly facilitates the clearing of routine debit transfer instructions directly between banks or, as in the case of Eurocheques, between national clearing centres. The sending bank automatically has value on its books for the amount of the instructions sent for honour as of the interest date agreed upon by the banks. If any of the instructions are not honoured upon presentment, the debit can be reversed to the extent of the dishonoured instructions.

### C. Funds transfer instruction

#### 1. Authentication

26. The authentication of a document or message gives it a legal form which renders it worthy of belief. A formal authentication consists of the execution of the document before a notary or other public official authorized to execute such functions, and especially in the civil law countries, it gives the document a special weight in any subsequent legal proceedings. Informal authentication consists of marking the document or message in such a way as to indicate its source. Funds transfer instructions are informally authenticated.

27. The term authentication as used here should be distinguished from the use of the same term in computer-to-computer telecommunications, and especially as it is defined in ISO DIS 7982. In that context, because of the availability of certain techniques using computers, the authentication of the message can validate the full text of the message as well as its source. This is, of course, a desirable attribute of those techniques. However, since those techniques are available only by use of computers, they are available neither for those electronic funds transfers which do not rely on the use of computers nor for paper-based funds transfers.

28. The relative rarity of electronic funds transfers prior to the introduction of computers may account for the lack of statutory or regulatory provisions that require electronic funds transfer instructions to be

authenticated before the banks concerned are permitted to act upon them. However, it is probable that all agreements between banks and their customers require that funds transfer instructions issued by the customer must be authenticated before the bank is authorized to execute them. The agreement would also include the form of the authentication.

29. Many closed-user networks for electronic funds transfers establish required means of authenticating a funds transfer instruction passing through them. Consumer-oriented networks, such as networks of automated teller machines, automated cash dispensers and point-of-sale terminals, specify the authentication required of the consumer. Inter-bank funds transfer networks specify the authentication required of the sending banks.

(a) Form of authentication

30. An authentication of a paper-based funds transfer instruction is usually accomplished by the signature of an authorized person. "Signature" is usually understood to mean the manual writing of a specific individual's name or initials. The signature so written is considered to be personal to the individual. Its existence on the funds transfer instruction gives a strong indication of that person's intent to issue the instruction. Moreover, the possibility of comparing it with a specimen of a signature known to be genuine provides a means of verifying that the signature on the instruction is also genuine.

31. The demands of modern commerce have led many legal systems to permit the signature to be made by stamp, symbol, facsimile, perforation or by other mechanical or electrical means. 1/ This is in line with developments in other fields of trade law. For example, all of the principal multilateral conventions governing the international carriage of goods which require a signature on the transport document permit that signature to be made in some way other than by hand. 2/

32. Authentication of a funds transfer instruction made electronically must be made by a means which is appropriate to the means of communication used. Telex and computer-to-computer telecommunications often employ call-back procedures and test keys to verify the source of the message. Certain encryption techniques authenticate the source of a message as well as its content. Withdrawals from an automated cash dispenser, transfers from an account through an automated teller machine or a point-of-sale electronic funds transfer by use of a plastic card are authenticated, under the most widely used current technology, by the entry into the terminal of a personal identification number (PIN) which agrees with the PIN assigned to that card-holder. Dynamic signature analysis by computer and other techniques based on characteristics personal to the individual are in experimental use as a replacement for the PIN. A funds transfer instruction given over the telephone may be authenticated by use of codes, and the transferor bank may call back to the transferor to verify the source of the request. More

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1/ Compare the definition of "signature" in the draft Convention on International Bills of Exchange and International Promissory Notes (A 41/17, annex I), art. 4(10), which has been elaborated by UNCITRAL.

2/ Co-ordination of Work: International Transport Documents, Report of the Secretary-General (A/CN.9/225), para. 47.

advanced telecommunication networks record the calling line identity as part of their normal operation and this information can be made available to the called terminal. Not only would an intruder on the system have to simulate the authentication procedures, but he would have to do so on a line normally used by an authorized user.

33. Although an authentication in any form serves the basic functions of identifying the source of the instruction and indicating that the instruction was intended to be issued, there is a fundamental difference between a handwritten signature and authentication by electronic means currently in use. Even though a handwritten signature can be forged so well that the forgery is difficult to detect, nevertheless the signature can properly be made only by a specific individual. Therefore, if a signature has been forged it is by its very nature an invalid authentication, even though other considerations may lead a legal system to hold that in certain cases the person whose signature was forged should bear the consequences rather than a person who relied on the forged signature in good faith and without negligence.

34. Mechanical forms of signature on paper documents and the techniques for authentication of an electronic funds transfer instruction currently in use can be authenticated in a proper form by an unauthorized person or by a person exceeding his authority. If such a person had access to the legitimate stamp, perforating device, test key, encryption key or plastic card and PIN, the instructions which he caused to be issued would be identical to those issued under proper authorization.

35. This difference between the various means of authenticating a funds transfer instruction has certain legal consequences when the bank honours a funds transfer instruction which has an unauthorized authentication. These legal consequences are discussed in connection with the allocation of loss arising out of fraud. <sup>3/</sup> However, this difference should not be understood to mean that a handwritten signature requiring visual comparison is a more secure form of authentication than is an electronic authentication. On the contrary, a person's signature can easily be forged well enough to be accepted by a bank, even if an expert could later determine with a high degree of certainty that the signature was forged. Moreover, visual comparison of signatures is so time-consuming and costly that in many countries it is not done for funds transfer instructions of a small amount, even though the applicable legal rules may assume or require the visual comparison of all signatures. On the other hand, an electronic form of authentication can be verified at an acceptable cost for even the smallest of transactions. Moreover, a well-designed authentication system and rigorous adherence to the procedures necessary to keep the system secure can reduce to a minimum the likelihood that funds transfer instructions containing unauthorized authentications will be honoured.

(b) What must be authenticated

36. As indicated in paragraph 12 above, in all paper-based and electronic credit transfers and some paper-based debit transfers, especially those involving the traditional collection of a cheque, the funds transfer instruction issued by the transferor is transmitted or presented to the transferor bank. Since this funds transfer instruction serves as the

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<sup>3/</sup> See discussion in chapter III, "Fraud, errors, improper handling of transfer instruction and related liability".

authorization to make the funds transfer and to debit the transferor's account, it is the only message which must be authenticated for this purpose. Where the paper-based debit transfer instruction is truncated, the transferor bank debits the transferor's account on the basis of a funds transfer instruction issued by the presenting bank. Therefore, in this case both this latter instruction and the original debit transfer instruction must be authenticated.

37. Where a debit transfer instruction was not issued by the transferor, as in cases of a bill of exchange drawn by a transferee (seller) on a transferor (buyer) payable at the transferor bank, a bill of exchange drawn by the transferee on the transferor bank pursuant, for example, to a letter of credit, or a debit transfer instruction submitted pursuant to a standing authorization to debit, the debit transfer instruction does not constitute an authorization by the transferor either to transfer the funds to the transferee or to debit his account. Therefore, both the debit transfer instruction issued by the transferee or the transferee bank and the authorization given by the transferor to the transferor bank, transferee bank or transferee must be authenticated.

38. When a paper-based or electronic funds transfer is between two banks and does not involve a customer either as transferor or as transferee, it is obvious that the funds transfer instruction passing between the two banks must be authenticated. If an electronic funds transfer must pass through intermediary banks, a new funds transfer instruction must be created for each funds transfer transaction and each instruction must be separately authenticated. Similarly, if an electronic funds transfer is initiated by a non-bank customer, both the instruction from the customer and the instruction passing between each pair of banks must be authenticated.

39. Where funds transfer instructions are transmitted in batches, there is usually a single authentication for the entire batch. In the case of the teletransmission of a batch, the authentication is found in the message header. In the case of electronic funds transfer instructions transmitted by the physical exchange of computer memory devices, the authentication may be in the header, on a separate piece of paper, or on both.

## 2. Data elements

40. Negotiable instruments drawn on or payable at or by a bank are more than funds transfer instructions. They are also instruments which embody certain rights in the instrument and which may free certain holders of the instrument from some defences which might have been available to the drawer against the payee. As a result there are strict requirements as to the data elements which must appear on a negotiable instrument and those which must not appear on a negotiable instrument. An instrument which does not conform to these requirements fails to be a negotiable instrument. However, an instrument which fails to meet the requirements of a negotiable instrument might still serve as a valid funds transfer instruction.

41. There are no general statutory requirements as to the necessary data elements in a non-negotiable funds transfer instruction. However, many electronic clearing-houses and communications services specify the data elements required for different types of funds transfer instructions transmitted through them. ISO DIS 7982 establishes a list of the data elements which can be used in a computer-to-computer telecommunication of a funds transfer instruction and gives examples of how they are to be represented in various types of instructions, but it does not attempt to specify which data elements may be necessary in a given type of funds transfer. The data elements for funds transfer instructions to be used in

telex messages and in debit and credit card message exchange among financial institutions are also being standardized by the Banking Committee of ISO. When consumer protection legislation specifies certain information which must appear on a periodic statement of account activity, the funds transfer instruction to the transferor bank must also contain that information so that the transferor bank can include it in the statement.

42. When paper-based debit or credit transfer instructions are truncated before they reach the destination bank, the electronic instruction prepared by the truncating bank may not contain all of the data elements which were on the paper-based instruction. Words of negotiability on a cheque are not forwarded. The account to be debited or credited may be indicated only by account number, if it is available, and not by name. The amount may be indicated only by figures, even if the paper-based instruction contained both words and figures and even if the applicable law provides that the words control. The date of the paper-based instruction may not be included.

43. It is the responsibility of the sending bank to be sure it has sent all of the data elements that would be necessary for the receiving bank to act on the instruction. Failure to do so renders the instruction incomplete. The receiving bank, however, may not recognize that the instruction is incomplete, in which case the instruction may be executed incorrectly. On the other hand, the receiving bank may be able to deduce some of the data elements from the context of the funds transfer instruction. A domestic funds transfer can be assumed to be in the local currency unless otherwise specified. Some of the required data elements can be derived from those data elements given. The number of an account to be debited or credited and the relevant branch of the bank can usually be determined if the name of the account is given correctly. In other cases the receiving bank may be able to repair the incomplete instruction on the basis of prior transactions or other information in the possession of the receiving bank. However, since attempted repair of the instruction by the receiving bank may lead to an incorrect instruction, the receiving bank may become liable for the error rather than the sending bank. Therefore, when the receiving bank is in doubt, it should ask for clarification.

44. Identification of account by name or number: Bank accounts are usually opened in the name of a particular person or entity. A single customer may have several different accounts for different purposes. These accounts are often identified by similar, if not identical, names. Likewise, different customers may have similar, or even identical, names. Moreover, customers may not be consistent or entirely accurate in the name they use in connection with their account or accounts. Banks usually attempt to overcome this problem by assigning a unique number to each account, permitting them to distinguish between accounts with similar names or different accounts of the same customer. If each bank has also been assigned a unique number, the entire process of sorting and routing funds transfer instructions between banks and within banks can be accomplished automatically through machine-readable magnetic ink character recognition (MICR) or optical character recognition (OCR) techniques in the case of paper-based funds transfer instructions or by a computer in the case of electronic funds transfers. In a fully automated banking environment the account of the transferor would be debited and the account of the transferee would be credited entirely on the basis of the machine-readable account numbers, thereby decreasing the cost of the bookkeeping operations as well as decreasing the likelihood of entering the debits or credits to an incorrect account.

45. In spite of the advantages of making funds transfers on the basis of the number of the account rather than the name of the account holder, there are several problems. A bank may allocate the same account number to two different customers, though it could be expected that this error would soon be corrected. The customer may give his own or the other party's account number incorrectly or, if the bank must transcribe the number to the code line of a paper-based funds transfers instruction or to a new electronic instruction, it may do so incorrectly. For paper-based funds transfers this problem can be reduced by the use of funds transfer instruction forms containing pre-printed machine-readable account numbers. The account number of both the transferor and transferee can be pre-printed when the funds transfers are regularly made between them. However, usually only the transferor's or the transferee's account number can be pre-printed on funds transfer instruction forms and the other account number must be entered on the form at the time of the transfer. The account numbers to be debited and credited in funds transfers processed by computer can be verified as being in existence, thereby reducing the possibility of error, but all cases of fraud cannot be eliminated through these verifications.

46. Although the use of machine-readable paper-based funds transfer instructions and of electronic funds transfer techniques have led banks to rely largely on the account number for these transfers, it is not clear at present to what extent in the various legal systems a bank is legally justified in relying only upon the account number as disclosed in the funds transfer instruction to post debits and credits, and especially to post them automatically from the code line of a paper-based funds transfer instruction or from an electronic funds transfer instruction. Where the transfer is identified only by account number, as it is for example in a transaction activated by the use of a magnetic stripe plastic card and a PIN, in an automated teller machine, automated cash dispenser or point-of-sale terminal, the bank can identify the account to be debited only by reference to that number, and it is believed that in most States this practice is legally justified either by general principles of law or as a result of contract between the bank and the customer. However, if the funds transfer instruction carries both the name and the number of the account to be debited or credited and the two are not in agreement, the legal rules in force may provide that the name of the account controls. The legal system may go even further and hold that the bank must investigate because of the obvious existence of either error or fraud. However, to the extent it can be reconciled with laws of general application in force in a jurisdiction, the development of a fast, reliable and inexpensive electronic funds transfer system would clearly be furthered by enabling banks to rely entirely upon the account number in the funds transfer instruction.

### 3. Format

47. Although there have been no general legal rules requiring that funds transfer instructions be in a particular format, certain world-wide conventions have developed over time as to the general formats to be used for the traditional paper-based instructions. This has been particularly true of cheques and bills of exchange, where the formats used are clearly recognizable in all countries. This similarity in format has greatly aided the international clearing and collection of these traditional forms of debit transfer instructions.

48. In order to process paper-based funds transfer instructions by automated data processing, it is necessary that the data elements be located in a

specific place and be machine-readable. This has called for the standardization of the size and the format of funds transfer instructions and this standardization has often been accomplished within the relevant clearing and collection systems. Therefore, in a country where there are several different clearing or collection systems for paper-based funds transfer instructions, such as one system amongst the commercial banks and a second operated by the postal system, and the funds transfer instructions are not cleared freely between the two systems, each of the clearing systems may have standardized the size and formats of the funds transfer instructions, but in an incompatible manner. Where there is only one clearing system or where funds transfer instructions are cleared freely between the different clearing systems, nation-wide standardization of the size and format will usually be found.

49. Similarly, where paper-based funds transfer instructions are intended to be cleared or collected internationally, or where forms prepared in one country are to be usable in other countries, international agreement has sometimes been reached on the size and formats to be used. Therefore, the size and format of Eurocheques have been standardized, thereby also standardizing the cheques as used domestically in those Eurocheque countries, and the forms to be used for the various types of international funds transfers through the postal system have also been standardized.

50. In the past electronic funds transfer instructions sent by telegraph or telex were not standardized. The move to standardize message formats of electronic funds transfer instructions undoubtedly began when banks began to exchange, either directly or through an automated clearing-house, computer memory devices containing funds transfer instructions. In order for the computers of the receiving bank to process the instructions, the programs for the computers of the banks, as well as those of the automated clearing-houses, must be compatible and the data elements must be entered according to a standard format.

51. The concerns are essentially the same for funds transfers made by computer-to-computer telecommunications. Although there is nothing in the nature of a computer-to-computer telecommunication network which precludes the use of free-form messages, since the receiving computer can show the message on a screen or produce a paper print-out which can then be used as the equivalent of a telex message, the use of free-form messages eliminates many of the advantages to be derived from a computer-to-computer network. Therefore, standard formats have been created for the different types of funds transfer instructions permitted in each network. A bank which programs its computers to interface with the standard format used for domestic and international funds transfers can enter transactions into its accounts directly from the instructions received, as well as from those sent, with at most a minimum of additional data to be entered relevant only to that bank.

52. Once a standard format for a funds transfer instruction has been adopted by a particular closed-user network for funds transfers, the use of that format should be obligatory. A bank within the network which fails to use a required format should be responsible for loss to the receiving bank caused by the failure. However, where banks can use the network also for messages necessarily sent in free-form, the evidence suggests that the computer operators use the required formats for messages of a type they send often but prefer to use free-form messages in place of message types they use less often. Since failure to follow a required format may cause extra work and delay to the receiving bank, even though no quantifiable loss may be created, consideration could be given to the levy of a standard charge on the sending bank for each deviation from the required format.

53. The standard formats developed for the various closed-user networks have been neither identical nor compatible in all respects. If the formats are compatible, even though not identical, software is available to convert funds transfer instructions from one format to the other. If the formats for the closed-user networks for computer-to-computer funds transfers in which a bank participates are not compatible with one another, a bank which receives a funds transfer instruction from one closed-user network and passes it on through a different network may have to re-enter the data for the outgoing instruction with the consequent delays, extra expense and, most important of all, the increased likelihood of errors. The incompatibility of the formats precludes the clearing of funds transfer instructions between banks or limits the access of some banks to some aspects of a market for funds transfers.

54. Incompatibility of format is most serious when the message format of one network does not contain data elements which are required in another network. This latter problem has arisen in its most acute form in respect of the use of magnetic stripe plastic cards in point-of-sale networks. Merchants in most countries in which point-of-sale networks have been created or actively discussed tend to insist that they can accommodate only one point-of-sale terminal at each cash register. If point-of-sale terminals which can accept only one of several competing magnetic stripe cards are installed in large numbers of stores, an adverse effect can be expected on the competitive position of those banks which belong to the rival systems. As a result, in several countries official pressure has been exerted, leading to the adoption of a compatible format for such cards. This problem has often been referred to as a problem in shared facilities.

D. Time within which bank must act on the instruction

1. General considerations

55. The agreement between the customer and the bank not only governs the extent of the bank's obligation to complete the funds transfer or cause the funds transfer to be completed, but also governs the period of time within which the funds transfer must be completed or within which the various banks and other entities in the funds transfer process must act. That period of time may be explicit or it may be implicit. The length of the period will vary depending on the funds transfer technique chosen. Few countries have statutory provisions prescribing the period within which the banks must act. However, some agreements between banks and their customers and a larger percentage of inter-bank agreements, including the regulations governing clearing-houses and closed-user networks, contain rules governing such period of time. Although in some countries the inter-bank agreements have no formal effect on the rights of the bank customers, they govern the rights of banks between themselves and, by providing the structure for the funds transfer system, they determine the period of time within which a customer can reasonably expect his funds transfers to be completed.

56. The law and practice governing the period of time within which banks must act in a funds transfer varies widely in different countries. Undoubtedly this reflects differences in such factors as the size of the country, the nature of the banking system, whether funds transfers are primarily made by debit transfer or credit transfer, the transportation system and clearing arrangements available for paper-based funds transfers and the extent to which various forms of electronic funds transfers are available. The development of international closed-user networks for paper-based funds transfers (e.g. Eurocheque), consumer electronic funds transfers (various debit and credit card systems) and commercial funds transfers has tended to unify the time-limits

applicable to transfers through those networks. However, even in these networks national differences are significant and, since an international funds transfer may also pass through domestic channels in the originating or destination country, the total period of time necessary for an international funds transfer is often still difficult to determine. It is likely, however, that the development of these networks is also having an effect on the domestic practice in the countries which are active participants.

2. Customer's concern about speed and consistency of performance

57. The concerns of bank customers about the speed and consistency of performance of the funds transfer system fall into two broad categories. On one hand, the funds transfer system must function in such a manner that bank customers can fulfill their business and personal obligations to make funds available to the credit of the transferee at the time and place required. On the other hand, customers and banks alike share the desire to maximize the interest-earning potential of their account balances.

(a) Impact on relations between customers

58. A transferee may be primarily interested in knowing that the transfer process has begun and can be expected to be completed in due course. On that assurance he may be willing to ship additional goods or provide additional services. A debit transfer system by which he receives a cheque from the transferor or in which he can initiate a bill of exchange or electronic debit transfer instruction may satisfy this concern. When the transferee has doubts whether the funds transfer will be completed in an acceptable period of time or when the transferee needs the money prior to proceeding further, he may require completion of the funds transfer with irrevocable credit to his account before he will act further.

59. If the funds must be available to the credit of the transferee by a certain date, the transferor using an ordinary cheque must furnish the cheque to the transferee in sufficient time for the cheque to be presented, honoured and credited to the transferee's account. If the transfer is by credit transfer, the transferor must make it in sufficient time and by a method that will assure the availability of the credit in time. In either case the transferor needs at least a reliable estimate of the time necessary for the funds transfer. In some cases he may need a firm commitment of the bank that the funds transfer will be completed by the point of time stipulated. If the transferor suffers a loss as a result of the failure to complete the funds transfer within the period of time explicitly or implicitly provided in the transferor's agreement with his bank, the transferor bank, or the other bank or entity responsible for the delay, may be liable for that loss.

(b) Interest-earning potential of customer bank balances

60. Many bank customers want to maximize the interest-earning potential of their bank balances by delaying debits as long as possible and securing credits as early as possible, while at the same time keeping only the minimum balance necessary in accounts which earn no interest or only a low rate of interest. Although customers have little control over the timing of debits and credits to their accounts once the funds transfer instruction has been issued, they can influence the timing by their choice of funds transfer techniques.

61. A transferor may be able to delay debits to his account for a significant period of time if he can effectively discharge an obligation by issuing a debit transfer instruction, such as a cheque, whether or not issuing the

instruction legally discharges the obligation. In many countries cheques are debited to the account only as of the date they are presented. In these countries the transferor has the continued use of the funds until the point of time the cheque is honoured, which may be days or weeks later. By careful management of the account balance, the transferor can ensure that there are sufficient funds in the account to honour the cheques as they are presented. Such a practice is often formally prohibited by a rule that there must be at all times a balance sufficient to cover all cheques issued, but official action is rare so long as cheques are in fact honoured.

62. The interest gained by the transferor from a delayed debit to his account is usually lost to the transferee, since it can be expected that the transferee will not be credited at least until the cheque has been honoured or, if he is credited more promptly, that the credit will not usually earn interest or be freely transferable until the cheque has been honoured.

63. In some countries the debit to the transferor's account and the credit to the transferee's account are entered as of the date the funds transfer instruction was issued, as shown by the date on the instruction. In those countries the amount of time it takes to complete a funds transfer is of less importance to the customers and to the banks. Although funds cannot be available to the transferee as a practical matter until the credit is entered, that may be of little consequence if the transferee is permitted to carry a debit balance larger than his immediate cash flow needs. Carrying a debit balance does not generate net interest charges to the extent that credits entered subsequently are credited as of the date the instruction was issued. Entering the debits and credits as of the date the instruction was issued may cause difficulties for inter-bank clearance. However, this practice has been in existence for a long time in some countries, and the problems would seem to be minimized when computers are used in the clearance. This system of dating the entries reduces the incentive for a bank to delay entering customer credits beyond that necessary for a normal flow of work.

64. In a credit transfer, the transferor's account is debited at the time the transferor bank begins to process the credit transfer instruction, while the transferee's account is credited only after the transferee bank receives the instruction. Unless the debits and credits are made as of the date of issuance of the credit transfer instruction, all inter-bank credit transfers necessarily envisage a gap between the point of time at which the transferor's account is debited and the transferee's is credited. As with debit transfers, no generalizations can be made as to the extent of the gap, which could run from fractions of a second in an on-line computer-to-computer network to days or even weeks for other transfers.

65. Since electronic funds transfer techniques almost always permit the banks to complete the funds transfer faster than do paper-based techniques, the transferee's account can be, and usually is, credited and the transferor's debited sooner than when a cheque is involved. This has been a major deterrent to the introduction of electronic funds transfer techniques in some cheque-oriented countries, since in most cases it is the transferor who decides the means by which the funds transfer is made. This concern has been met in some point-of-sale networks by delaying the debit to the transferor's account for some specific period of time. There would be no such deterrent to the substitution of electronic funds transfer techniques in place of paper-based credit transfer techniques when the transferor's account is debited at the same time.

(c) Irrevocability of funds transfer instruction

66. It is in the interest of transferees, and of transferee banks, that funds transfer instructions be irrevocable as early in the funds transfer process as possible. On the other hand, on occasion transferors wish to revoke funds transfer instructions they have issued, usually because of problems associated with the underlying transaction or because of the intervening insolvency of the transferee. Although specific rules vary in different legal systems, a matter which is discussed at more length in the chapter on finality of honour, the transferor's right to rescind the funds transfer instruction terminates no later than when the funds transfer is completed. Since electronic funds transfers tend to be completed sooner than paper-based funds transfers and the operating rules of many on-line and off-line electronic clearing-houses further restrict the right to revoke a funds transfer instruction once it has been submitted to the clearing-house, transferors tend to lose their right to revoke funds transfer instructions at an earlier time when the funds transfer is made electronically than when it is made by paper-based techniques.

3. Bank's concern about speed and consistency of performance

67. Banks are at least as interested as their customers in having the funds transfer system operate in a consistent and predictable manner. Banks transfer large sums of money for their own accounts, and they too must be able to count on being able to deliver funds when they have promised to do so and to receive funds which were promised to them. If the funds transfer service does not operate well, in many countries the banks risk losing both deposits and funds transfer fees to other financial entities which can furnish competitive, if not identical, services. This leads banks to work for the reliability of the system, including both improvements in the hardware, software and procedures and a strengthening of the rules requiring prompt action by the receiving bank of a funds transfer instruction. However, in addition to the pressures exerted on the banks to increase the speed with which the funds transfer system operates, there are countervailing pressures on the banks to retain some of the delay that was inherent in the paper-based system. The two main pressures of this type are the impact which the speeding up of the funds transfer process has on the interest-earning potential of the bank and the impact which it has on the security of the transferee bank that it will be reimbursed by the transferor bank.

(a) Interest earning potential of bank assets

68. A banking system as a whole increases its net earnings when there is an increase in the amount of interest-earning assets not subject to a corresponding obligation to pay interest to a customer. Interest obligations of a banking system to its customers are decreased during the period after the account of the transferor has been debited and before the account of the transferee has been credited. In effect, during this period of time the deposit liability for funds transfers in transit is not recognized as due or available to any specific bank customer. Since the introduction of electronic funds transfer techniques in credit transfers tends to reduce the period of time before which transferee banks receive the credit transfer instructions, prompt crediting of the transferee's account as of the day of receipt of the instruction tends to increase, as compared with the situation using paper-based credit transfer techniques, the obligations of the banks to their customers reflected in customer bank balances.

69. In many parts of continental Europe, it is common practice in an inter-bank transfer to credit the transferee's account with an interest date one or two banking days subsequent to the entry date. The time can stretch to

four calendar days over an ordinary weekend. This period of one or two banking days is intended to allow the transferee bank to receive settlement from the transferor bank prior to the date on which the transferee would begin to earn interest. The funds can be withdrawn or transferred to another account immediately. However, they do not draw interest until the indicated interest date. Moreover, if they are withdrawn before that date, the customer is charged for the relevant period. This practice assures the banks a minimum period during which neither bank is paying interest on the amount transferred in addition to any period of time necessary to make the transfer.

70. Interest-earning assets are also created if the transferee bank receives a credit to its account before the transferor bank is debited. In effect, in this case both banks recognize the same asset. This occurs in debit transfers in the United States, where the Federal Reserve uses an availability schedule to determine when it will give credit to transferee banks for cheques they have submitted to the Federal Reserve for collection. This availability schedule on average calls for crediting the transferee banks somewhat sooner than the Federal Reserve is able to present the cheques to transferor banks and to receive value from them. The Federal Reserve, however, has acted to reduce this unique form of bank asset by encouraging, *inter alia*, the development of electronic credit transfers and the faster presentation of cheques, including a proposal for the electronic presentation of large cheques.

71. Where the interest-earning potential which existed in the previous paper-based funds transfer system has been decreased by the introduction of electronic funds transfer techniques, or by the action of the public authorities, it has been expected that explicit charges for funds transfers would result. While the advantages or disadvantages of explicit charging for funds transfer services go beyond the scope of this Legal Guide, a funds transfer service adequate to the needs of many bank customers calls for rules which do not reward delay in processing any aspect of the transfer in order to create interest income for the banks themselves.

(b) Security of reimbursement to transferee bank

72. In some countries, banking rules permitting delay in entering a legally final credit to the transferee's account are associated with the transferee bank's concern that it may not receive reimbursement from the transferor bank. When a bank becomes legally committed to its customer for the credit before it has a final legal right to the corresponding debit in a form acceptable to it, the bank runs a credit risk that the debit may not become final or that the person or bank indebted to it on the debit may become insolvent. In a debit transfer there may be an additional risk for the transferee bank that the debit transfer instruction will be dishonoured.

73. The risk for the transferee bank has been reduced in most countries in respect of paper-based debit transfers by a legal rule permitting the transferee bank to reverse the credit to the transferee's account in case of dishonour. A similar rule seems to prevail in electronic funds transfer systems permitting debit transfers. The risk that the transferor bank may fail to settle for either a debit or a credit transfer is also reduced in some countries by a similar legal rule that the credit to the transferee's account can be reversed if the transferee bank does not receive value. The most notable example is that of the United States, where the risk of bank failure underlies many of the rules governing funds transfers. However, where the legal rules do not permit reversal of a credit to a transferee's account, or give a priority in insolvency, the risk can be placed on the transferee rather than on the transferee bank by delaying the entry of the credit to the transferee's account until after settlement is final.

4. Responsibility of destination bank to act promptly

(a) Credit transfer

74. In a credit transfer the transferee bank is the bank which finally executes the instruction of the transferor to credit the account of the transferee, although in many legal systems the transferee bank's legal obligation to do so promptly arises out of the inter-bank agreement between it and the transferor bank or intermediate bank which sent it the instruction.

75. Pay date: The transferor's instruction to the transferor bank may include a pay date on which the transferee's account is to be credited. Although the pay date may constitute a contractual commitment on the part of the transferor bank that the transferee's account will be credited by that date, it is less clear what significance the pay date has for the transferee bank. ISO DIS 7982 defines the pay date as the "date on which the funds are to be available to the beneficiary transferee for withdrawal in cash". This would appear to make the pay date, as that date appears in the instruction received by the transferee bank, legally binding on the transferee bank unless it rejected the instruction because it could not credit the transferee's account by that date or because it would not credit it until it had received settlement. Failure by the transferee bank to credit the transferee's account by the appropriate time, which would seem to be the pay date if one is specified, would therefore ordinarily constitute breach of an inter-bank agreement, and the transferee bank might be liable for the losses, if any, caused by the delay.

76. The transferee bank also has an agreement with the transferee to credit his account within some appropriate period of time for all credit transfers received. When crediting is delayed beyond the appropriate time, there would be a loss of interest in many cases, even if the loss is so minor for each transaction that it would not be worth the transferee's time to complain. The transferee might also fail to complain because he is not in a position to know when the credit transfer instruction was received. However, if a bank is consistently slow in crediting the transferee's account, the total loss to the bank's customers and gain to the bank could be substantial. It is for this reason that some countries and some credit transfer networks prescribe the maximum period of time after receipt of a credit transfer instruction for the transferee bank to credit the transferee's account.

(b) Debit transfer

77. In a debit transfer the transferor bank acts on the instruction or authorization of the transferor to debit his account and to transfer or cause to be transferred the sum in question to the account of the transferee. If the transferor bank wrongfully fails to honour the instruction, it may be liable to its customer for damages. The transferor bank, by debiting the transferor's account, also acts as the bank which finally executes the instruction given by the transferee to the transferee bank to collect the sum in question from the transferor's account in the transferor bank. As a practical matter, few transferees would be in a position to insist that the transferor bank honour the instruction promptly. On the other hand, the transferee bank may be able to exert pressure in this direction. Furthermore, in some countries the public authorities also press transferor banks to settle promptly.

78. The principal concern of the legal system, however, has not been the amount of time before the debit transfer instruction is honoured but the amount of time available to the transferor bank to dishonour a debit transfer

instruction. A transferor bank to which an instruction is presented that would, if honoured, create an unacceptably high debit balance in the transferor's account might decide to retain the item for a period of time to allow the transferor an opportunity to deposit additional funds to the account. If the additional funds are not deposited, the debit transfer instruction will eventually be dishonoured. However, when the transferor's financial position worsens during this period of time before dishonour, the transferee and the transferee bank may suffer more losses because they were not notified of the transferor's financial difficulties by an immediate dishonour of the debit transfer instruction. It is common to find in clearing-house rules and similar inter-bank agreements a strictly limited period of time, measured from the presentment of the instruction, after which it can no longer be returned through the clearing-house. However, it is usually somewhat less clear for how long the dishonoured instruction can be returned outside the clearing-house, although there is general agreement that such a time-limit exists.

#### 5. Effect of branch banking

79. In respect of paper-based funds transfers, separate branches of banks have often been treated as separate banks for the purpose of determining the applicable time-limit for the transmission of a funds transfer instruction from one bank to the next or for the honour or dishonour of the instruction by the transferor bank. This rule is based on the premise that many of the crucial actions to be taken by the transferor bank and transferee bank can take place only when the funds transfer instruction has arrived at the office of the bank where the customer records of account and specimen signatures are kept and the account is managed.

80. When the customer records of account are kept off-line at a centralized data processing centre but the specimen signatures for paper-based funds transfer instructions are maintained at the branch, it is less clear whether the time-limit for the bank to act should be measured from the time of receipt of the paper-based instruction at the data processing centre or from its receipt at the branch where the verification of the authentication can take place. Many clearing-house rules measure the time for return of a dishonoured debit transfer instruction or of an unprocessable credit transfer instruction from the point of time when the receiving bank withdraws it from the clearing-house. This does not take into account any need for the receiving bank to process the instruction at both the data processing centre and the branch. Nevertheless, if many banks participating in the clearing-house found the periods of time to be too short, it could be expected that the clearing-house rules would be amended to allow additional time for return of such instructions.

81. Since the PIN, password or other customer authorizations for off-line as well as on-line electronic funds transfers are contained in the computer along with the records of account, the funds transfer instructions would need to be delivered only to the data processing centre, and not to the branch. Furthermore, if the branches and offices of the bank are on-line, the customer records of account and authorizations for electronic funds transfers could be accessed from terminals at any of those points. However, in case of paper-based funds transfers, it might be necessary for the transferor bank to send the instructions to the appropriate branch for verification of signature even though the debit or credit entries to the customer's account could be made from an on-line terminal at another convenient point. On the other hand, if banks truncate the paper-based funds transfer instructions, there is no necessity to allow them time to send those instructions to the branch for verification of signature.

Chapter III

FRAUD, ERRORS, IMPROPER HANDLING OF TRANSFER INSTRUCTION  
AND RELATED LIABILITY

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### Introductory note

1. The volume of electronic funds transfers and the sums involved suggest that the potential losses could exceed the losses experienced with paper-based funds transfers. At the same time, customers of banks have been concerned that the move from paper-based funds transfers to electronic funds transfers would result in their bearing a larger share of any losses arising out of errors or fraud. The result has been an unusually unsettled state of the law as participants attempt to establish appropriate grounds for assigning loss in the multitude of new and rapidly changing factual situations. The problems would be difficult enough if only the banking law governing the responsibility of various parties to a funds transfer were involved. In spite of the many years during which such problems have been considered in regard to paper-based funds transfers, there remain a surprising number of unanswered questions in many legal systems. Moreover, the changes in procedures necessitated by the use of electronic techniques raise questions as to whether the rules on liability for paper-based transfers should be applied to electronic funds transfers.

2. The problems are complicated by the rapidly changing role of the telecommunications carriers and the pressures on the law governing liability which have ensued. Whereas previously telecommunications were a service external to the bank offered by a common carrier monopoly, today the office equipment in many banks is linked in local area networks, branches are linked by dedicated lines and banks are transmitting an increasing share of their funds transfer messages to other banks by telecommunications. Telecommunications are no longer external to the bank; they have become a vital internal operating medium, as they have in many other fields of economic activity. Because of the blurring of the lines between computers and telecommunications, the former monopoly of telecommunications service has been broken in some countries and is under pressure in others. As a result of these developments, questions are being raised as to whether the former (and largely still existing) exemption from liability accorded to the telecommunications carriers is still a valid policy.

3. This chapter considers first some of the factors which contribute to the occurrence of errors or fraud in electronic funds transfers and the actions that can be taken to minimize their occurrence. Secondly, it considers the allocation of the loss among the various parties to the funds transfer. Then, the focus is on the extent to which and the party from whom the bank customer as transferor or transferee can recover losses suffered as a result of an improper handling of transfer instructions.

#### A. Fraud

##### 1. Opportunity for fraud

4. Fraud in an electronic funds transfer involves an unauthorized instruction, alteration of the account to which an entry is to be made or alteration of the amount of the entry. To avoid losses from fraud, adequate steps must be taken by the party in a position to do so to prevent unauthorized instructions from appearing as though they were authorized.

##### (a) Dishonest employees of bank customer

5. Many losses due to fraud in electronic funds transfers are caused by the application of techniques well known in connection with paper-based funds transfers. Three common examples involve dishonest employees of the bank customer.

6. A clerk charged with preparing the payroll or preparing the vouchers authorizing payment to a supplier may falsify the payroll or the vouchers so that payment is made to a person not entitled to receive it. If payment is made by means of a cheque, the dishonest employee gains possession of the cheque and, after endorsing it in the name of the fictitious person, deposits it in an account he has previously opened in that name. If payment is made by means of a paper-based or electronic credit transfer, the funds are credited to the account of the fictitious person in due course. The fraud is completed by the subsequent withdrawal of the funds from the account by the dishonest employee.

7. If the dishonest employee has the authority to authorize the funds transfer on behalf of his employer, rather than the responsibility of preparing the substantiating documentation, he signs the cheques or paper-based credit transfer instruction or authorizes transmission of the data in electronic form to the bank. The fraud is completed in the same manner by withdrawal of the funds by the dishonest employee.

8. In both cases, the funds transfer instruction appears to the bank to be genuine and authorized, although it is fraudulent in fact. These cases have caused considerable difficulties in some countries when the funds transfer instruction was in the form of a cheque, since the completion of the fraud requires the endorsement of the cheque by the dishonest employee in the fictitious payee's name. Nevertheless, the endorsements of the dishonest employee (or of his accomplice) have usually been held to authorize the bank to honour the cheque.

9. The allocation of the loss to the bank customer causes fewer doubts when the fraudulent payment is by paper-based or electronic credit transfer, since the fraud does not require any equivalent of a forged endorsement.

10. A third type of fraud by a dishonest employee who has no authority for issuing funds transfer instructions on behalf of the employer is possible when a computer terminal located at a bank customer's place of business can be used to make funds transfers. If the dishonest employee is able to gain access to the terminal and learns how to enter a funds transfer instruction, including the necessary password or other security measures, the instruction will be followed by the bank. For many countries this is a new form of fraud which could not be committed in a paper-based funds transfer. However, in some countries which permit the use of mechanical forms of signature on cheques or paper-based credit transfer instructions, a similar problem arises when a dishonest employee (or third person) gains access to the mechanical signing apparatus and causes cheques or credit transfer instructions to be issued payable to himself or to a fictitious person.

11. In those countries which do not prohibit mechanical signatures, it seems to be the general rule, often reached by agreement between banks and their customers, that a bank which honours in good faith a cheque or credit transfer instruction signed fraudulently by a genuine signature apparatus can debit its customer's account. Although different legal theories might be used to support such a result, the underlying reasons are that the bank cannot distinguish a genuine usage of the signature apparatus from an improper usage, the bank customer has a responsibility to guard carefully an apparatus which can so easily be used fraudulently, and the bank customer is negligent in allowing the signature mechanism to be used fraudulently.

12. The reasons for allowing the bank to debit the customer's account in the case of a fraudulent use of the signature apparatus would also apply to the right of a bank to debit its customer's account for the amount of fraudulent

funds transfer instructions made by use of a computer terminal located at the customer's place of business. However, it should be noted that the responsibility for security over the terminal at the place of business of a bank customer is shared by the bank customer and by the bank, necessitating an allocation between them of that responsibility and of a failure to exercise it adequately.

(b) Fraudulent use of customer-activated terminals

13. Terminals located at the place of business of a bank customer as well as automated teller machines, cash dispensers, point-of-sale terminals and home banking terminals share the characteristic of being customer-activated. One of the purposes of a customer-activated terminal is to eliminate the need for human intervention on the part of the bank. This has the effect of reducing the likelihood of error by the bank in processing funds transfer instructions. However, the use of customer-activated terminals also has the effect of increasing the possibilities for fraud.

14. All computer terminals which can authorize a funds transfer work in essentially the same way. Before an individual can use the terminal, he must first establish his authorization to do so. A bank employee may log in one time to establish his authority to use the terminal for the day. A customer-activated terminal would normally require separate authorization for each transaction, unless it was in constant use by the customer. A given terminal or customer may also have a limit placed on the types of transactions which can be authorized, the accounts which can be debited or credited and the monetary amount, which may be calculated per transaction, per day or in any other relevant way.

15. The log-in or authorization procedure to be followed before a customer-activated terminal can be used is established by the bank. In deciding on the procedure to be followed, the bank (or the electronic funds transfer network of which the bank is a member) must balance considerations of safety, cost and customer acceptance. Usually, the more secure the authorization procedure, the more expensive it is for the bank to install and maintain and the more difficult it is for customers to use. For marketing reasons it may be desirable for the customer-activated terminal to be user-friendly, but a user-friendly terminal also tends to be intruder-friendly. This is a delicate balance for the bank to make, and it is a balance which changes as technological developments occur.

16. Restrictions on the types of transactions which can be authorized or accounts which can be debited or credited can be an effective way to reduce the likelihood of fraudulent transactions. Restrictions on the monetary amount have only a limited effect on eliminating the incidence of fraud, but they can be an important means of limiting the financial consequences of fraud. This may, however, be meaningful only in regard to consumer-oriented networks since the upward limit in commercially oriented networks may need to be so high that sufficient room for serious fraud is allowed.

17. Current models of cash dispensers, automated teller machines and point-of-sale terminals require the convergence of two items to authorize the transaction, i.e. a plastic card with magnetic stripe containing certain information and the entry by the bank customer of a personal identification number (PIN). New and more secure forms of plastic cards are in experimental use. In some proposed home banking systems, it would not be feasible to use a plastic card for authorization purposes; therefore, the authorization procedure may depend on the use of a PIN or password alone. In other systems,

the PIN or password, which the customer uses over a period of time, may be combined with a transaction number which is unique to that transaction. A terminal located at a business establishment can have more complicated and presumably more secure procedures, but in essence they usually revolve around the use of passwords and the possible use of a plastic card.

18. There are currently two different approaches used by banks for protecting the security of the PIN. One approach concentrates on eliminating the possibility that an employee of the bank or funds transfer system can know the PIN. The PIN is generated by a computer using an algorithm and certain basic data relevant to the customer. The resulting four or six digit number is inserted by the computer into a sealed envelope and mailed or otherwise delivered to the customer. If properly followed, this method can give a secure PIN for each customer. However, since the number is abstract and may be difficult to remember, many bank customers feel the need to carry the number with them whenever they intend to use their plastic card, thereby seriously compromising the security of the PIN.

19. The other approach attempts to make it easier for the bank customer to remember the PIN by allowing the customer to choose his own number. A customer often chooses a number based on his own or his spouse's birthday, his street address, telephone number or other number already well known to him. While this has the advantage of making it less likely the bank customer will carry the number with him in written form, it has the disadvantage of reducing to a minimum the combination of numbers likely to be chosen by any given person and making it thereby easier to determine what that person's PIN might be. Moreover, the PIN is known to at least several of the bank's employees and, since the PIN is no longer generated by computer, it must be entered into the customer's file and is available to anyone having access to that file.

20. Password security for terminals located in businesses or in homes raises the same kind of problem. The password should be neither so obvious that it can easily be guessed nor so obscure that the user will keep it in written form, unless the writing is to be kept under strict security controls. A terminal from which a wide range of funds transfers can be made for significant amounts of money should be subject to additional safeguards. Log-in might require the concurrence of two different persons with different passwords. Passwords can be changed at relatively short intervals, although that introduces difficulties of their distribution from the bank to the customer, or vice versa. The bank can cancel a password automatically if it is not used for a particular period of time, since this may mean that the person to whom the password is assigned is absent.

21. Protection against fraud in the use of customer-activated terminals is, therefore, a joint endeavor of the bank and the customer. The bank must install and maintain as good a security system as is practicable considering the cost involved and the interference with use which may result. One measure of the quality of the security system is the extent to which the customers of the bank, who are often non-professionals in the use of computers and in funds transfers, follow the security instructions given them by the bank.

(c) Customer-supplied machine-readable instructions

22. A somewhat similar situation exists when the customer supplies the bank, or an automated clearing-house, with funds transfer instructions in batch on computer memory device or in machine-readable paper-based form. Although it is the responsibility of the customer to prepare the instructions properly, including the use of internal controls to guard against both fraud and error

in their preparation, the bank or clearing-house should be responsible for verifying that item counts and value agree with the sums indicated, that they are within the parameters authorized by the customer for such batches, and that the batch otherwise appears to be free from alteration subsequent to its preparation. These controls can easily be exercised by the bank or clearing-house at the time it verifies the devices prior to processing.

(d) Fraud by bank employees

23. Employees of banks and other entities in the funds transfer system also have access to terminals with which they can enter fraudulent transactions. Fraud by such parties can be particularly difficult to discover unless the bank has a well-designed system. The possibility of a dishonest employee programming the computer to credit his account and to erase all records of the transaction has been well publicized. This should not be possible, however, since the bank's computers can be programmed to leave a complete audit trail of all activity, including instructions to delete transactions. For this to be done effectively, the audit trail should be programmed by persons different from those who prepare the applications programs and should be subject to independent audit.

(e) Fraud by tapping telecommunications transmissions

24. It is relatively easy to tap any telecommunications system over which electronic funds transfer instructions might be sent. The cost for complete physical security of the transmission system is such that it is not feasible for commercial purposes. Therefore, the design of any electronic funds transfer system should assume the possibility of interception and reading of messages, alteration of genuine messages and the introduction of false messages. The first line of protection against such fraud is encryption. If the encryption standard used is powerful enough, there is no danger of interception, alteration or the introduction of false messages. However, an encryption standard which is highly secure today may be rendered insecure within a few years by the development of more powerful computers allowing exhaustive search for encryption keys or, in the case of public key cryptosystems, by the development of new techniques for factoring the large numbers on which they are based. Moreover, the proposals in some countries that a government agency have all encryption keys used for transborder data flows would create a potential weak link in the system of security over which the parties would have no control. The creation of rigorous logs of all incoming and outgoing funds transfer instructions and the assignment of input and output sequential numbers provide a means of verifying the time of receipt or dispatch of the message and the other party to the message. These procedures increase the likelihood that a fraudulent instruction will be recognized, and they are an essential means of subsequently discovering and tracing suspected fraudulent instructions.

2. When may a fraudulent instruction justify a debit to an account

25. Although a bank is normally authorized to debit a customer's account only for the amount of an authorized instruction, it may also debit the customer's account for the amount of certain unauthorized instructions, particularly when the fraud was made possible through the lack of adequate controls on the part of the customer. There is, for example, little doubt that the customer's account can be debited for the amount of fraudulent transfers initiated by those employees authorized to act for the customer, unless there was something about the transaction which was so unusual that it ought to have raised the suspicions of the bank.

26. However, it is less clear whether the bank or the customer should bear the loss for fraud committed by means of a customer-activated terminal. Since the bank designs the basic security and authorization procedures and the customer carries them out, one approach is to assign the loss on the basis of comparative negligence in each case. This approach may be feasible for those cases where it is evident that the fraud was made possible through a clearly inadequate security and authorization procedure or that the customer had been unusually negligent in following those procedures. It is not, however, an efficient means of distributing the loss, particularly in cases of fraud in consumer-oriented systems, where the individual loss is often not large enough to support a full judicial inquiry.

27. As a result, there is a tendency to search for formulas of general validity for the vast majority of the cases. Bank-customer contracts, which are normally standard form contracts prepared by the bank, typically authorize the bank to debit the customer's account for any transfer made by use of the particular type of customer-activated terminal when the proper PIN or password and plastic card, if any, was used. In the case of systems in which transfers are authorized in part by use of a plastic card, customer liability normally ceases once the customer has notified the bank of the loss or theft of the card and the bank has had the possibility of entering the information in the bad-card file. This may be immediate in the case of an on-line system or the next banking day in the case of an off-line system.

28. An alternative approach, which has been most evident in respect of some consumer-oriented systems, has been to allow the bank to debit the customer's account for the fraudulent transfer, up to a limit of a relatively small amount. The customer bears a risk of loss large enough to encourage him to report the existence of any loss or theft of the plastic card or the compromise of the password, PIN or security procedure, while the bank bears the risk of major loss, thereby encouraging it to strive for a more secure authorization procedure. This approach may be supplemented by a rule that the bank may debit the customer's account for the full amount of fraudulent transfers which are the result of certain actions of the customer. These may include loaning a magnetic stripe card to a third person and telling him the PIN, or writing the PIN on the card or otherwise carrying the two together so that the loss or theft of one results in the loss or theft of both.

29. A third means of assigning the loss in a large number of cases is to place on the bank or on the customer the burden of proving how the fraud took place since in many cases the party who carries the burden of proof will lose. It is particularly difficult to prove that a fraud committed by a third party who has not been apprehended was caused by such actions of the customer as leaving a password in a desk drawer or writing the PIN on the plastic card. It would normally be even more difficult for a customer to show that a bank had designed an inadequate security system or had failed to follow its own authorization and security procedures.

30. Insurance can also be used to shift fraud loss from both bank and customer. However, large or repeated losses are soon reflected in higher premiums.

## B. Errors

### 1. General sources of errors using computers

31. At the time computers were first widely used in some countries for commercial purposes, the experience with the large number of errors encountered was discouraging for the firms that owned the computers and upsetting to their

customers. Not only were there large numbers of errors, but it seemed difficult for the firms to correct many of them. However, the early bad error experience of many firms in the use of computers lay partly in the quality control of the hardware itself and partly in the inexperience in designing software. These are no longer the source of constant frustration they once were; the hardware is highly reliable, and software, while still a problem, is of a much better quality than before. The errors which occur as a result of hardware or software failure are a minute proportion of the total number of transactions.

32. The early bad error experience also lay in the inadequate procedures adopted by many firms in relation to their newly acquired computer systems. In order to gain the volume of transactions necessary to support a main-frame installation, a central data processing center was often established which was organizationally and physically separated from the operating departments which received, generated and used the data. The data processing center was often in a separate building, and in the case of organizations with branches in different cities, it was by necessity in a different city from many of those branches. The personnel in the operating departments too often did not understand the needs of the data processing department for presentation of data in a consistent format; the data processing department became the province of specialists who too often did not understand the operations and needs of the firm; procedures for eliminating and resolving errors did not always command the same level of support as did the installation of the new equipment; and it was often difficult for customers, suppliers and employees alike to locate the person with authority to rectify problems which had arisen.

33. Although these problems are far from eliminated, it can be said with some confidence that errors arising out of the separation of the data processing department from the operating sectors of the firm and arising out of inadequate internal procedures in general are no longer the source of concern they once were. Operating personnel are more familiar with the procedures required to function with computers, and data processing personnel have learned better how to shape the technological needs and possibilities of computers to the requirements of the commercial or administrative activities within which they operate.

34. Equally important, especially in the banking context, has been the decentralization of data input to the computer facilities. It is now common in many parts of the world for terminals to be located throughout the operating departments. Tellers dealing with banking customers over the counter can enter deposits and withdrawals directly into the computer, as can operating personnel who receive funds transfer instructions and other banking instructions through the mail, over the telephone or by other means.

35. The decentralization of data input in the bank has reduced the likelihood of error in several ways. By entering the data in the operating departments responsible for the transactions, the personnel entering the data are responsible for the entire transaction. They may feel a greater sense of responsibility for the accuracy of the data; they get a response from the computer immediately and know if the transaction was accepted; they are more apt to understand the context in which the data was created, thereby permitting them to recognize ambiguities and to resolve those ambiguities promptly and correctly; and the data need be entered only once in the bank's records, rather than two or more times as sometimes occurred with centralized data processing or with paper-based systems.

36. The introduction of customer-activated terminals with the capacity of ordering routine funds transfers further reduces the likelihood of bank error since the funds transfer instruction is normally processed automatically

without intervention of the bank's personnel. Errors are less likely to occur in a fully automatic electronic funds transfer system than in a semi-automatic system or in a paper-based system. However, errors in a fully automatic system are much harder to prove, especially where only one transaction has been affected. Accordingly, the question of allocation of responsibility for any losses arising is itself a serious problem for the customer. Other types of error may affect many customers because of the extremely large numbers of transactions processed by computer. Furthermore, because of the increasing complexity of computer systems now in use or planned for the future, it is virtually impossible to validate them completely. As a result, there is a possibility of massive failure out of all proportion to prior experience, and it is essential that fallback positions be prepared by banks for this eventuality.

2. Current sources of errors peculiar to electronic funds transfers

(a) Non-standardization of messages

37. Because there is as yet no universally recognized standard format for electronic funds transfer instructions, the possibility of error in composition of the message by the sender and comprehension by the receiver is increased. Moreover, if the message fields in two computer-to-computer funds transfer networks are not fully compatible, allowing for automatic conversion from one message format to the other by interface software, a funds transfer instruction received from one network will have to be fully or partially rekeyed to be sent through the second network.

(b) Re-creation of messages

38. Rekeying a transfer message creates the possibility of error. This possibility of error is to some degree unavoidable in all electronic funds transfers. In contrast to paper-based funds transfers, where the original paper form filled in by the customer can usually be forwarded through the banking system, precluding the possibility that the payment instruction will be altered except by fraud, an electronic funds transfer message is re-created at each processing point. Payment instructions given to a bank in paper form are transformed into electronic messages which may again be reproduced on paper at receipt. Telex transfers through a correspondent bank require the correspondent bank to pass on a new message with a somewhat different data content. Messages sent over packet-switching networks are broken into segments of a uniform length, which are sent by separate circuits and reassembled at the destination. Transfer instructions submitted on magnetic tapes to an automated clearing-house are sorted and recorded on new magnetic tapes before being sent to the receiving bank.

39. Each of these processes introduces the possibility of an inadvertent change in the content of the payment instruction through human error, an incorrect computer program or a breakdown or defect in the equipment. However, these errors can be detected before they pass through the system if the necessary controls are designed into the system as well as into the operations of each bank, and if those controls are rigorously applied.

(c) Non-standardized procedures

40. International funds transfers, whether electronic or paper, are more difficult for banks to handle without error than are domestic transfers because of the lack of international agreement on appropriate procedures.

Each transfer message must, therefore, be read carefully to be sure as to the procedure being used by the sending bank. That message may be unclear, especially when it is composed in unstructured cable language.

41. This confusion may be compounded when the local banking practices in the receiving country are different from those in the sending country. In particular, expectations as to the time within which funds will be made available to the transferee bank and to the transferee may turn out to be incorrect because of a local practice that a correspondent bank may withhold settlement for several days, or that remittance will be made to remote locations by mail or by cheque, even though the international funds transfer instruction requested that the highest priority be given to the transfer.

(d) Computer failure and software error

42. One source of errors in electronic funds transfers which does not exist in paper-based transfers is the electronic equipment itself. This includes the computer hardware of the banks, telecommunications carriers and clearing-houses or other switches, and the software to make them operate. Although errors from these sources are comparatively few compared to those experienced only a few years ago, they are particularly serious. An error which arises out of a mistake in keying a funds transfer instruction into the system affects only that one message. However, a defect in the computer hardware or software may treat an entire series of instructions incorrectly. Moreover, the very nature of the problem in the hardware or software may cause the error to bypass the validity checks which are built into most computer programs. Most importantly from a legal point of view, errors arising out of defects in the computer hardware or software itself raise difficult questions as to the responsibility for the losses which result.

3. Conceivable methods to prevent errors from occurring

43. Fortunately, most of the actions necessary to reduce the number of errors occurring in electronic funds transfers can be taken by each bank individually. However, some actions can be taken only by the banking community as a whole. In particular, standardized message formats and banking procedures should be established for both domestic and international funds transfers. In some respects, agreement at the international level may be the more important as well as the more difficult. Large amounts are transferred through international wholesale networks, and international consumer electronic funds transfer networks are increasing in importance. Moreover, agreement at the international level should lay a firm basis for agreement at the domestic level.

44. The international banking community is currently engaged in several projects within the Banking Committee (TC 68) of the International Standards Organization (ISO) which should lead to generally accepted formats for the most commonly used message types in international funds transfers. ISO Draft International Standard (DIS) 7982, Part 1, contains vocabulary and data elements used in describing, processing and formatting funds transfer instructions. ISO/DIS 7746 provides standard telex formats for inter-bank funds transfer instructions. These standard formats, based upon S.W.I.F.T. message formats, are intended (1) to eliminate misinterpretation by the receiving bank of the sending bank's instruction and (2) to provide a basis from which can be developed systems for the automatic handling of telex funds transfer instructions. Other work of ISO TC 68 on such matters as test keys, technical characteristics of magnetic stripe cards and interchange message specifications for debit and credit cards will also contribute to more efficient, error-free and fraud-free electronic funds transfers.

45. The eventual adoption by ISO of standard formats for telex funds transfer instructions which are in harmony with the S.W.I.F.T. message formats and agreement on vocabulary to be used in funds transfer instructions, and their adoption and use throughout the world for both domestic and international funds transfers, would reduce the likelihood of errors arising out of the needs to rekey funds transfer instructions. A standard telex format with numeric field tags as well as field descriptors will permit the receiving bank to key the instruction into its computer system for entry into the records of the bank and for retransmission, if necessary, with no necessity for interpretation of the instruction. This will be of particular value when the sending and receiving banks are from different language areas.

46. It can also be hoped and expected that the international banking community, through appropriate institutions will over time be able to agree upon the procedures to be followed by a receiving bank, especially when it is not the transferee bank. It must be recognized, however, that when the receiving bank must retransmit the funds transfer instruction through the domestic funds transfer system, agreement on the actions it should take would require a large degree of harmonization of the technical means by which funds transfers are processed domestically in different countries as well as of the attendant banking laws and procedures. As an interim step, a clearer delineation of the actions which are taken by receiving banks in different countries in standard situations and the time required for these various actions might lay the basis for future harmonization efforts.

C. Need for customers to verify status of accounts

1. Statement of account activity

47. In spite of the most rigorous efforts on the part of all concerned, a certain number of improper entries will be made to the accounts. Once these entries have passed the various controls instituted by the bank to eliminate errors and fraud, they can in most cases be discovered and rectified only by the complaint of the customer. In order for the customer to discover any errors in his account, he must have a means of reconciling the records of the bank with his own record of transactions in that account.

48. There have been two traditional means of furnishing the customer with a statement of account activity. In some countries, perhaps in particular those countries in which credit transfers have been the normal means of inter-bank funds transfer for commercial and consumer purposes alike, a notice is sent by the bank whenever a debit or credit entry is made to the account. The notice can, and often does, indicate the opening balance, the debit and credit entries made that day and the closing balance. A quarterly or yearly statement may also be sent to reflect interest debited or credited to the account and to state officially the bank's record of the account balance. In other countries, a statement of account activity is sent periodically to the account owner. Statements on ordinary accounts may be monthly, quarterly or yearly, while statements on active commercial accounts may be weekly or even daily. Although a daily statement on an active account may appear to be the same as a daily notice to the customer of an active account of debits or credits to the account, it implements a different policy.

49. Where the account is inactive, the customer may receive no statement for a long period of time. In a country in which notices are sent to the customer each time there is a debit or credit to the account, this would indicate that no action had occurred during that period. In a country in which statements of account activity are normally sent on a periodic basis, the bank and the

customer may agree that no statement is required because of the infrequency of expected transactions or because the customer wishes to keep the account secret. However, this is a dangerous practice since it leaves open the possibility that fraudulent or mistaken entries to the account may not be discovered for long periods of time.

50. The advent of customer-activated terminals changes somewhat the need for statements of account activity, whether the statement is furnished periodically or as a notice of debit or credit to the account. If the customer can access the bank's record of his account, and especially if the customer has the facility of producing a hard copy of that record, there may be no need for the bank to go to the expense of mailing statements to the customer. At the present time some commercial customers of many large banks can access their accounts in this manner, and this facility is being actively promoted by banks serving multinational corporations as part of a cash management programme. It is also available in some home banking experiments, but automated teller machines which permit balance inquiry may not permit inquiry as to account activity.

## 2. Customer's examination of the statement

51. There are several arguments for holding that a customer should examine the statement sent by the bank to find fraudulent entries, errors or other discrepancies. The statement, especially a periodic statement, may be seen as an offer to settle the account between the bank and its customer on the basis of the statement, a form of settlement which is known in various legal systems under different doctrinal names. The recipient of the statement must reply within a specific period of time or, in some countries, it is accepted as the correct statement of the account at that point of time, while in others the burden of proof of showing whether it is correct or not shifts from the bank to the customer.

52. The policy supporting this result is directly applicable to a transaction account in a bank. It is useful for the parties to agree periodically on the status of their mutual relations so that at the end of an extended period of time it is not necessary to retrace each entry to the account long after the details have been forgotten and the records may no longer exist. Furthermore, an incorrect entry to one account, whether caused by error or fraud, is often mirrored by an incorrect entry to another account. Delay in notifying the bank of an incorrect entry may reduce the possibility that the bank can correct the transaction or otherwise reduce the loss.

53. In some countries the customer is said to have no duty to examine the statement of account activity and may raise an objection to an incorrect entry at any time until the period under the statute of limitations or prescription has passed. This rule is more protective of the customer and it may be particularly justified in the cases of individuals who are new to the banking system, and therefore unaware of the need to reconcile their statements or unable to do so, or who travel a great deal or live in a distant place and may have more difficulty in receiving the statement promptly. However, even in these jurisdictions it may be contributory negligence if a customer does not examine the statement and object to incorrect entries.

54. It should be recognized, nevertheless, that whatever the rule may be, an improper entry to an account which has passed through the controls of the bank will often be discovered only if the customer reconciles the statement of account activity received from the bank and notifies the bank of the improper entry. This is particularly relevant when cheques are truncated at the bank

of deposit and the essential funds transfer data are electronically processed, because this practice reduces the likelihood that the transferor bank (drawee bank) will detect a forged signature of the transferor (drawer). The practical difference in the rules lies primarily in the fact that the customer has a shorter period of time within which to notify the bank of the improper entry when the customer is said to have a duty to examine the account than when the customer is said not to have such a duty.

### 3. Duty of a bank to correct entries

55. It is evident that a bank must correct improper entries in the account promptly after being notified of them by the customer, unless there is a legitimate question whether the entry is improper. Detailed rules governing error correction by banks in respect of consumer electronic funds transfers have been adopted by some countries and proposed in others. 1/ The need or desirability of such rules depends on the experience in each country.

#### D. Responsibility of an originating bank to its customer for errors or fraud made in an interbank transfer: a transaction liability approach

56. As used in this discussion, the term "originating bank" means the bank which receives the funds transfer instruction from its customer and transmits it through appropriate channels to the destination bank. In a debit transfer the originating bank is the transferee bank (or depository bank), while in a credit transfer the originating bank is the transferor bank. The originating party is the party who submits the funds transfer instruction to the originating bank. In respect of the issue discussed in this section, there seems to be no particular difference in the law governing paper-based transfers between the transferee bank as the originating bank in a debit transfer and the transferor bank as the originating bank in a credit transfer.

57. The fundamental problem is that associated with any field of economic activity in which a customer contracts with one firm to achieve a result which requires the participation of one or more other firms. The first firm may be held responsible only for its own performance, including the choice of appropriate collaborators, or it may be held responsible to the customer for the performance of all parties necessary to achieve the result contracted for, i.e. a transaction liability approach. The closest analogy to the funds transfer situation is that of the carriage of goods by common carrier, where the carriage of the goods from origin to destination may require the participation of freight forwarders and terminal operators as well as several carriers of the same or of different types.

58. In favour of transaction liability: Although the originating party designates the general type of funds transfer and the destination bank, with few exceptions, neither the means of communication between the banks nor the intermediary banks are designated. The choice of a proper channel is left to the discretion of the bank. In a highly automated bank this choice may be exercised by a computer according to programmed criteria. Where alternative means of communication or intermediary banks are available, the bank must use reasonable care in the selection of appropriate means.

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1/ The right of a bank to correct entries to a customer's account when the error was in favour of the customer is considered in chapter IV, "Finality of funds transfer".

59. If the funds transfer is not made correctly, it is often difficult to determine where, how and why the error occurred. Each bank, clearing-house, switch and telecommunications carrier has an interest in claiming that the problem did not occur with it. The customer, being outside the system and having no continuing relationships except with his own bank, may find it unusually difficult to investigate and determine who appears to be at fault. If it appears that the party at fault can be sued only in a distant part of the country or in a foreign country, the originating party faces additional difficulties and expense to pursue his claim. However, if the originating bank has accepted or is deemed by the applicable law to have accepted responsibility for the successful completion of the funds transfer, subject to the loss not having occurred for specified exonerating reasons, it would be in a better position to seek reimbursement from the bank or other entity at fault. Under this approach, the originating bank would suffer the loss rather than the originating party if it could not be determined how the loss-causing event occurred. The increase in cost to the banking system as a whole, not taking into account any increase or decrease in litigation expenses, would be the amount customers had previously been unable to recover because of an inability to prove where or how the error had occurred.

60. In the context of debit and credit cards issued by a bank, these same considerations have led to the opposite result, i.e. to acceptance of the destination bank (often referred to as the card-issuing bank in this context) as the sole bank responsible to the customer for any improper debits to his account arising out of the use of the card. If an error or fraud has occurred in connection with the use of the card or the forwarding of the funds transfer instruction for which the customer cannot be charged, the banks in the card network distribute the loss between themselves according to the terms of the network agreement.

#### E. Permissibility of disclaimer of liability

61. Disclaimer provisions are found in contracts between the originating bank and its customer and between the banks, clearing-houses, operators of switches, telecommunications carriers and other parties who may participate in the funds transfer. A disclaimer provision may provide that the disclaiming party is not to be held liable for loss caused by third persons, for loss caused by some or all of the disclaiming party's own acts or failures or for certain types of losses, and especially for indirect damages. Such disclaimer provisions should be drafted in clear and unambiguous terms so that customers can know precisely for which circumstances and types of loss the bank or other party will, or will not, accept liability.

62. The extent to which disclaimer provisions in contracts governing electronic funds transfers will be enforced depends in part on the general attitude of the legal system towards such clauses and in part on the extent to which the law governing funds transfers is regarded as mandatory or non-mandatory. It could be expected that disclaimer provisions directly affecting rights and obligations in respect of a negotiable instrument would not be enforced, whereas provisions affecting its collection or affecting electronic funds transfers, neither of which are covered by comprehensive statutes in most countries, might more likely be enforced. Where a statute has been enacted to protect consumer rights in electronic funds transfers, as in the United States, those rights can be modified to only a limited extent by contractual provisions.

63. The contractual disclaimers in contracts between the banks, between the banks and other entities in the funds transfer process, and between banks and their suppliers of computers and software have no formal effect on the relations between a bank and its customers. The customer as originating party may be able to present his claim to the entity whose actions or non-actions caused the loss without regard to disclaimer provisions in contracts to which he was not a party.

1. Technical failure of computer hardware or software

64. Many bank-customer contracts provide expressly or by implication that the bank is exonerated from liability for failure to carry out a funds transfer instruction in the proper manner if it can show technical failure of computer hardware or software. <sup>2/</sup> However, exoneration on these grounds should be carefully limited.

65. Although computers have become considerably more reliable than in the past, computer downtime is a regular occurrence. Banks which use computers for funds transfer and other purposes should have, and normally do have, sufficient redundancy of equipment available either on their own premises or at another firm (e.g. supplier of computer equipment, computer service bureau, another bank or other firm with compatible equipment) to operate during the period their own computers are out of service, although perhaps with some impairment of service. Therefore, computer downtime of an expectable level which should be compensated by redundant capacity should not be readily accepted as a justification for failure to carry out a funds transfer instruction within the otherwise applicable time-limits. On the other hand, some delay may have to be tolerated. Furthermore, computer failure beyond an expectable level, especially if associated with a general disaster or loss of electricity in the area where the bank is located or if associated with a major disaster to the bank, such as a fire, may justify exoneration of the bank.

66. Banks which do not have available sufficient redundant computer capacity should retain the capacity to receive and dispatch funds transfer instructions by other appropriate means.

67. There would be no particular legal difficulties in denying exoneration if a failure to carry out a funds transfer instruction was caused by defective software designed by personnel of the bank. The defective software would seem to be merely the means by which the bank failed in its obligations. The answer would be the same even if the source of the problem was defective or inappropriate software purchased from an outside supplier. In general, neither a bank nor any other business should as a matter of course be exempt from liability because equipment or software it uses in its business is inadequate for the task at hand.

2. Data communications service

68. Most inter-bank and many intra-bank electronic funds transfers must use the services of a data communications service. Traditionally, the

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<sup>2/</sup> The related problems of whether a bank should be exonerated for failure occurring while the instruction was transiting a telecommunications carrier which is itself immune from liability or while it was transiting a clearing-house or switch owned by or operated on behalf of a group of banks are treated in paragraphs 68-73 and 78-81.

telecommunications carriers have often been free of most liability for harm as a result of the delay or non-delivery of a message or for any change in the content of the message.

69. The argument in support of exemption from liability, that the telecommunications carrier could not foresee the consequences of a late or non-delivered message or of a change in its content because it did not know the content, has not always been satisfactory in respect of telegraphic or telex service where the customer handed a message to the carrier to be transmitted. In many cases the personnel of the carrier fully understand the significance of the message being sent. In any case, when the damages were unforeseeable, at most the types or amount of damages might have been limited, but this did not justify complete exemption from liability.

70. Computer-to-computer telecommunications over a common carrier would seem on their face to be a prime example of a case in which the carrier has no idea of the content of the message, especially when the message is encrypted. Once the integrated services digital networks (ISDN) are installed, the carrier may not even know whether it is carrying data, written messages, voice or pictures; all will be transmitted as a string of digits. However, at the same time, the carriers are no longer limiting themselves to the provision of a basic telecommunications service. As the line between computer services and telecommunications blurs, the carriers are offering sophisticated enhanced services while the purveyors of computers and office equipment are linking their equipment together into networks. In many cases a bank or other user can receive the same or equivalent service from either a value-added network (VAN) or from the telecommunications carrier. Among the services available in many countries which no longer are the exclusive province of the carrier is the ability to switch messages. Therefore, even if the carrier's exemption from liability remains a good public policy in respect of the basic external telecommunication service, the exemption from liability for that basic service should be restricted to those services not available from other sources which do not have the same exemption.

71. In many countries telecommunications services have been provided by the State, often through the same ministry as the postal service. As a result, the telecommunications service has benefited from the general exemption of the State from liability. Where necessary, the general exemption has been buttressed by a specific regulation protecting the telecommunications service. In countries where the telecommunications service has been provided by private companies, the regulatory structure within which these companies have operated has permitted the limitation of liability in the tariffs filed by them.

72. However, the former monopoly position of the telecommunication carriers may no longer be self-evident, and the question has been raised whether the exemption from liability should continue to be sustained. The deregulation of domestic carriers in the United States has already removed the former legal basis for exemption from liability in that country. It is not as yet clear whether the courts will still sustain clauses inserted in contracts by the carriers purporting to limit liability for their own negligence.

73. Questions of liability are a secondary issue within the broader debate over the future shape of public data communications services. However, as major private users, such as banks, establish private networks in which they control the facilities and take the risk that messages will be late, non-delivered or altered in transmission, the public telecommunications carriers will be under increasing pressure to take an equivalent risk.

3. Should an originating bank be exonerated from a delay or non-delivery of a funds transfer instruction after dispatch

74. Since it has not been possible to hold the telecommunications carrier responsible for losses arising out of its failure to deliver a message properly, parties using telecommunications have acted to allocate between themselves the resulting losses. In the context of funds transfers by telegraph or telex, it has been normal for banks to provide in their contracts with their customers that the bank was not responsible for such losses. As a result, the customers of the banks have borne the entire risk that the funds transfer message would not be received or that it would be received in an altered condition. The reasonableness of such a contract provision was based upon the inability of the bank to exercise any control over the message once it was handed over to the carrier for dispatch.

75. The reasonableness of the contractual provision is less obvious when the message is sent by the bank on its own telex machine directly to the telex machine at the receiving bank. The carrier furnishes only the circuit and the switch to connect the two machines. The bank sends the message, it can request an answer-back to verify that the proper connection has been made, and it can send a test-key to establish the identity of the sender and verify that key portions of the message have not been altered by error. When there is any doubt whether the message has been received correctly or the message is particularly important, at the cost of a second transmission the sending bank can request the receiving bank to repeat the message in full.

76. All of the possibilities available to verify the receipt and the correct content of a funds transfer instruction sent by telex are also available to the sending bank in a computer-to-computer message. Additional safeguards are available in closed-user networks such as S.W.I.F.T. where all transactions entering the system are validated to ensure that they originate from an authorized terminal, that they meet mandatory format and message-text standards and that they are addressed to a valid S.W.I.F.T. recipient. The messages sent by each bank are assigned an output sequential number and the messages received by each bank are assigned an input sequential number, reducing to a minimum the possibility that a message will be lost. Store-and-forward capability reduces the likelihood that a message cannot be delivered, and undeliverable message reports assure the sending bank that any messages which could not be delivered were accounted for. Alternative routings are provided in case one of the switching centers is out of commission, and member banks are instructed on how to access the S.W.I.F.T. network over the public switched network in case of failure of the regional processor.

77. Not all of the safety measures taken in a closed-user network such as S.W.I.F.T. are available to a bank operating over a public switched network. Nevertheless, procedures can be followed which reduce to a minimum the possibility that a failure in the communication net will go undetected and uncorrected by the sending bank. The availability of these techniques to avoid errors arising during transmission of the electronic funds transfer instruction raises a serious question as to whether banks should be free to avoid liability for such errors, even if they cannot seek reimbursement from the carrier.

F. Malfunctioning in an electronic clearing-house or in a switch owned by or operated for a group of banks: loss-sharing by participating banks

78. A clearing-house is an integral part of the funds transfer system. It may be operated by the central bank, another large bank or the banking association. Alternatively, the clearing-house may be organized by a group of

banks. In some countries on-line electronic funds transfer networks have been established in which the message switch without a net settlement function is operated for the participating banks by a company which is neither a bank, a clearing-house nor a telecommunications carrier. The company may be a computer service bureau, value-added network or the like.

79. In many cases the clearing-house or switch provides in its regulations or by contract with the participating banks that it has no liability or only limited liability for errors or fraud which occur at the clearing-house. If the clearing-house is operated by the central bank, the liability of the clearing-house or central bank may be limited or excluded by statute, by regulation or by general doctrines of law applicable to agencies or instrumentalities of the State. However, since the clearing-house is acting for the banks, exemption from liability may not pose the same level of concern as it does in respect of telecommunications carriers.

80. Nevertheless, it is significant that a clearing-house is an integral part of the funds transfer system. It cannot be argued that the banking system as a whole should not be held responsible to its customers for the failures of a clearing-house, as it could in the case of a telecommunications carrier. It seems evident that the originating party should in principle have an effective means of pursuing any claim arising out of such a failure.

81. At the same time, the collective nature of a clearing-house or switch for banking transactions may call for a sharing of the resulting losses among the participating banks. There are a number of ways in which a sharing of losses can be arranged, including insurance, constituting a compensation fund and levy upon all of the other participating banks. The losses which may be attributed to a clearing-house or a switch, and therefore subject to sharing, might include losses suffered by a bank as a result of following the procedures outlined for transfers through the clearing-house or switch. In particular, it may be appropriate to share losses which are attributable to a weakness in the security system, including the procedures and the algorithm for enciphering the funds transfer instructions.

#### G. Improper handling of transfer instructions

##### 1. Wrongful dishonour of instructions by a transferor bank and damages to the transferor

82. The transferor bank is responsible to the transferor for damages suffered as a result of the bank's wrongful dishonour of a proper funds transfer instruction. A bank which dishonours a credit transfer instruction should inform the transferor promptly of that fact and the reasons for so doing. The transferor's claim for any damages resulting from improper dishonour would be evaluated and settled as would any other claim arising out of delay in effecting a funds transfer. Wrongful dishonour of a debit transfer instruction may have more serious consequences. When the transferee of a debit transfer instruction is notified that the instruction has been dishonoured, whether or not a reason is given for the dishonour, doubts as to the solvency and the integrity of the transferor naturally arise. If the dishonour was wrongful, the transferor bank (e.g. drawee of a cheque or bill of exchange) should also be responsible for the damages which were caused to the transferor in that connection.

2. Inaction on debit instructions by the transferor bank within the required time-limits

(a) General rules for negotiable instruments applicable

83. If the transferor bank does not act within the required time to honour or dishonour a debit transfer instruction or to give notice of its dishonour, the transferee has a claim against the transferor bank.

84. Except in France and other countries which follow the doctrine that a negotiable instrument transfers to the holder ownership of the fund (provision), i.e. the right in the account up to the amount of the instrument, the standard doctrine in respect of cheques and bills of exchange is that the instrument is not such an assignment and that the transferee (payee or other holder) has no right on the instrument against the transferor bank (drawee) until the instrument has been honoured. However, once the instrument has been presented to the transferor bank for honour, the bank may have a duty to the transferee or to the transferee bank to act within certain time-limits either to honour or to dishonour the instrument. If the instrument is dishonoured, the transferor bank owes a duty to the transferee to give a prompt notice of the dishonour. The party to whom the notice of the dishonour may or must be given varies in different countries, and in some countries the notice must be given by formal protest.

85. These rules from the law governing paper-based negotiable instruments and their collection should be generally applicable to debit transfers in electronic form. However, since these rules usually appear in statutes governing negotiable instruments or in the law or agreements governing their collection, it may be necessary to extend them to electronic debit transfers.

(b) Delay in honouring debit transfer instruction

86. If the transferor bank honours the debit transfer instruction, but does so later than it should have under the applicable rules, the consequences of its delay depend on the means by which settlement was made. If the transferor bank provisionally settled for the instruction when it was presented, for example, by net settlement through a clearing-house, the delay in honouring would have no practical consequences. If settlement for the instruction was delayed until the instruction was honoured, the presenting bank would be denied use of its funds for the period of time of the delay. The transferee in turn may not have been given credit for the transfer until the transferee bank received credit. The delay may, therefore, lay the basis for a claim of damages such as for loss of interest or, in an international transfer, for exchange losses.

(c) Delay in dishonouring debit transfer instruction

87. The delay in dishonouring a debit transfer instruction by the transferor bank sometimes arises because the transferor is on the edge of insolvency. In some cases, when there are not sufficient funds in the transferor's account to honour the instruction, the transferor bank may wish to give the transferor time to replenish the account so as to be able to cover the outstanding instruction. In other cases the bank may, whenever possible, wish time to decide whether to set off against the transferor's account other obligations due it from the transferor before it honours the funds transfer instruction. In either case, the instruction may subsequently be dishonoured.

88. In such a case, the debit transfer instruction may be deemed to be honoured or the transferee may be allowed to recover for the delay. However, the transferee may find it difficult to prove the amount of its loss in these circumstances. It would be possible to overcome this problem by placing on the transferor bank, which was in delay, the burden of proof of showing that the transferee had suffered no loss from the delay. Another way to achieve the same result would be to permit the transferee to recover the face amount of the instruction from the transferor bank and to assign to the bank the transferee's rights in the insolvency proceedings of the transferor. 3/

#### H. Recoverable losses

89. An improperly executed transfer can lead to a loss of part or all of the principal amount transferred, as well as to consequential losses. In the context of a funds transfer, consequential losses can arise out of loss of interest, changes in exchange rates and indirect losses arising out of lost business opportunities and the like.

##### 1. Loss of principal

90. When an electronic funds transfer is credited to the wrong account, credited to the correct account for an excessive amount or processed twice, the transferor or the transferor bank risks losing the principal amount of the incorrect transfer. In most cases, the error can be rectified by a debit to the account of the incorrect transferee, with a corresponding credit to the account of either the transferor (in which case the transfer has been reversed) or to the correct transferee (in which case the transfer has been made correctly). 4/

91. If the incorrect transferee withdraws and uses the funds, whether or not he knew of the error, and subsequently is unable to restore the amount used, the loss of principal must be allocated between the transferor and the bank or banks at which the error occurred. Similarly, if a transfer has been made fraudulently, the resulting loss of principal must be allocated between the transferor, whose account has been debited, and the bank or banks where the fraud may have occurred. In cases of loss of principal there is seldom any argument over the amount of loss which is to be allocated. The argument goes, rather, to determine which party should bear the burden of the loss, a subject covered by the general rules on liability discussed above.

##### 2. Loss of interest

92. The one form of consequential damages which has generally been admitted in the law has been interest when payment of a sum due was late. Interest claims for late funds transfers by commercial customers of banks are now a frequent occurrence. In part this is because interest rates are high and the amount of interest which can be earned in even one day is measurable and may be worth claiming. In part it is because of the funds transfer possibilities

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3/ The periods of time within which the transferor bank should honour a debit transfer instruction or should give a notice of the dishonour are discussed in chapter II, "Agreements to transfer funds and funds transfer instructions", paragraphs 77 and 78.

4/ The right of the bank to debit the incorrect transferee's account without his prior consent is discussed in chapter IV, "Finality of funds transfer".

made available to corporate treasurers by the new electronic funds transfer techniques. When commercial payments are made by slow, paper-based credit transfer methods, a transferor cannot withhold his funds transfer instructions to the last moment before payment is due. It is understood that the time between the debit to the transferor's account and the credit to the transferee's account might be sizeable and somewhat unpredictable. However, now that some banks advertise their ability to transfer funds instantaneously, many commercial customers attempt to retain their cash until the last possible moment before issuing funds transfer instructions. Cash management techniques have made public and corporate treasurers throughout the world conscious of the interest-earning potential of their cash balances.

93. Sometimes it is the transferee rather than the transferor who should have the right to claim interest. In the typical electronic credit transfer, the transferor's account is debited before or at the time the funds transfer is sent. If the transfer is delayed, it is the transferee who is denied the use of the funds, not the transferor. Nevertheless, the transferee is currently understood to have no right against any bank, except perhaps his own, to claim interest because of delay in completing the funds transfer. <sup>5/</sup> If indeed the payment is late under the underlying agreement, the transferee's claim for interest because of late payment would be against the transferor. The transferor in turn may have a right of reimbursement from his bank or from the bank at fault. The problem, however, is how to determine the exact period of time within which a funds transfer should take place. There are few agreed rules on the matter.

94. With regard to adjusting interest charges between banks, there are several sets of rules governing the allocation of interest when the delay in transfer of the funds was due to the fault of one party or the other. Many of the rules governing the reimbursement of lost interest allow recovery only if the claim is for more than a specified amount. An interesting feature of the most prominent set of rules in use in the United States for compensation between banks when the claim is the result of an inter-bank funds transfer error is that the bank which receives money by mistake from another bank is required to pay to the bank which sent the money by mistake interest at the prevailing rate, less a service charge to the receiving bank. The rationale which lies behind this provision is that a bank which receives money will have the benefit of its use.

95. The existing rules, however, are limited in their application to the bilateral relation between any two banks or, in the case of some interbank telecommunications systems or clearing-houses, such as S.W.I.F.T. or CHIPS, to some losses caused by that system. They specifically do not apply to losses caused by or to third parties.

### 3. Exchange loss

96. With exchange rates fluctuating daily, customer claims for reimbursement of exchange losses arising out of late payments have become a more frequent occurrence. By the nature of the loss, claims for losses occasioned by an

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<sup>5/</sup> By analogy to the law governing the carriage of goods, where the consignee of the goods has a right to claim for the damage even though the contracting parties are the shipper and the carrier, consideration might be given to providing the transferee a convenient means of claiming lost interest in appropriate cases.

adverse movement of the exchange rates during the period of a late transfer will normally be made only by transferors of large sums. However, in the case of a devaluation by a significant percentage, customer claims arising out of international consumer transactions or consumer transfers should also be expected. The difficulties of establishing the appropriate period of time within which the transfer should have been made apply as much to losses occasioned by adverse movements of exchange rates as to loss of interest.

97. However, a claim for loss arising out of an adverse movement of the exchange rate will not normally be presented as such. Instead, it will be asserted that the date for conversion from one currency to the other should be the date on which the conversion would have been made if the transfer had taken place properly. Giving the customer the choice between the exchange rate on the date the conversion should have taken place and the exchange rate on the date it did take place is the policy expressed in articles 71 and 72 of the draft Convention on International Bills of Exchange and International Promissory Notes, as revised by the United Nations Commission on International Trade Law at its nineteenth session (1986). These articles provide that in case of dishonour of an instrument by non-payment, "the amount to be paid in local currency is to be calculated, at the option of the holder, according to the rate of exchange ruling on the day of presentment or on the date of the actual payment". This option is given to the holder "in order to protect him against any loss he may suffer because of speculation by the party liable". (A/CN.9/213, article 71, commentary, para. 8.)

#### 4. Indirect damages

98. The least frequent, but potentially the most serious, losses are the indirect damages suffered when a contract is lost, a penalty is incurred or a ship is withdrawn from a charter-party because a required payment was improperly handled. When these events occur, the damages can easily amount to many times the size of the transfer. In most electronic funds credit transfers, the party who usually suffers the harm is the transferor who did not fulfil a contractual obligation to pay on a certain date or who missed a business opportunity which required having funds available at a particular place at a particular time. On occasion the harm may be suffered by the transferee who does not have the funds available when needed and who cannot find alternative funds.

99. In some systems the bank is held not to be liable for the indirect damages which it could not foresee at the time it received the funds transfer instruction from the transferor unless the bank deliberately delayed the funds transfer or was grossly negligent. This rule is a direct application of general principles of contract law. However, the limitation of indirect damages to those which are foreseeable is not completely satisfactory in the context of electronic funds transfers. It is particularly difficult for a transferor to give the required information to the proper parties. Even if the transferor bank may have had the requisite information to foresee the eventual indirect damages, it would often be the case that the information was not passed on to the intermediary bank or transferee bank at which the negligent actions occurred. Neither the S.W.I.F.T. format for a customer transfer nor the ISO draft international standard telex format for a customer transfer (DIS 7746) provides a field for informing the intermediary bank of the possible consequences of a failure to credit the transferee's account by the pay date, although this information could always be added to the instruction by the sending bank. In one recent frequently discussed case, the intermediary bank was negligent in allowing its telex machine to run out of paper without cutting off the machine. It may be of interest that the same

negligence which caused the funds transfer instruction to fail precluded the possibility that the intermediary bank could receive the information which might have made it possible for it to foresee the eventual damages.

100. It is often pointed out that, if banks were to be routinely held liable for indirect damages, the fee charged for funds transfers would need to increase several-fold. However, transferors making particularly important transfers might be willing to pay a premium for guaranteed performance by the bank. Therefore, consideration should be given to a new "guaranteed performance" message category in addition to the existing categories. Failure to perform as guaranteed would subject the bank to indirect damages suffered as a result.

Chapter IV

FINALITY OF FUNDS TRANSFER

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Introductory Note

1. Finality of a funds transfer is often considered to be one of the important unifying concepts in the law of funds transfers. In many legal systems, important legal consequences are considered to occur at the time when the funds transfer becomes final. For this reason, concern has been expressed in banking and legal circles as to whether the time when an electronic funds transfer becomes final is the same as or different from the time when a paper-based funds transfer becomes final. Furthermore, discussions of international funds transfers have often suggested the importance of finding a common understanding as to when an electronic funds transfer becomes final.

2. A comparison of the concept of finality in a number of legal systems shows that the concept is imprecise. Although many legal systems refer to the finality of a funds transfer as occurring at a single point of time, there are several points of time when various aspects of the funds transfer may become final. A funds transfer often becomes final as to one or more of the banks implementing it at a different time from that when it becomes final as to the transferor and transferee.

3. This chapter is drafted on the basis that each of the legal consequences often associated with finality must be treated as a separate problem and the time at which that legal consequence occurs is determined by considerations relevant to it. Furthermore, it may be suggested that in the preparation of new rules to govern electronic funds transfers, and especially rules governing the relations between banks in domestic or international funds transfers, a similar approach would be desirable. Therefore, when a funds transfer is said to be "final" in this chapter, it should be understood to mean no more than that a certain number of legal consequences may have occurred in respect of that funds transfer, but that they do not necessarily constitute all the legal consequences which may occur in any particular legal system.

A. When funds transfers become final

4. The time when a funds transfer is final, or when certain legal consequences occur, is normally associated with a specific action of a bank. There is a long list of actions by banks which are considered or which might be considered to make a funds transfer final in various countries. In the following paragraphs are discussed some of the more important of those actions. Other actions are usually variations of those discussed.

1. Credit transfers

(a) Debit to the account of the transferor

5. In one country (France) it has been held that one-bank and two-bank credit transfers are final, at least to the extent that the funds transfer instruction can no longer be withdrawn by the transferor, when the transferor's account is debited. It has been suggested that the funds transfer should also be considered final where insolvency proceedings are subsequently commenced against the transferor. The doctrinal explanation for legal finality of a credit transfer upon debit of the transferor's account is that the transferor thereby loses ownership of the funds. To the extent this rule is generalized to other consequences of finality, it leads to the result that in a one-bank transfer at a bank with multiple branches or in a two-bank transfer, the funds transfer could become final several days before the transferee's account was credited in fact.

6. However, no country is known to apply this reasoning to three-bank transfers. A reason often given in France for the different treatment is that in a three-bank transfer the funds are considered to be in the hands of an agent of the transferor until the account of the transferee bank has been credited by the intermediary bank and, until that moment, the transferor can revoke the agency.

7. In many other banking systems it is not acceptable for funds transfers to become legally final for any purpose before the transferee bank has had the opportunity to exercise its judgment as to the acceptability of the settlement offered. In some countries the failure of a bank to settle for a domestic funds transfer may be a distinct possibility, and international funds transfers by their very nature raise the possibility that foreign transferor banks may be unable to fulfil their obligations. However, the settlement question need not affect the question of finality where the structure of the banking system precludes the possibility that transferee banks will not receive settlement, and particularly where all banks are owned by the State.

(b) Credit to the account of the transferee bank

8. If the credit transfer between the banks themselves is final when the transferee bank's account has been credited by the transferor bank or intermediary bank or has been credited at or through a clearing-house, and if the credit can no longer be reversed either by a withdrawal of the funds transfer instruction or by the sending bank's failure to settle, then the funds transfer may be considered to be legally final as to the transferor and transferee at the same time, i.e. when the transferee bank's account has been credited. In such a case the subsequent crediting of the transferee's account would have no effect on finality of the funds transfer. A somewhat similar result has often been reached in respect of paper-based transfers where the sending bank settled with the transferee bank by enclosing with the funds transfer instruction its own irrevocable commitment in such a form as a banker's cheque or banker's payment.

(c) Notice of credit to the account of the transferee bank

9. The above considerations apply if the credit transfer between the banks is final when notice of the credit to the transferee bank's account has been given to it and, thus, the funds transfer would be final as to the transferor and transferee when the notice is given to the transferee bank.

(d) Transferee bank decides to accept credit transfer

10. In many common law countries a credit transfer may become final at the moment the transferee bank decides to accept the credit transfer. This decision can be manifested by any act which demonstrates the transferee bank's intention and will be based upon its assessment of the reliability of the settlement offered in support of the credit balance it is asked to create.

11. Historically, this rule had the advantage that the funds transfer became final at the earliest possible moment after the transferee bank had received the credit transfer instruction and had had the opportunity to perform the necessary verifications. As a result it may have been the earliest point of time acceptable for finality of a funds transfer in which the transferee bank received the funds transfer instruction from a foreign country. The rule has the disadvantage that in case of dispute it calls for a judicial determination whether a particular employee of the bank had made a subjective judgment by a particular point of time, a determination which can be made only by the review

of specific facts in each case. The rule, which was first formulated in respect of the honour of bills of exchange and cheques in an earlier era, may be less applicable to the finality of funds transfers in a period of batch-processing or on-line telecommunications.

(e) Entry of credit to transferee's account

12. In routine batch-processed credit transfers, no conscious decision to honour is made by the transferee bank. The first objective act which can be relied upon to occur is the credit entry to the transferee's account. It is that objective act which is considered to make the funds transfer final in many legal systems.

13. However, although the entering of the credit to the transferee's account is an objective act, the point of time at which it occurs is often not determinable. When account records are kept in visual form, the order in which debits and credits are entered is discernible, even though the exact time at which they are entered may not later be determinable. When individual funds transfer instructions are received over computer-to-computer telecommunications and are released for posting after verification, the time of posting can be stored in the record of the transaction. However, individual paper-based and electronic funds transfer instructions processed in batch-mode are usually not time-stamped. Although time-stamping of the individual instruction is technically feasible, it may be questioned whether it would be a desirable requirement simply for the purposes of determining when the funds transfer became final. The same effective result might be achieved by considering the funds transfer final when the batch is introduced into the machine for processing or when it is taken out of the machine after processing, actions which are likely to be kept in a data-processing log.

14. Overnight posting with an entry date of the following day may raise a question as to whether the posting of a credit outside normal working hours legally takes effect immediately or only at the opening of business on the next banking day. If this is an issue in any legal system, it will become more acute as banking moves towards a twenty-four-hour day, not only in respect of international banking but also in respect of consumer banking through the full array of customer-activated terminals.

15. Posting with an interest date one or more days after the entry date raises a different issue. In many civil law countries once the credit is posted the funds transfer is final and the transferee has an unqualified right to withdraw the funds. However, he does not earn interest on the credit until the interest date and, if the funds are withdrawn before the interest date, he would pay a fee equivalent to the prevailing rate of interest on loans from the date of withdrawal to the interest date. Therefore, in these countries, transferee banks which receive a credit transfer before the pay date, i.e. the date specified by the transferor on which the funds are to be freely available to the transferee, may enter the credit immediately with an interest date which is the same as the pay date.

16. In common law countries a different result is likely. Where transfers show a future pay date, it is common practice to delay entry of the credit to the transferee's account until the day indicated, although the transaction may be entered into the transferee bank's computer at an earlier time for entry to the account on the pay date. Therefore, if finality is dependent upon entry of the credit to the transferee's account, the funds transfer would not become final until the pay date and the funds would not be available until then.

(f) Entry of credit subject to reversal

17. In some countries it is an acceptable banking procedure for banks to enter debits and credits to the accounts of their customers subject to reversal for a period of time. Although the procedure is followed in several countries, its most well-known use in respect of international funds transfers involves credit transfers made through CHIPS in the United States with end-of-the-day net settlement. Since the CHIPS rules anticipate the possibility that one or more banks may fail to settle for their net debit balance, many banks participating in CHIPS provisionally credit their customers' accounts with incoming credit transfers as those transfers are received over the CHIPS system. However, the credits are subject to reversal if there should be a failure to settle. The provisional credits and the credit transfers become irrevocable when settlement is final. In other types of credit transfers where reversal may be allowed for a wider range of reasons, a provisional credit to the transferee's account may become irreversible when the time has passed during which the system allows reversal of the credit. Although irreversibility and finality are not synonymous terms, in these cases the funds transfer is usually considered to become final when the credit entry becomes irreversible.

(g) Notice to the transferee

18. In a number of legal systems a credit transfer is deemed to be final when a notice of the credit is given to the transferee. This is seen as the moment when the information that the transferee's account has been credited passes out of the control of the bank.

19. The rule is based on a practice of sending a notice of the credit at the end of the day or on the following day for every credit entered to a customer's account. However, if customers can enquire by on-line customer-activated terminals as to their account balance and recent account activity, application of this rule might lead to the conclusion that the credit was final as soon as it was posted to the account. In this case, there would no longer be a need to send a notice of the credit to the transferee for the purpose of making the funds transfer final.

(h) Payment in cash

20. When the transferee bank is to hand over cash to the transferee at such a place as his domicile or place of business, as is the practice in many consumer-oriented credit transfer networks and especially those operated by postal services, the funds transfer may be final upon the handing over of the cash. Therefore, it would seem that the funds transfer would not be final if the transferee refused to take the cash. The same result may occur when the transferee bank is to hold the funds for delivery in cash or equivalent to the transferee upon identification.

2. Debit transfers

21. Considering that debit transfers become final when the transferor bank takes the relevant action, the same general set of possible points of time at which a funds transfer becomes final exists in respect of debit transfers as exists in respect of credit transfers. That is, the funds transfer may become final when the transferor bank decides to honour the debit transfer instruction, when the debit to the transferor's account is entered, when a notice of the debit is given or when, subsequent to the posting of the debit to the account, the time allowed for reversal of the debit has passed.

22. There is, however, a major qualification to the general equivalence between the points of time when a debit transfer and a credit transfer may become final. A debit transfer is not final as a result of the crediting of the transferee's account. On the contrary, if the transferee's account is credited when the debit transfer instruction is first processed by the transferee bank, e.g. when a cheque is deposited, that credit will normally be provisional subject to reversal if the instruction is dishonoured. This result occurs even in legal systems which would hesitate to permit a transferee bank to reverse a credit to the account of a transferee in a credit transfer.

B. Relationship between finality of transfer between customers and finality of transfer between banks

23. A transfer of funds for the account of customers at different banks is implemented by a transfer of funds between the banks. Where settlement for a debit transfer is by means of provisional debits and credits, the inter-bank funds transfer is final when the funds transfer between the two customers is final. Where settlement is by means of a separate funds transfer from the transferor bank, the finality of that settlement transfer may be divorced from the finality of the customer transfer. However, the legal system may provide that the customer transfer is not final and may be reversed if the settlement does not become final.

24. The finality of the credit transfer between the banks, as distinguished from the transfer between the customers, creates significant theoretical and practical difficulties. Although the theoretical difficulties are the same for credit transfers handled between banks in batches (usually small in value per instruction) and credit transfers handled between banks individually (often large in value per instruction), the practical difficulties exist almost exclusively with transfers handled individually.

25. Credit transfers handled individually, and especially large-value international transfers, may require the involvement of as many as six or seven banks. These banks may all be in a row, as described in chapter I, paragraph 28, or some of them may be reimbursing banks. In a credit transfer each segment takes on most of the characteristics of a separate funds transfer between the pair of banks involved in that segment. In ISO/DIS 7982 this segment is referred to as a "funds transfer transaction". Each funds transfer transaction requires a separate credit transfer instruction and a means of settlement. However, the inter-bank rules governing the finality of the funds transfer transaction between the banks do not purport to be the rules governing the funds transfer as a whole of which the transaction is a segment.

26. The inter-bank rules governing the funds transfer transaction may be found in a bilateral agreement between the two banks, but they are often found in general agreements among banks, or in clearing-house or other network rules. These rules apply without regard to whether the sending bank is acting on its own behalf in making a payment (e.g. making a payment in connection with a foreign exchange transaction for its own account) or to implement the instruction of a non-bank customer of the sending bank, or of one of its correspondent banks. Similarly, the rules apply whether the credit is to be applied by the receiving bank to an obligation of the sending bank or of an earlier bank in the chain or whether the credit is to be entered to the account of a non-bank customer of the receiving bank or to the account of one of its correspondent banks, perhaps in turn for credit to the account of one of that bank's customers. The original source of a credit transfer, the ultimate transferee and the business purpose of the transfer affect the content of

certain data fields in the funds transfer instruction; they do not, however, affect procedures for the funds transfer transaction, and especially the rules governing its finality.

27. As noted in paragraphs 8 and 9, the finality of the credit transfer between the transferor and transferee could depend on the finality of the funds transfer transaction between the banks. However, in many legal systems the funds transfer would not be final between the transferor and transferee until the appropriate act had been taken in respect of the transferee, e.g. sending a notice of the credit to the transferee. Thus, there might be a period of time when the funds transfer transaction was final between the two banks but the funds transfer was not final between the transferor and transferee. In other legal systems the funds transfer transaction between the two banks might not be final until the funds transfer between the transferor and transferee was final under the appropriate rule.

28. When there are three or more banks, the dichotomy between the funds transfer from transferor to transferee and the funds transfer transaction between each pair of banks becomes both clearer and more important. A three-or-more-bank large-value funds transfer often passes through an electronic clearing-house which has clearly defined rules as to the time when the transfer is final as regards the sending and receiving banks. When the sending and receiving banks are both intermediary banks in regard to the customer transfer, that intermediary segment of the funds transfer may be final even though the funds transfer must pass through one or more additional banks before it arrives at the transferee bank.

29. The finality of a funds transfer transaction between intermediary banks could be expected to terminate the right of the sending bank in that transaction to withdraw its funds transfer instruction. Therefore, once that funds transfer transaction had been completed, the sending bank's subsequent receipt of a notice that the transferor had withdrawn his funds transfer instruction would be too late to affect the transaction. For the same reason, notice of the death of the transferor, commencement of insolvency proceedings against him or attachment of his account would also be too late. This suggests that the receiving bank in the funds transfer transaction might also have no obligation to pass to its credit party any such notice it may have received. If this is the case, the legal effect of these various notices in respect of the funds transfer as a whole might also be terminated by the finality of an intermediate funds transfer transaction. In order to overcome this result, the transferor bank or sending bank might be required to send the notice directly to the transferee bank.

30. The early finality of a funds transfer transaction has the further effect of protecting the funds transfer process from the failure of an intermediary bank to settle for the transaction. This matter is discussed below in paragraphs 97 to 99 and in the annex.

### C. Changes in technology affecting finality

31. Even before the advent of modern electronic funds transfer techniques, changes in the technology used to process paper-based funds transfer instructions had affected the rules governing the finality of funds transfers.

#### 1. Individual processing of paper-based instructions

32. The traditional rules governing finality were developed in the context of individual processing of paper-based funds transfer instructions. The rules

tended to be based on four factual assumptions which were more or less common to the majority of banking systems. These factual assumptions were that:

(a) Account records were kept in tangible and visible form at the bank or branch at which the account was maintained. For purposes of the rules governing finality, as well as the rules governing the period of time within which the bank was required to act, the relevant actions took place at that branch;

(b) Each funds transfer instruction was processed both at the originating bank and at the destination bank as an individual item and not as part of a batch;

(c) The flow of work caused instructions to be verified and to be posted in the order they arrived at the branch and to be processed in a standard way culminating in posting the accounts and sending of notices, if any. At any given moment it was possible to know what verifications or decisions had been made with respect to a given funds transfer instruction, and by referring to the account record it was always possible to know the order in which the instructions had been received and honoured.

(d) The volume of transactions was small enough to permit taking all the steps necessary to honour or dishonour the debit and credit transfer instructions on the day they were received. Clearing-house rules often required any return items, e.g. dishonoured debit transfer instructions, to be returned on the same day, and rules on finality often permitted the reversal of entries on that same day, but not later. A cut-off time was sometimes established for instructions received too late in the day to permit processing on that same day. In such cases instructions received after the cut-off time could be treated as having been received the next day.

## 2. Batch-processing

33. The use of batch-processing techniques changes a number of the factual assumptions on which the traditional rules on finality were often based:

(a) In order to gain the operational efficiencies possible in batch-processing large volumes of transactions, centralized data processing facilities have been created. Account records are no longer kept at the individual branches of a bank. Performance of the relevant acts leading to honour or dishonour is often divided between the data processing centre and the branches;

(b) In order to create homogeneous batches with the necessary characteristics, instructions may be collected and transported to the data processing facility periodically, in some cases only at the end of the day. Funds transfer instructions which are to be executed on a fixed day may be sent in advance of the entry date to an automatic clearing-house or transferee bank for advance processing. There is no longer a fixed relationship between the point of time when a specific funds transfer instruction is received by the bank, when the crucial decisions are explicitly or implicitly made to honour it, when the entries in the account records are made and when the funds transfer becomes effective. Rules on finality which were based upon that fixed relationship become difficult to apply in practice;

(c) Batch-processing is designed for the inexpensive processing of large volumes of transactions rather than for their expeditious processing. Funds transfers which are intended to be executed on a particular day may be

processed in advance by the transferor bank, automatic clearing-house or transferee bank, sometimes many days prior to the effective date. A funds transfer instruction received during the day for current action may be processed that night. Only on the following day would the banking officials responsible for the customer accounts see the print-outs showing the record of transactions and new account balances. Rules on completion which anticipate all steps being taken on the day of receipt may, therefore, be difficult to apply with batch-processing.

### 3. On-line data processing

34. The introduction of on-line data processing restores some aspects of the previous routines whereby instructions were processed individually. When a bank processes fund transfers on-line, its computer verifies the authenticity of the instruction and the status of the affected accounts and concurrently enters debits and credits, whether provisional or not. As a result of on-line data processing:

(a) The on-line entry of debits and credits to accounts from multiple branches, as well as from off-premise locations, frees the rules on finality (and of time-limits) from the previous constraints linked to the physical location of the account record;

(b) Individual funds transfers are processed within the bank and the entries are made as individual items without waiting for the creation of batches with appropriate characteristics or for the physical transportation of the instructions to the data processing centre. The account records indicate permanently the order in which the on-line transactions took place, including the exact time if that is desired.

35. Where an on-line data processing system provides for the entry of the debits and credits directly into the relevant accounts, the factual situation in respect of the rules on finality would seem to be the same as if the entries had been made in the traditional fashion on paper account records, i.e. the determination as to whether the funds transfer was final for any purpose would depend on whether under the relevant rule the funds transfer was final on entry of the debit or credit, or at a different time.

36. In other cases on-line data processing systems enter debits and credits into provisional accounts. These accounts may subsequently be consolidated with the regular accounts when inter-bank settlement has been completed or at any other time deemed appropriate by the bank. In the meantime, the computer can be programmed to show the provisional account rather than the regular account in case of enquiry about account balance or account activity, so that the existence of provisional accounts may not be readily apparent even to many employees of the bank. However, until the debits and credits are consolidated into the regular accounts, the funds transfer may not be final under rules which are based on the time of entry.

37. A mixture of on-line and batch-processed entries makes it difficult to establish priorities between different funds transfers on the basis of the time of entry of the debits or credits. It may be further noted that funds transfer instructions which are processed on-line by the originating bank may nevertheless be transmitted off-line in batches to another bank or to an automatic clearing-house. In this case the receiving bank would probably process the instructions in batch-mode.

#### 4. Customer-activated terminals

38. Off-line customer-activated terminals store the transaction data on computer memory devices for later batch-processing. In most cases the normal rules on finality applicable to batch-processed funds transfer instructions would be appropriate. However, the dispensing of cash from a cash dispenser, whether on-line or off-line, would probably be considered to be final at the moment the cash was withdrawn. In this case the debit to the account of the customer would constitute only an implementing act of record-keeping. This would be in accord with the rules governing time of finality of cheques or credit transfer instructions which are honoured in cash.

39. Although on-line point-of-sale systems permit the immediate entry of the credit to the merchant's (transferee's) account and debit to the purchaser's (transferor's) account, some point-of-sale systems which permit the on-line verification of the authenticity of the funds transfer instruction and the transferor's account balance delay debiting the transferor's account for one or more days to allow the transferor the same delay in debit which would previously have occurred if he had given the merchant a cheque. The credit to the merchant may also be delayed for a period of time, which may be the same as for the debit to the transferor. Thus, in most legal systems application of the usual rules would lead to the conclusion that the funds transfer was not final until the relevant entry date.

40. If only the debit was delayed, under certain rules on finality the funds transfer would be considered to be final if it was a credit transfer but not if it was a debit transfer. The opposite result would occur if only the credit was delayed. Determination as to whether the funds transfer was a debit transfer or a credit transfer might in turn depend on whether the funds transfer instruction from the point-of-sale terminal passed first through the purchaser's bank (credit transfer) or through the merchant's bank (debit transfer). However, if the funds transfer instruction went to a switch which simultaneously routed the credit to the merchant's bank and the debit to the purchaser's bank, the funds transfer could no longer be classified as either a debit transfer or a credit transfer, and this analytical basis for determining finality would not be available.

#### 5. Guarantee of honour by transferor bank

41. Credit card plans, guaranteed cheque plans such as Eurocheque and electronic point-of-sale systems with delayed debit normally provide that, if the required procedures have been followed, the transferee (merchant) will be credited for the amount of the debit transfer instruction even though the instruction may turn out to be fraudulent. These procedures include a requirement that the transferor properly identify himself and may include a requirement that the transferee (merchant) receive an authorization from the transferor bank (or from the relevant network) before proceeding with the transaction.

42. Guarantee of honour creates a legal hybrid in the law of funds transfers. A direct result of the guarantee is that the transferor bank is irrevocably obligated under the contractual arrangements to the transferee and to the transferee bank to honour the debit transfer instruction when it is presented. A necessary additional element in the contractual arrangements is that the transferor relinquishes any right he would otherwise have under the applicable law of funds transfers to withdraw the debit transfer instruction. Where consumer legislation protects the right of the transferor to withdraw the debit transfer instruction for some period of time, thereby for that period of time

precluding the transferor bank from irrevocably debiting his account in respect of that instruction, the transferor bank's guarantee to the transferee and transferee bank must necessarily be similarly limited.

43. However, where the transferor bank's guarantee is complete and irrevocable, the legal situation could be considered to be the equivalent of that following acceptance of a bill of exchange (or certification of a cheque, in those countries where certification is permitted). Furthermore, the legal situation would be similar to that found in many legal systems where a funds transfer is final at the time when the transferor bank has irrevocably committed itself to settling with the transferee bank by, for example, issuing to the transferee bank its own irrevocable funds transfer instruction such as a banker's cheque or banker's payment. If this comparison is made, other consequences associated with finality may be thought to occur arising out of a guarantee of honour, such as that the amount in the transferor's account subject to attachment would be reduced by the amount of the guaranteed transfer, even though the account had not yet been debited.

#### 6. Microcircuit cards

44. Since microcircuit cards are not yet in general use for funds transfers, the effect of this new technology on finality rules must be purely speculative. However, it would seem that if the cards are used merely to give a more secure means of identifying the transferor than is currently available, the law governing funds transfers, including the finality rules, will not be directly affected. This would be true whether the funds transfer was on-line or off-line. Similarly, if an off-line system is used and the card is programmed to authorize a given amount of purchases (undoubtedly with a guarantee of honour by the transferor bank) but the debit to the account of the transferor, and the credit to the account of the transferee, are entered only after the purchase has been made, the finality rules would seem to be those otherwise applicable where there is guarantee of honour.

45. A third funds transfer procedure using microcircuit cards raises more difficult questions in regard to the appropriate finality rules. Under this procedure the card is charged with a certain value by the transferor bank. The transferor may remit cash to the transferor bank, but usually his account is debited for that amount at the time when the card is charged. As the card is used to purchase goods or services, the amount of value available on the card is reduced by the merchants' point-of-sale terminals. The transferee (merchant) is credited by the transferee bank either on-line or, more likely, off-line for the amount of the purchase. Under this procedure, therefore, the entire funds transfer consists of two stages, the charging of the card with value and the use of the value in the card to purchase goods and services. These two stages may be viewed as two separate transactions or as one transaction taking place at two different times. Under either view the credit to the transferee's account would become final at the same time, i.e. only at the time of or after the purchase of the goods or services. However, the debit to the transferor's account could be considered final either at the time when the card was charged with value and the account was debited or at the time when the card was used to purchase the goods or services.

46. On the one hand the debit to the transferor's account could be considered to become final without regard to his use of the card if the charging of the card by the transferor bank and the related debiting of the transferor's account were considered to be the equivalent of a withdrawal of cash by the transferor or of a sale to him of traveler's cheques or non-monetary tokens for use in public transportation or public telephones. Although the transferor retains the same amount of monetary value, it is in a different form.

47. On the other hand the card could be considered to constitute an account of the transferor with the transferor bank in a special form. If this view of the transaction is taken, the card could be considered to constitute either a separate account or a special form of the original account. If the card constitutes a separate account, the debit to the original account would become final upon the charging of the card. The debit to the account contained in the card arising out of the purchase of goods or services would probably become final at the time of purchase when the value remaining in the card available for use by the transferor was reduced by the point-of-sale terminal. If the card constitutes a special form of the original account, the debit to the original account would become final at the time of purchase. In either case the unused value in the card would constitute a claim of the customer against the bank. It would seem that the bank could exercise set-off for its claims against that value. Furthermore, that value would seem to be included in any attachment of the customer's claims against the bank and the bank would, therefore, be obligated to take steps to prevent further use of the card.

#### 7. Computer-to-computer telecommunication of funds transfer instructions

48. The fact that funds transfer instructions are transmitted between banks by computer-to-computer telecommunication does not by itself affect the appropriateness of rules on finality. However, the increasing availability and decreasing cost of computer-to-computer telecommunication has been one of the causes of the large increase in the volume of funds being transferred, especially by the large-value networks. Customer use of cash management services, for example, creates funds transfers that would not have occurred at an earlier time. As a result, there is increased risk to the banking system and to the entire economy arising out of the large number of funds transfers which are not yet final. Some measures being considered to face this problem are discussed in paragraphs 97 to 99 and in the annex to this chapter.

#### D. Consequences associated with finality

##### 1. General rules giving priority to funds transfer

49. Several general rules give the transferee rights to the credit arising out of the funds transfer prior to the transfer becoming final. The most inclusive of those general rules is the French rule that the issuance of a cheque transfers the provision to the holder of a cheque (i.e. the transferee). As a consequence of this rule, the transferee normally prevails over a third party claimant whose claim against the transferor's account arose after issue of the cheque. However, even though the transferee prevails over third party claimants, the funds transfer itself is not final until the cheque has been honoured.

50. A general rule of more limited application is that the transferor bank or an intermediary bank must be allowed to complete the funds transfer if it has irrevocably committed itself to honour the transferor's instruction. This may occur, for example, by the bank accepting a bill of exchange (or certifying a cheque if permitted by the relevant law). It may also occur when a transferor bank settles for a funds transfer by issuing its own irrevocable promise to pay, such as a banker's cheque or banker's payment. The policy that lies behind this rule is that the bank which is committed to honour the funds transfer instruction or to settle for it should be able to reimburse itself from the transferor's account in spite of the intervening creation of third party rights in the account. This policy would also seem to be applicable to

funds transfers made through a clearing-house if the sending bank guarantees settlement to the receiving bank and to guarantee-of-honour plans for debit transfer instructions, as discussed in paragraphs 41 to 43.

2. Specific conflicts in priority

(a) Effect on funds transfer of legal rights of third persons

51. The legal rules governing the effect on the transferor's account of his death, the commencement of insolvency proceedings against him or attachment of the account are largely or completely found outside the law governing funds transfers. These legal rules create rights in third persons which may compete with the rights claimed by the transferee. As a result, it is often difficult to reconcile the law governing the third party right and the law governing the funds transfer itself.

52. The conflict in priority between the third party right and rights arising out of the funds transfer can arise in several ways. The most direct source of conflict is between the third party claimant and the transferee who claims that the funds transfer was final before the third party right arose. If the transferee has already used the credit, the claim of the transferee may be asserted by the transferee bank. In many cases, the immediate conflict is between the third party claimant and the transferor bank, which claims that the third party's rights in the transferor's account arose after the credit had already been transferred from that account. This is of particular importance to a transferor bank which has little likelihood of recovering the credit from the transferee.

(i) Death of the transferor

53. In some legal systems the death of the transferor may terminate all authority to act on his behalf or under his instructions at the moment the death occurs. Although this rule is often explained as an automatic termination of the agency relationship between the transferor and the bank or banks implementing the funds transfer, it would also seem to be applicable in those legal systems where the bank or banks carrying out the funds transfer on the transferor's instructions are not considered to be his agent. However, in many legal systems the bank's authority is terminated only by notice to it of the death. Furthermore, since the transferor is solvent at the time of death in the vast majority of cases and the funds transfer is usually for the purpose of discharging an obligation which would need to be discharged even after his death, some legal systems permit the transferor bank to continue to honour the transferor's funds transfer instructions for a period of time even after notice of his death unless ordered to stop doing so by an heir or, in some other countries, any person claiming an interest in the account.

(ii) Commencement of insolvency proceedings against transferor

54. The commencement of insolvency proceedings against the transferor creates a more complex legal situation than does his death because of the wide variety of rules governing insolvency in different countries. This causes particularly difficult legal problems for a transferee who is resident in a country foreign to the place where the insolvency proceedings against the transferor are taking place. However, one element in common with the legal situation caused by the death of the transferor is that the commencement of insolvency proceedings normally terminates the transferor bank's authority to honour any funds transfer instructions which have not already become final. Because of the strong policy to preserve the insolvent's remaining assets for distribution to

creditors in accordance with the statutory priorities, in some countries the transferor bank's authority to honour funds transfer instructions terminates when the insolvency proceedings are begun, even though the bank may have no notice of those proceedings.

(iii) Legal incapacity of transferor

55. A transferor may not yet have legal capacity to issue funds transfer instructions or may lose legal capacity because of the conviction of certain crimes, declaration of mental incompetence, declaration of receivership or for similar reasons. Where the legal incapacity arises out of minority, declaration of mental incompetence or the like, the desire to protect the incapable person from his own acts may require the reversal of funds transfers which otherwise appear to be final. Where the transferor is legally incapable because of conviction of a crime, it would seem incongruous not to allow the transferee to benefit from a funds transfer in process.

(iv) Attachment of the transferor's account

56. Attachment of the transferor's account normally takes effect upon notice to the transferor bank. Except in the case of the issue of a cheque in France by which the provision is transferred to the holder of the cheque, the attachment would normally take priority over a debit transfer which had not become final before the legal process took effect. However, where the debit to the transferor's account is first entered provisionally, attachment of the account during the period of reversibility may be too late even though the funds transfer may not yet be considered final.

57. In the case of a credit transfer, in some legal systems the legal process would be too late if the transferor's account had already been debited. However, in other legal systems, since the credit transfer would not be final upon the mere entry of the debit to the transferor's account, the credit might be considered still to be subject to the legal process. In such a case, the transferor bank would have to use reasonable efforts to stop the completion of the credit transfer by notifying the transferee bank of the legal process.

58. Difficult questions may be raised as to the transferor bank's obligation for a credit transfer made through an intermediary bank. Since the transferor bank knows the name of the transferee bank and all the details of the transfer, it could send the notice directly to the transferee bank. However, since there is no direct relationship between the transferor bank and the transferee bank when intermediary banks have been used, it may not be clear what obligation the transferee bank would have to act upon the notice given by the transferor bank. These problems would be particularly difficult in the case of an international funds transfer where the transferor bank and transferee bank may be subject to different rules on finality and where intermediate portions of the funds transfer may have become final under the rules governing funds transfer transactions between the intermediary banks.

59. As a result it could be expected that the transferor bank might have to make reasonable efforts to stop the completion of the funds transfer or, if no such efforts were made, to show that they would have failed.

(v) Withdrawal of funds transfer instruction by transferor

60. In accordance with general legal principles, a person may withdraw (or revoke) instructions or authority to act which he has given to another until such time as the instructions or authority have been acted upon. Under these

principles, in some countries the transferor may withdraw from the transferor bank the authority to honour a funds transfer instruction up to the moment the transfer is final. However, the authority or instructions may be irrevocable if they have been expressly stated to be so. Where the agency is for the benefit of a third person or of the agent himself, the right of the principal to withdraw the authority to act may be limited so as to protect the agent or third person. Therefore, since a standing authorization to debit may be for the benefit of the transferee, the transferor might need the agreement of the transferee to withdraw the authorization or the transferee may need to be given adequate notice so as to be sure he can receive the money due to him. When the bank itself is the beneficiary, the authority to debit may be irrevocable without the agreement of the bank.

61. The withdrawal of a funds transfer instruction by the transferor creates many of the same problems for the transferor bank as does the withdrawal of authority to honour the funds transfer instruction by reason of the appearance of third party rights. In both cases the transferor bank must notify its own personnel of the withdrawal of authority and, in the case of a credit transfer, it may be required to attempt to notify the transferee bank not to credit the transferee's account.

(b) Notices given to a bank

62. Rules which terminate the bank's authority to act upon notice to the bank may also indicate the form of the notice and the information which must be contained in it, the person to receive the notice for the bank and whether the notice has an immediate effect upon the bank's authority to act or whether the bank has time to communicate the notice internally.

63. In some legal systems an oral notice of death, of the commencement of insolvency proceedings or of the withdrawal of a funds transfer instruction may be sufficient to require the bank to stop any funds transfers in progress. The oral notice may be valid for a limited period of time and be subject to confirmation by a later written notice. In most legal systems a written notice of withdrawal of a funds transfer instruction may be informal and may be communicated by telecommunications. Attachment of an account would always be in a formal legal writing.

64. A notice given to a transferor bank that all funds transfers by a particular transferor are to be stopped need only indicate accurately the account or accounts affected by the notice. In the case of a credit transfer where the transferor bank may be required to notify other banks of the death, commencement of insolvency proceedings or attachment, the transferor bank itself would have all of the relevant information.

65. A notice by a transferor withdrawing only one or more specific funds transfer instructions must be more precise since it must describe the affected funds transfer instruction or instructions with reasonable precision as well as identify the account. This requirement can cause serious difficulties where large numbers of instructions are issued against the account or where the account records are kept on computers. A notice containing a typographical or other error might, nevertheless, be sufficient to alert a bank clerk working with account records in visible form. However, because of the similarity of data on many funds transfer instructions, if the notice of withdrawal as entered into the computer does not accord exactly with the funds transfer instruction on all material particulars, the computer may be unable to locate the instruction in question except by initially rejecting all funds transfer instructions which are similar to the one being withdrawn and subjecting them to individual review by bank staff. Such a procedure may be excessively expensive.

66. Any of the notices to a bank under discussion may have legal effect only as of the time when it is given to the bank. Where the bank has multiple branches, the notice may need to be given to the branch where the account is maintained. Unless the appropriate person to receive the notice is actually the person required to implement it, the bank will need a reasonable period of time to communicate the notice within the bank before it can have any practical effect, whether or not the notice may be legally effective prior to that time. Furthermore, if implementation of the notice requires its communication to other banks, an additional period of time may be required for this purpose. This need for time to communicate the notice within the bank or to another bank may be recognized by the law in determining the time at which the notice has legal effect.

67. The time to be allowed for the bank to communicate the notice before the notice becomes legally effective can be phrased only in general terms, such as the amount of time which any bank would reasonably need to communicate the notice, or as the amount of time which a bank would reasonably need in the light of its own existing internal communication system. The general installation by banks of on-line access to their customer account records would reduce the period of time allowed for all banks to communicate notices.

68. One effect of off-line batch-processing of funds transfer instructions is to decrease the likelihood that a bank (or automatic clearing-house) will be able to withdraw a specific funds transfer instruction from the processing after receipt of a notice to do so. Since most off-line batch-processing systems do not permit the economical search for an individual instruction, automatic clearing-houses often do not permit the withdrawal of an instruction once the computer memory devices have been delivered or communicated to them, though some permit withdrawal for a period of time before processing begins. Similarly, the rules governing submission of debit transfer instructions pursuant to standing authorizations to debit often do not permit withdrawal of the authorization for a specific period of time prior to the scheduled submission of the debit transfer instruction. However, where the batched funds transfer instructions are contained on optical disks, the previous difficulties in searching for individual funds transfer instructions no longer exist. As a result, it has become technically feasible to allow withdrawal of the instruction for a longer period of time. This new technical possibility may be recognized in the rules governing the time until which a funds transfer instruction may be withdrawn by the transferor or transferor bank.

### 3. Reversal of erroneous funds transfers

69. After a bank has debited the transferor's account or credited the transferee's account, it may subsequently learn that it has made an error in carrying out the funds transfer, or that another bank or other participant in the funds transfer has made such an error. The question arises whether the bank may rectify the error or whether it is precluded from doing so because of the finality of the funds transfer.

70. Legal rules which delay the point of time at which the funds transfer becomes final give banks additional time to discover the problem and to dishonour the instruction before the transfer is final. As has been noted above, one means of delaying finality is to permit banks to enter debits and credits provisionally until the bank has verified the authenticity of the funds transfer instruction, the accuracy of the data processing and the assurance that the bank will receive value from its debit party. Once the funds transfer is final, the reversal of the debits or credits entered by the banks is subject to varying degrees of restriction.

(a) Reversal of debit on demand of transferor

71. A transferor bank which has received a notice that there has been fraud committed in the issue of funds transfer instructions is normally responsible for the loss caused by its subsequent honour of them. However, the transferor bank is not required to reverse the debits to the transferor's account in respect of those funds transfers which have already become final. In such cases, the bank is protected to a greater or lesser extent by principles of law of general application, placing the liability for the loss as between the transferor and the bank in whole or in part on the transferor. For example, if a dishonest employee of the transferor has caused a series of fraudulent funds transfer instructions to be issued, the transferor may have the right to instruct the bank not to honour those instructions which have not yet been honoured but not have the right to require the bank to reverse the debits to his account in regard to those instructions which have been honoured.

72. A special problem arises when the transferor notifies the transferor bank in an appropriate manner and at an appropriate time that he is withdrawing the funds transfer instruction but the transferor bank subsequently honours it by mistake. A variation of this problem arises when the transferor bank has already sent a credit transfer instruction to the next bank in the chain prior to withdrawal of the instruction by the transferor and the bank does not take the necessary steps to prevent the transferee bank from honouring it. Even though the transferor may be acting properly within the legal rules, it may be thought that his issue of a funds transfer instruction and his subsequent withdrawal of it create a situation in which the transferor bank is subjected to a higher than ordinary risk of making an error. Furthermore, if the transferor owed to the transferee the amount transferred, in many legal systems completion of the funds transfer would be considered to discharge that obligation, even if the legal rules permitted the transferor to withdraw his instruction before it was honoured.

73. One approach to this situation emphasizes that banks must follow the proper instructions of their customers. Therefore, when a funds transfer instruction has been withdrawn in due time and in the proper manner, the transferor bank should be required to reverse any debit entered to the transferor's account. In addition, since no value has been transferred from the transferor's account, any credit already entered to the transferee's account should also be reversed. Otherwise, the transferor would have the benefit of discharging his obligation to the transferee without being charged for it. Reversing both the debit to the transferor's account and the credit to the transferee's account restores all parties to the situation they would have been in if the transferor bank had acted upon the transferor's withdrawal of the funds transfer instruction. However, if the funds transfer was for the purpose of discharging a valid obligation owed by the transferor to the transferee, the obligation would remain and would need to be discharged by a subsequent funds transfer. Therefore, a second approach is that, although the transferor bank would in principle be required to reverse the debit to the transferor's account, if the bank showed that the transferee was authorized as against the transferor to retain the funds, it could maintain the debit to the transferor's account.

(b) Recovery of credit in a debit transfer on demand of transferor bank

74. Except for the relatively few debit transfer instructions which are sent to the transferor bank for collection only, a transferor bank normally gives provisional credit to a presenting bank for all debit transfer instructions

presented. This provisional credit does not signify finality of the funds transfer. Therefore, the provisional credit may be reversed if the debit transfer instruction is dishonoured in the proper manner and within the allowable period of time.

75. Furthermore, in the vast majority of cases in which the transferor bank could have dishonoured a paper-based debit transfer instruction, it has the right to recover the credit from the presenting bank (and therefore from the transferee) even though the funds transfer has become final. The major exception is that in most countries the transferor bank may not recover a credit which has become final on the grounds that the balance in the transferor's account was insufficient when the debit to that account was entered. Moreover, in common law countries, as well as in some civil law countries, the transferor bank may not reverse the credit given to certain good-faith parties in honour of a cheque or bill of exchange bearing a forgery of its customer's signature as drawer. In these countries the truncation of cheques with electronic presentation raises the question whether the transferor bank will be bound by this general rule or whether the law should be changed to relieve the transferor bank of that responsibility.

76. This latter problem is raised in a somewhat different way in connection with debit transfers made pursuant to a standing authorization to debit. If the authorization is lodged with the transferee bank or with the transferee, both of which are common in some countries, the transferor bank has no way to know whether the debit transfer instruction is properly authorized unless the transferor complains about the debit to his account when he receives a statement of account activity covering the period in question. Therefore, it is common in such schemes for the transferee bank to guarantee to the transferor bank that the debit transfer instruction is properly authorized and that it will reimburse the transferor bank for any challenged transfers. In turn, the transferee is required to guarantee reimbursement to the transferee bank.

(c) Recovery of credit in a credit transfer

77. In many legal systems, once the funds transfer is final, the transferee bank may not reverse the credit to the transferee's account on the grounds it has failed to receive settlement. If, at the time the transferee bank makes the credit available to the transferee, there is any doubt whether settlement will occur, the credit may be entered provisionally, or other means may be taken to prevent the funds transfer from becoming final.

78. In several countries in which credit transfers have not been the normal means of inter-bank funds transfers, doubts have been expressed whether appropriate legal theories exist to enable the transferee bank to recover from the transferee a credit entered in error. Credits entered in error occur, for example, by the transferee bank crediting an amount greater than the correct amount, crediting the same transfer twice or crediting the wrong account. Nevertheless, in most legal systems it is clear that, in general, the credits established in error can be recovered by the transferee bank. In some legal systems a bank has the right to correct credit entries it has made in error by debiting the transferee's account even though the credit has become final but may correct errors made by a transferor or a sending bank only with the express permission of the transferee.

(d) Right of bank to recover credit by reversing entry

79. In some countries a bank has the right to reimburse itself for a credit entered in error by reversing the credit without the express permission of the transferee. This right may exist for a limited number of days after the funds transfer is final or until the transferee has been notified of the credit. Exceptionally, the bank's unilateral right to correct errors may be unlimited in point of time. However, in many legal systems, the transferee bank may be allowed to correct the error by reversing the credit only with the express permission of the transferee. If the transferee does not give its permission, the transferee bank might obtain reimbursement only by taking legal action.

80. The right of a transferor bank or intermediary bank to correct an error by reversing a credit is essentially the same as that of the transferee bank. However, such a bank may be precluded from reversing the credit to the receiving bank without its permission unless either the receiving bank has not as yet credited its credit party or it can secure reimbursement from the credit party. In some cases, rules of finality governing the funds transfer transaction between two intermediary banks may preclude reimbursement by reversal of the credit even though the funds transfer between transferor and transferee is not yet final.

4. Availability of funds

81. Although there may be no direct legal connection between the finality of a funds transfer and the availability of the funds to the transferee, the finality of the transfer as to the transferee is usually one of the factors determining the time when the funds are made available. It is also important to distinguish between the time when the funds are available to the transferee bank and the time when they are available to the transferee. The time when funds are available to the transferee should also be distinguished from the time when those funds begin to accrue interest. In some banking systems the two points of time coincide, but in many other banking systems funds may be available for use for one or more days before they begin to earn interest in the account. In other banking systems funds may begin to earn interest in the account before they are available to the customer for use.

82. Any rules on availability could be expected to provide the transferee bank sufficient time to process the funds transfer instructions. Therefore, even a deposit of cash in an account may not give rise to a right to draw on the resulting credit until the following day if the deposit voucher would not be posted until after the close of business. The use of on-line terminals for many funds transfer activities, including the receipt of deposits, may remove this basis for delay in availability in some banks. However, a deposit of cash in an automatic teller machine, even if recorded on-line by the depositor, would normally not be available immediately because of the bank's need to have its personnel count and verify the deposit.

83. The time when funds are made available to a transferee is usually determined by the practice of the transferee bank and is seldom governed either by the contract between the transferee and his bank or by provisions of law. However, in some cases, and particularly in regard to those accounts from or to which large-value transfers are made or which are part of a cash management programme, individual contracts may be negotiated covering, among other matters, the time when funds will be made available to the customer. The maximum periods of time before which the funds must be made available in certain types of funds transfers have been established by law in a few States.

84. Although the availability of funds to the transferee is of primary interest to the transferee, it may also be of interest to the transferor who, for a variety of reasons, may need to be sure that the funds are at the free disposal of the transferee by a particular time. The transferor has little control over the time at which the funds will be available to the transferee in a debit transfer, since it is the transferee who initiates the funds transfer process with his bank. The transferor has more control in a credit transfer since he chooses the date on which the funds transfer begins and since he may be able to specify a "pay date".

85. The legal significance of the pay date in a credit transfer is unclear. As noted in the discussion on the period of time within which a bank must act on the funds transfer instruction, if the definition in ISO/DIS/7982 that the pay date is the "date on which the funds are to be available to the beneficiary [transferee] for withdrawal in cash" is part of the contract governing the funds transfer, it would seem to create a legal obligation to the transferor, and perhaps to the transferee, on the part of the transferor bank. The definition would more clearly create an obligation between the transferor bank and the next bank in the chain, and between each subsequent pair of banks through to the transferee bank. However, it may be unclear in many legal systems whether the transferee bank could be legally bound by the pay date either to the transferor, with whom the bank may be considered to have no legal relationship, or to the transferee. It may be thought that the transferee bank's obligation to the transferee as to when funds should be made available arises out of the relationship between them and not out of the instructions originally emanating from the transferor. In any case, it would seem that the transferee bank should not be obligated by the specification of a pay date if it has not received both the funds transfer instruction and settlement satisfactory to it in sufficient time, unless it has undertaken a more stringent obligation in some appropriate form.

86. Once the transferee bank in a credit transfer has received both the credit transfer instruction and settlement, the funds should normally be available to the transferee promptly since the transferee bank runs no further credit risk. However, if the credit transfer instruction and settlement arrive before the pay date, it is a common practice in common law countries for the transferee bank to delay entry of the credit and availability of the funds until the pay date.

87. Rules on availability of funds in debit transfers must differentiate between debit transfer instructions, such as many bills of exchange, for which the transferee bank will give credit only after it has received notification of honour and the funds have been remitted to it, and debit transfer instructions for which provisional settlement is given between the banks and notification is given only in case of dishonour. Transferees of the first type of debit transfer instruction know that the funds will not be available before their bank receives notice of honour and the remittance of funds. In the second type of debit transfer instruction, which represents the vast bulk of all paper-based and electronic debit transfers, appropriate rules on availability are more difficult to formulate. The instructions are handled in bulk throughout the funds transfer process. The applicable rules, which should take into account such matters as the period of time before the banks receive settlement, the period of time before the debit transfer instructions should normally be honoured and the period of time before information that there has been dishonour should normally be received by the transferee bank, can be based only on averages for the type of instruction in question and the experience of those using the system.

88. In most banking systems settlement for debit transfer instructions of this second type is made by provisional debits and credits through appropriate inter-bank accounts. The settlement may be immediate or it may be delayed for a specified period of time but the date when it is available to the bank is always predictable for each batch of debit transfer instructions of a similar type.

89. For paper-based debit transfers, the least predictable element is the period of time before information that there has been dishonour is received by the transferee bank. In some countries a transferor bank may have an indefinite period of time after receipt of a debit transfer instruction in which to dishonour it. Where the instruction itself must be returned through the same clearing channels through which it was presented, in some countries the period of time for it to be returned to the transferee bank can be several times the period of time necessary for it to be presented. Since delaying availability of the funds because of the possibility that the instruction may be dishonoured may delay availability for an excessive period for the vast majority of instructions that are honoured, actions to reduce this period of time may be desirable. Guarantee of honour by the transferor bank eliminates the possibility of dishonour. Cheque truncation with electronic presentment would serve to reduce the period of time for presentment in many countries. The period of time after presentment during which a transferor bank could dishonour an instruction for insufficient funds could be strictly limited. A notice of dishonour could be sent by mail or by telecommunications directly to the transferee (depository) bank, even if it was necessary to return the debit transfer instruction itself through the clearing channel.

90. Electronic debit transfers present somewhat different problems for estimating the period of time before information that there has been dishonour will be received by the transferee bank. In general, as indicated in paragraph 88, electronic presentment of debit transfer instructions would serve to reduce the time for presentment. Furthermore, the system can be designed in such a manner as to facilitate the prompt return of dishonoured instructions. However, when an electronic debit transfer arises out of cheque truncation or pursuant to a standing authorization to debit where the authorization is lodged with the transferee or with the transferee bank, the transferor bank has no means to verify the authenticity of the debit transfer instruction. Therefore, until the transferor has received the relevant statement of account activity and the period of time for objection to unauthorized debits has passed, the possibility exists that the transferor will claim that the instruction was not authorized or that no authorization to honour the instruction existed. In some countries where only the passage of the statute of limitations or period of prescription cuts off the transferor's rights to object that a debit to his account was not authorized, the period of uncertainty may last for a period of years. For this reason it is advisable wherever possible for the authorization to debit to be lodged with the transferor bank.

91. Where the transferee is well-known to the transferee bank and there is little doubt that the transferee will be able to reimburse the transferee bank for any dishonoured debit transfer instructions, the bank incurs no substantial risk in making the funds available at an early date. Therefore, there is usually less delay in availability in respect of debit transfers made pursuant to a standing authorization to debit, where transferees are typically large and financially secure organizations, than there is in respect of other forms of debit transfer.

## 5. Discharge of the underlying obligation

92. Ultimately an underlying obligation is discharged by means of a funds transfer only if the transferee-creditor receives irrevocable credit in his account. However, the time when the obligation is discharged depends on the terms of the contract or other source of the obligation, the law governing the obligation and the funds transfer procedure followed.

93. In a relatively few, but usually important, contracts the transferor is obligated to make the funds freely available to the transferee by a designated date. In some countries it has been the practice to treat primary obligations of a bank, such as a banker's cheque or banker's payment, as satisfying such an obligation, but it is becoming the general practice to use a credit transfer with a specified pay date or even a specified time of day.

94. If the time when the funds must be freely available is not specified in the contract, an obligation discharged by credit transfer is normally discharged when the credit transfer becomes final as to the transferee. Therefore, recent changes in credit transfer procedures due to the increased use of electronic techniques could be expected to affect both the rules on discharge and the rules on finality. Indeed, it appears that in some recent cases the rules on finality of the funds transfer have been influenced by problems which have first arisen in connection with discharge of the obligation.

95. Since the obligation is usually discharged when the credit transfer becomes final, as between the transferor and the transferee it is the transferor who runs the risk of delays or errors in the funds transfer process. In some countries, the courts have relieved transferors from the most serious consequences of such delays by holding that insurance contracts or the like could not be terminated for late payment when the transferor had taken the appropriate actions to transfer the funds and had done so in due time. When the only consequence to the transferor arising out of a late payment due to delays in the funds transfer process is loss of interest, the loss is often recoverable from the bank responsible. However, when the consequence is termination of the contract, banks have often been held not to be liable for the resulting damages.

96. Where the underlying obligation is to be discharged by a debit transfer, the transferee may not treat the obligation as being in default if he has the means to start the debit transfer process. Therefore, the issue as to when the underlying obligation was discharged seldom arises in the case of debit transfers where the transferee issues the debit transfer instruction, such as in the case of bills of exchange drawn by the transferee on the transferor or on the transferor bank or debit transfers made pursuant to a standing authorization to debit. Similarly, in the case of a cheque, the transferee may not treat the obligation as being in default once he receives possession of the cheque. In some countries there is a question whether the transferor may be liable to the transferee for interest as a result of remitting a cheque at such time that the transferee does not receive credit until after the date payment was due. However, in all cases of debit transfer it is the transferee who bears the risk as against the transferor of delays or errors in the funds transfer process. Although the debit transfer instruction must be honoured when presented for the underlying obligation to be irrevocably discharged, the time when it is honoured is of no practical significance in respect of the underlying obligation.

E. Rules on finality and system risk

97. System risk is the danger that the banking system as a whole will be severely damaged by the failure of one or more banks to settle for the transfers they have made. A failure to settle is almost always a consequence of problems external to the funds transfer process. However, the recent development of on-line high-value net settlement electronic clearing-houses, through which participating banks often send in one day funds transfer instructions for more than their entire capital and surplus, increases the risk that a bank will end the day with a debit balance for which it cannot settle. Furthermore, the larger the debit balance for which a bank fails to settle, the greater the impact on the other banks in the clearing-house, on the banking system and on the economy in general.

98. The extent to which a banking system can absorb a bank's failure to settle depends not only on the size of the debit balance for which it fails to settle, but also on the allocation of the loss between the other participants in the funds transfer system, including the non-bank customers of the banks involved. Among the rules allocating loss to the participants in the funds transfer system are the rules governing finality. In turn, the rules governing finality of large-value funds transfers have an important effect on the financial markets and large commercial transactions for which these transfers are made.

99. The public discussion of the issue has been concentrated in the United States. The issue has also been addressed in the United Kingdom, where the nature of the banking system has led to yet other solutions to the problem. Because the discussion must of necessity treat the issue separately for each country, it has been placed in the annex to this chapter.

Annex

NATIONAL EXPERIENCE IN REDUCING SYSTEM RISK

A. The nature of the problem

1. In general

1. High-value electronic funds transfers, which are at present usually credit transfers, are likely to create risk for several reasons. The most obvious is that the value of the individual transfers, the total value of transfers made in a day and, most importantly, the size of the net debit or credit balance of an individual bank with any other bank or with the banking system as a whole during or at the end of the day are greatly increased. A second important reason is that, since transferors are more interested in having their large-value funds transfers completed quickly, large-value transfers are generally made as same-day transfers. As a result, the time allowable before settlement has been shortened and banks have less time than in earlier days to mobilize funds to meet their debit balances. Foreign banks, or local branches of foreign banks, may have more difficulties than domestic banks in funding their positions, especially if the foreign banks cannot obtain credit from the central bank.

2. Correspondent bank settlement

2. High-value credit transfers made through correspondent bank relationships can offer rapid settlement with little or no system risk under most circumstances. When the receiving bank receives value from the sending bank at the same time that it receives the credit transfer instruction, which is typical when the banks maintain accounts with one another, the receiving bank can give irrevocable credit to the credit party immediately without risk. When the receiving bank does not receive value immediately, it may have the right to delay honouring the funds transfer instruction until it receives value, collateral is given or there is a guarantee of reimbursement from a reputable source. Since there is no unsecured extension of credit arising out of the funds transfer, there is no risk to the receiving bank and, therefore, no system risk. However, this conclusion is subject to the important qualification that, when the receiving bank is the account-servicing bank and the instructions to debit or credit the account of the sending bank, i.e. the account owner bank, are sent or received by a number of departments of the receiving bank in addition to the funds transfer department, it can make rational credit decisions only if all its departments report all transactions promptly. When large sums of money are involved, this may call for transactions from all departments to be entered in realtime to the account.

3. Some correspondent bank relationships require the receiving bank to give irrevocable credit to the credit party before receiving value. This may occur, for example, because the pattern of funds transfers calls for certain banks to send more funds transfer instructions than they receive early in the day and to receive more than they send late in the day. Although these banks may regularly carry substantial credit balances at the end of the day, they may also regularly carry substantial debit balances during the day. In this case passage of high-value credit transfers through correspondent bank relationships may create significant system risk.

### 3. Net settlement

4. A net settlement network is in many respects an arrangement for a series of correspondent bank relationships between each pair of banks in the network made through a single switch. However, there are several institutional features which may increase system risk in comparison with pure correspondent bank relationships. Since there is no mechanism in a net settlement network for the sending bank to give value to the receiving bank prior to settlement, at any point of time during the day one bank necessarily has a debit balance with the other bank. Furthermore, since the creation of a debit balance arises out of the receipt of credit transfer instructions, as well as by the sending of debit transfer instructions, no bank in the network can know until the end of the day whether it will finish the day with a debit or a credit balance with any other bank, even if it were to know the total amount of credits it would send to that other bank during the day. As a result, a bank which adopted a policy of not giving irrevocable credit on a credit transfer until it knew it had value, could act on instructions it received only to the extent it had already sent credit transfer instructions to the other bank. An alternative policy, which would permit receiving banks to give immediate irrevocable credit to a larger proportion of credit transfer instructions it received, would be for each bank to establish an upper limit of the net intra-day debit balance it would allow each of the other participating banks to carry with it at any point of time. A bank which received instructions that would bring the debit balance of the sending bank over the pre-established limit would have to return those instructions to the sending bank for resubmission after the sending bank's balance had been re-established. If the network functioned through a central switch, the switch could be programmed to return the instructions to the sending bank rather than requiring the receiving bank to do so.

### 4. Net-net settlement

5. If a funds transfer network settles the day's funds transfers on a net-net basis, i.e. by establishing a single debit or credit balance for each participating bank for the total amount of all funds transfer instructions it has sent to or received from all other participating banks, but distributes loss in case of failure by a bank to settle on the basis of the net debit or credit balance of that bank with each of the other participating banks, the system risk is that of a net settlement network. However, where the loss is considered to be that of the entire network to be shared among the participating banks, under several of the possible loss-sharing formulas the loss to be borne by the other banks can often be estimated only after the close of the settlement. Under some formulas a bank with a credit balance in its own bilateral transactions with the non-performing bank might nevertheless be called upon to share in the loss. This in turn could mean that banks which could easily have settled if the settlement had been completed under normal circumstances may not be able to settle because of the loss they have suffered arising out of the failure of the first bank to settle. This cumulative effect arising out of one bank's failure to settle increases the system risk.

### 5. Means available to reduce system risk

6. A risk-reduction policy would have three principal goals: to limit the likelihood that a bank will fail to settle; to limit the effect of such a failure on other banks, the banking system as a whole and the economy in general; and to ensure the continued smooth operation of the funds transfer system. These goals may be in conflict. The primary techniques available for reducing system risk in either net or net-net settlement networks can be grouped under five headings:

(a) Participation in net or net-net settlement networks can be limited in various ways. The number of banks can be limited, since the fewer the number, the less likely that any one of them will fail to settle. The participating banks can be limited to those whose financial security is unquestionable. Foreign banks, which may be unable to settle in local currency, may not be permitted to participate, allowed to participate to only a limited degree or allowed to participate only if they furnish additional assurance of their ability to meet their commitments;

(b) The degree of monetary exposure of any single bank or of the network as a whole can be limited. Intra-day bilateral net debit limits can be established between individual pairs of banks. Intra-day net credit caps can be established limiting the amount owed by any one bank to the entire network. If more than one paper-based or electronic network exists in a country, the intra-day credit cap could be applied to the net amount owed by any one bank across all networks;

(c) The period of time from the sending of the first funds transfer instruction through the network until settlement can be reduced to a minimum so as to limit the possibility that events prior to settlement will cause a failure to settle;

(d) Banks can refuse to make funds available to their credit party until settlement has been completed. This protects the receiving bank in case of failure of settlement at the cost of delaying availability of funds to the credit party. Since the credit party may need those funds in order to make its own funds transfers that day, as may be particularly the case where the credit party is itself a bank, the entire network may come to a halt because of a shortage of funds until those funds are made available subsequent to settlement. Alternatively, receiving banks may make the funds available to the credit party with a right to reverse the credit in case of failure of settlement. This protects the receiving bank to the extent the credit party is credit-worthy by shifting the risk of loss from the receiving bank to the credit party;

(e) The debit balance of each participating bank can be guaranteed by an appropriate financial institution, which might be the central bank or a private or public insurance fund. Protection of the system is most effective if the guaranteeing financial institution can make the necessary funds available immediately. Otherwise the system will suffer a cash-flow shortage that may cause other banks to be unable to meet their commitments.

## B. National experience

7. In this section are set forth the experience of three countries which have taken different approaches to limiting system risk in their high-value electronic funds transfer networks.

### 1. France

8. On 16 October 1984 a high-value computer-to-computer network entitled Système automatique de gestion intégrée par télétransmission de transactions avec imputation de règlements "Etranger" (SAGITTAIRE) began operations. Since SAGITTAIRE was originally conceived as a domestic extension of S.W.I.F.T., only banks which are members or users of S.W.I.F.T. can participate in SAGITTAIRE. However, the use of SAGITTAIRE has been extended so that it can furnish the domestic link for essentially every type of international funds transfer denominated in French francs. It is not currently available for use for purely domestic funds transfers, although it has been decided that it will be available for payments arising out of money market transactions.

9. Although SAGITTAIRE functions as though it was a correspondent bank service of the Bank of France, the Bank serves only as the operating agent for the group of participating banks. Participating banks send SAGITTAIRE funds transfer instructions to the Bank of France with one of three entry dates, i.e. that day, the next banking day or two banking days later. The sending bank's "pseudo-account" is immediately debited according to the appropriate entry date, the receiving bank's "pseudo-account" is credited according to the appropriate entry date and the funds transfer instruction is forwarded to the receiving bank.

10. The entry date closes at 12:00 on each full banking day (10:00 on partial banking days), i.e. an entry date of Wednesday, 4 March runs from 12:00 Tuesday, 3 March to 12:00 Wednesday, 4 March.

11. At the end of the banking day, i.e. at 17:30 on full banking days, the debits and credits arising out of SAGITTAIRE operations showing in the "pseudo-account" for that entry date are entered to the account of each participating bank with the Bank of France, along with the debits and credits to the account of the bank arising out of other banking operations. However, since the Bank of France does not allow a bank to carry a debit balance in its account, the entries are not made if doing so would leave a debit balance in the account of a bank. If the debit balance is not covered by 11:30 the next morning, the Bank of France is authorized to annul the debit entries arising out of SAGITTAIRE transactions, as well as the corresponding credits, in the reverse order of reception of the instructions until the debit balance is eliminated.

12. As a result, if there was any reason to doubt the financial position of a sending bank, the most dangerous funds transfer instructions from the viewpoint of the receiving bank would be those which pass through SAGITTAIRE immediately before 12:00, while the most secure would be those made with a delayed entry date or which pass immediately after 12:00. However, since all participating banks are under public control, failure to settle is highly unlikely. The SAGITTAIRE rules do not specify when the receiving bank must credit its credit party. However, under standard French doctrine, the credit becomes irrevocable when the receiving bank enters a credit to the credit party's account (and not to his "pseudo-account"), even if the bank never receives value for the funds transfer.

## 2. United Kingdom

13. The Clearing House Automated Payment System (CHAPS) is a high-value same-day credit transfer network linking the twelve settlement banks, including the Bank of England. It is a nationwide supplement to, and eventually a replacement of, the Town Clearing, which is the specialized paper-based high-value funds transfer network limited to the City of London. A recent decision has been made that settlement membership in CHAPS and the Town Clearing, as well as in the other clearing arrangements, should be opened to banks which meet the following five criteria:

(a) Readiness and ability to comply with the technical operational requirements of the clearings and agreement to be bound by the rules of the individual clearing company concerned;

(b) Ability to establish settlement account facilities at the Bank of England;

(c) Willingness to meet a fair share of operating costs;

(d) Willingness to pay a fair entry price;

(e) Ability to meet a minimum volume criterion in the operational clearings concerned.

A number of banks, including the London operations of foreign banks, are seeking settlement membership in CHAPS and the Town Clearing. Non-settlement banks can have funds transfer instructions sent through CHAPS only by maintaining a correspondent bank relationship with a settlement bank.

14. Banks receiving credit transfer instructions through CHAPS are required to make same-day availability of the funds to the credit party. This rule is intended to increase the usefulness of CHAPS to the business and financial communities. In turn, the sending settlement bank is obligated to reimburse the receiving settlement bank for the amount of the funds transferred, even if the sending bank is not reimbursed by its instructing party. A funds transfer through CHAPS is unconditional and irrevocable.

15. The proper functioning of CHAPS, therefore, depends upon confidence in the solvency of the sending bank. This confidence has been secured in the past by restricting the number of participating banks in CHAPS and by relying on the Bank of England to put through the final inter-bank CHAPS settlement transactions. At present, settlement is made at the end of the day on a net-net basis by transferring balances of the settlement banks in their accounts with the Bank of England. In the new arrangement, "the prudential criteria to be met for settlement membership in any clearing [including CHAPS] should be subsumed into a precondition that members maintain an account with the Bank of England which could, with the Bank's express agreement, be used for the purposes of settlement in that clearing". <sup>1/</sup>

### 3. United States

16. Two large-value, electronic credit-transfer networks are currently operating in the United States. One is Fedwire, operated by the Federal Reserve System. Fedwire permits all 14,000 banks in the United States and certain other deposit-taking institutions that maintain account balances with their regional Federal Reserve Banks to transfer those balances to other banks or deposit-taking institutions. In effect, Fedwire functions as a correspondent banking service to the entire banking system.

17. The other is a private network, Clearing House Interbank Payments System (CHIPS), which is owned and operated by the New York Clearing House Association. Over 140 participating banks are authorized to submit credit transfer instructions for payment to other participating banks, many of which are New York branches or agencies of foreign banks. In addition, large-value transfers are made through correspondent banking relations, which are highly developed in the United States for use in domestic as well as in international transactions, although not commonly regarded as a credit transfer "network".

#### (a) Fedwire

18. The rules governing Fedwire provide that a credit transfer is "final" between the sending bank and the receiving bank, meaning the receiving bank has received "good available funds" when the receiving bank's regional Federal

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<sup>1/</sup> Payment Clearing Systems: Review of Organization, Membership and Control (London, Members of the Bankers Clearing House, 1984), appendix 1, p. 20.

Reserve Bank sends the notice of the credit to it. This notice is sent by computer to banks that are "on-line", and by telephone, telex or mail to banks that are not. The Fedwire rules require the receiving bank to credit the "beneficiary" (or persons or organization designated to receive the transfer) promptly after receipt of the notice, but the rules do not define "promptly" nor do they purport to govern the time at which the transfer is final with respect to the beneficiary.

19. As a result of the credit transfer instructions that a bank sends into Fedwire and the other actions it may take affecting its account on the books of its regional Reserve Bank, the bank may run an intra-day or end-of-day debit balance at its regional Reserve Bank. For example, many banks borrow overnight from other banks in the inter-bank funds market and return those funds to the lending bank the next morning. The borrowing banks, which tend to be the large money-center banks, often run large intra-day debit balances in their accounts with their Federal Reserve Bank that are restored to credit balance by the end of the day. As is true of any correspondent bank, the Federal Reserve Bank may refuse to accept credit transfer instructions from a bank with a debit balance until covering funds have restored the balance in the account to a credit position, or until the debit position is otherwise secured. If a debit balance does persist, the Federal Reserve Bank carries the entire risk of non-reimbursement. Therefore, in addition to protecting the receiving bank, the Fedwire rules insulate the entire banking and nonbanking sectors from the immediate consequences of a sending bank's failure to settle. The risk of loss resulting from a settlement failure is on the Federal Reserve Banks.

20. A similar result obtains with respect to correspondent relationships. The correspondent bank bears the risk if it irrevocably honored a credit transfer instruction from another bank that later failed to settle. However, here there could be an effect on the banking and nonbanking sectors, because the other bank's failure to settle its obligation could cause the correspondent to fail to settle its obligations, with potentially cascading effects throughout the economy. This systemic risk is not present in the Fedwire network, because there the correspondent is the central bank.

(b) CHIPS

(i) Settlement rules

21. The CHIPS settlement process begins when CHIPS reports the net-net balance of each participant to the participants. If one participant is settling for another, the so-called settling participant will also learn the net-net balance of the participant. Those banks with a debit balance transfer funds to a special account at the New York Reserve Bank for that network, by Fedwire transfers from their accounts with their regional Federal Reserve Banks. Once all the banks in a debit position have transferred the funds due, the Federal Reserve Bank transfers the appropriate amounts by Fedwire to the accounts of those banks with a credit balance. The special account carries no debit or credit balance forward after settlement is completed. One of the requirements of the Federal Reserve Banks in establishing the settlement arrangements with the network was that the Reserve Banks would bear no settlement risk arising out of the existence of the clearing accounts.

22. Participants in CHIPS are divided into settling and non-settling banks. Non-settling banks must settle any net debit balance with one of the settling banks, and they receive any net credit settlement through that bank. Settling banks settle through the special account at the New York Reserve Bank for the net debit or credit balance arising out of their own funds transfers and those of all the non-settling banks for which they settle.

(ii) Failure to settle

23. If any bank fails to settle its CHIPS debit balance at the end of the day, all transactions to that bank and from it are withdrawn from the settlement and new balances are calculated for the remaining banks. The payment excluded from the settlement might be settled directly by the participants outside the network. If other banks are unable to settle their new debit balance, the rules provide for a general unwinding of the settlement. In that case, settlement of the day's transactions would have to be done in some other, unspecified, manner.

(iii) Finality rules

24. CHIPS transfers are final when released to the receiving bank in that the sending bank may not withdraw the credit transfer instruction after that time. However, since there is a possibility that receiving banks will not receive settlement for transfers made through CHIPS (i.e. they do not receive "good funds"), they are not obligated to honor funds transfer instructions or to give irrevocable credit to transferees or other credit parties until settlement is final. As a matter of practice, banks permit their customers to use provisionally credits resulting from CHIPS transfers.

(c) Methods considered to reduce system risk

25. The United States banking community has been concerned with limiting the systemic risk arising out of the recent increase in bank failures. In view of such concern, on 29 March 1984, the Board of Governors of the Federal Reserve System requested comments regarding various proposals to reduce system risk in high-value funds transfer networks. Over two hundred comments were received. The principal methods to reduce system risk considered by the Federal Reserve are set out in the following paragraphs.

(i) Bilateral net credit limits

26. In order for a private network, of which CHIPS is now the only example, to settle its net balances through the Reserve Banks, the network must provide for net credit limits. Under this method, each participating bank determines the maximum amount of the net intra-day credit (arising out of funds transfers through the network), if any, it is willing to have with any other bank. Such a limit would be flexible, with each bank adjusting the net credit limit it would extend to another bank depending on considerations relating to the economy in general, to perceptions of the other bank's current financial position and its ability to meet immediate business needs.

27. The CHIPS network has a requirement that the participating banks have bilateral net credit limits for each of the other banks participating in the network. These limits are monitored on a real-time basis by the network computers. If an individual bank wishes to have a bilateral credit limit for another bank applicable to other funds transfer means, it must create its own system to accomplish that objective.

28. Bilateral net credit limits are not applicable as such to Fedwire, or to private correspondent banking relationships. However, the same result is achieved by limits on the intra-day debit balance any bank is permitted to carry with the Federal Reserve Bank, or with its private correspondent bank.

(ii) Sender net-debit cap

29. In order to use Reserve Banks to settle their net balances, private networks must also establish a net-debit cap. Moreover, to participate in Fedwire, a bank must subject itself to an all-system net-debit cap. A sender net-debit cap limits the extent to which a bank can send credit transfer instructions to all other banks beyond the amount it receives from them. The CHIPS cap is based on a percentage of the total bilateral credit limits established for a bank by all other participating banks.

30. By restricting the extent to which a bank can send credit transfer instructions beyond the amount received, and applying the restriction continuously throughout the day, the likelihood that the bank will fail to settle is reduced. Consequently, systemic risk is also reduced. However, if sender net-debit caps are applied separately to each network (CHIPS and Fedwire), some believe that the total net amount a bank could send might still be too high. Therefore, it was thought desirable for a single sender net-debit cap to be applied to all networks combined. The cap amount is a function of the bank's capital, based on a self-evaluation of a bank that takes into account the quality of its systems, its financial strength and other factors.

31. While the usefulness of sender net-debit caps to reduce risk seems clear, it is feared that one adverse effect could be to interfere with the smooth and efficient functioning of present networks. A bank that had not yet received incoming funds transfers from other banks (which, perhaps, were waiting for their positions to improve) might find itself unable to effect the funds transfer requests of its customers. In particular, banks that had borrowed funds overnight might find that they had reached their net-debit cap simply by returning the borrowed funds the next morning. To reduce this possibility of "gridlock", banks might delay sending funds transfer instructions to other banks until late in the day, thereby generally slowing the entire funds transfer system and threatening payment jams at the end of the day. Because the caps initially set have been sufficiently high, this problem has not yet been encountered.

(iii) Guaranteed finality by receiving bank

32. Finality from the perspective of the beneficiary exists if the receiving bank is irrevocably obligated to credit the beneficiary whether or not it receives settlement ("receiver guarantee"). This type of finality does not now exist in the CHIPS system.

33. The receiver guarantee insulates the non-banking sector of the economy from the effect of a failure to settle, thus protecting financial markets and the general economy. It is reasonable to expect receiving banks providing a receiver guarantee to monitor and limit their exposure to sending banks. If a sending bank's ability to settle became doubtful, the receiving bank might lower its bilateral net credit limit. On the other hand it has been suggested that the receiver guarantee might cause receiving banks to increase funds-transfer fees to compensate themselves for bearing such increased risk, and might lead to a reduction in the willingness of banks to receive funds transfers.

(iv) Central bank guarantee of debit positions

34. One means of reducing system risk that has been carefully avoided to date is for the Federal Reserve and other banking authorities to guarantee the obligations of participants in a network. The recent closing of a number of

small and medium-sized banks and the rescue of a large bank by the banking authorities have caused those authorities to search for other means to reduce system risk.

(v) Insurance to guarantee debit balances

35. The guarantee of the debit balances arising in settlement networks could also be covered by a public or private insurance fund, similar to the insurance funds covering small deposits in banks and other deposit-taking institutions. One estimate which has been made is that the premium cost would approximate \$1.90 per million dollars in funds transfers.

Chapter V

LEGAL ISSUES RAISED BY ELECTRONIC FUNDS TRANSFER

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## INTRODUCTION

1. The previous chapters in this Legal Guide have described the relationship between developments in electronic funds transfers and the paper-based funds transfer system in the context of the legal régime governing funds transfers. In this chapter a number of legal issues arising out of these developments are set forth as questions to be considered in the preparation of new rules necessitated by the introduction of electronic funds transfers. Most of these issues raise specific questions as to the appropriate legal rule and are based on the discussion in the previous chapters. Several of the issues raise questions of general policy. Following each question is a short comment indicating several factors which may influence the decision to be made in respect of the question posed.

2. The comments contain references to those portions of the previous chapters that are particularly relevant to the question posed as well as to certain material outside the Legal Guide. The references to the chapters have been abbreviated as follows:

Terminology used in this Guide	Terminology
Electronic funds transfer system in general	EFT in general
Agreements to transfer funds and funds transfer instructions	Agreements
Fraud, errors, improper handling of transfer instruction and related liability	Liability
Finality of funds transfer	Finality

Issue 1

Are major changes in the law required by the development of electronic funds transfers?

Comment

1. Since the underlying funds transfer procedures remain the same whether the medium of communication is paper-based or electronic, it could be expected that the law governing paper-based funds transfers would remain fundamentally appropriate for electronic funds transfers. However, since electronic funds transfers are not carried out in a manner identical to paper-based funds transfers, changes in the law to adjust to the new procedures should be expected. The following paragraphs suggest some of the major elements that would affect the extent to which the law written for paper-based funds transfers might need to be adapted to make it appropriate for electronic funds transfers.

2. Since most electronic funds transfers are made by credit transfer, countries where funds transfers have been largely made by cheque may have few legal rules which are directly applicable. Although this Legal Guide has frequently pointed out the identity or comparability of the rules governing debit transfers and credit transfers, rules drafted for the issue, collection and payment of cheques, with their elements of negotiability, are not applicable to credit transfers without significant modification.

3. The elimination of all elements of negotiability from electronic debit transfers, except for those transfers involving the truncation of cheques, bills of exchange or other negotiable debit transfer instructions, presents the opportunity for unifying or harmonizing the law of debit transfers with the law of credit transfers. Some degree of harmonization may already be present in the rules governing electronic funds transfer networks handling both types of funds transfers. A more substantial opportunity for harmonizing the law may be present when the statutory law governing funds transfers is reviewed for its applicability to electronic funds transfers.

4. Even in countries with a satisfactory legal structure for paper-based credit transfers, the new technology requires an adjustment of the law in regard to such matters as the periods of time within which various actions are to be taken, the presence or absence of liability arising out of computer failure at one of the banks, clearing-houses or communication networks, the time when a funds transfer becomes final and the consequences of finality. Modifications of this nature to the existing legal rules do not affect their structure, but they may modify their content to an important degree.

5. Although the absence of negotiability in electronic funds transfers presents the opportunity to simplify the law by harmonizing the law of debit transfers and credit transfers, the technical development of several alternative ways of making funds transfers, and the continual change in the technology, may lead to new subdivisions in the law. It may be useful to distinguish between batch-processed funds transfers and individual funds transfers sent by telecommunications, between transactions using debit cards and those using credit cards, between those initiated on customer-activated terminals and those where the electronic communication is initiated at a bank. To some extent these distinctions may be satisfactorily expressed in bank-customer contracts and in inter-bank rules governing different types of funds transfer networks. However, in some cases these distinctions may need to be expressed in the statutory law governing funds transfers. If the number

of special rules which are the result of these distinctions is small, they can be handled within the general law of funds transfers. If the number of special rules is too large, it may be preferable for special laws to be adopted, as there currently are for debit transfers and credit transfers. In any case, there will continue to be a need for rules governing paper-based funds transfers, and in particular to cover cheques and bills of exchange.

6. Some questions arising in the context of electronic funds transfers are common to all forms of automatic data processing and the legal rules may also be common to all such transactions. Prominent among these questions is the evidential value of the computer records of funds transfer instructions sent and received in computer-readable form and of account records stored in that manner. Of particular concern is the acceptability of the authentication used in electronic funds transfers. In some cases, the rules in respect of these matters may be found in the law governing funds transfers rather than in laws of general application.

7. The concurrent growth of electronic funds transfers and of international large-value and small-value funds transfers is leading to the international standardization of funds transfers procedures and a growing interest in the international unification and harmonization of the governing law. This Legal Guide is one important step in that direction. A further step would be the preparation of rules governing aspects of international funds transfers in some appropriate manner. Yet a further step would lead to the unification or harmonization of some aspects of domestic law, especially in respect of those aspects of funds transfers which are the domestic extension of an international funds transfer.

## Issue 2

To what types of financial transactions should the law of funds transfers apply?

## References

Finality, paragraphs 44-47  
Issue 4, paragraph 5

## Comment

1. In a number of countries deposit-taking institutions which previously were not permitted to make funds transfers on behalf of their customers are now permitted to do so. However, in some countries the law of funds transfers has been applied only to transfers made by debit and credit to current accounts in a bank, as the term "bank" is narrowly defined by the relevant law. Funds transfers made by debit to a current account in other types of deposit-taking institutions, including funds transfers made by debit to accounts with the postal system, have often been governed by a distinct set of rules, even though the rules were often the same or similar in substantive content to the rules governing funds transfers made through banks. There would be no technical difficulties for funds transfers made through the efforts of all deposit-taking institutions to be governed by the same set of legal rules, if this was considered desirable.

2. In addition to accounts at deposit-taking institutions, customers may hold credit balances at many other types of financial institutions, such as stock or commodity brokers or insurance companies. In some countries it has become

possible for customers to transfer those credit balances in whole or in part to accounts of other parties held with the same institution, at a different institution of the same type or at a bank. This developing practice raises important monetary and regulatory questions in regard to the banking and funds transfer systems in general. It also raises the question as to whether these transfers of account balances, if they are permitted at all, should be governed by the law of funds transfers or whether a different legal régime should be applied. If a different legal régime is applied, many of the same or similar legal problems as those covered by the law of funds transfers will need to be considered.

3. A credit card transaction may be considered not to be a funds transfer for the purpose of applying the relevant law of funds transfers, e.g. consequences of a fraudulent transaction or finality of the debit, since the debit is usually considered to be an extension of credit to which certain rules of consumer credit may apply and which must subsequently be reimbursed by a credit from another account of the customer. The law of funds transfers may be considered to apply only to the customer's reimbursement of the debit and, perhaps, to the reimbursement of the merchant or other card acceptor.

4. Nevertheless, when the account is held with a bank or other deposit-taking institution, it may be considered appropriate to include such transactions within the category of funds transfers, particularly since debit card transactions on accounts held by banks would clearly fall within the category of funds transfers. If credit card transactions on accounts held with banks are considered to be funds transfers, the question arises whether credit card transactions leading to a debit to an account held with an institution which is neither a bank nor other type of deposit-taking institution should also be subject to the law of funds transfers. The decision may be affected by whether the credit card paper or electronic vouchers (debit transfer instructions) clear through or outside banking channels. This basis for a decision, however, might be upset by subsequent changes in clearing procedures.

5. A somewhat similar problem may be posed by the use of a microcircuit card which has been charged with value by the bank before its issue to the customer. The issue of the charged card to the customer and the debit to his account may be considered to be a completed funds transfer equivalent to the sale of traveller cheques. Use of the card would set in motion a procedure for reimbursement of the merchant by the bank, which might be considered to be a form of electronic debit transfer similar to the collection of the traveller cheque. However, if the charged card were considered to be a special form of account with the bank, the issue of the charged card to the customer would merely furnish the customer with a means of accessing that account. Nevertheless, the consequences to the bank and the customer arising out of the issue of the charged card to the customer might be appropriately covered in the law of funds transfers in the same way that the consequences to the bank and customer arising out of the issue of cheques, debit cards or other devices to access the account is also covered in the law of funds transfers.

### Issue 3

Should the law governing funds transfers recognize the increased role of the funds transfer system in individual inter-bank funds transfers?

### References

Terminology, paragraphs 1-7  
EFT in general, paragraphs 1-5  
Liability, paragraphs 56-60  
Issues 13, 16, 18, 22, 23

Comment

1. Until recently in most countries the funds transfer system in place did not restrict significantly the judgement of banks as to the methods by which funds transfers were made. The smaller volume of funds transfers allowed each funds transfer instruction to be considered as an individual item calling for the specific judgement of each bank in the chain as to how it should be handled.

2. Recent technological developments have led to the creation of specialized communications and funds transfer networks and a consequent standardization of many aspects of funds transfer procedures. Funds transfers are processed through these networks in large quantities and the design of the total funds transfer system determines whether funds transfers can be made promptly, accurately and safely.

3. Among the factors influencing the extent to which the increased role of the system might be consciously taken into consideration in the law governing funds transfers is the extent of fragmentation of the banking system. Where there are only a few banks with many branches, each bank represents a major portion of the funds transfer system as a whole. The bank would necessarily be responsible for the design of both the computer facilities at a specific branch and for the transmission system between branches. Since it would often be both transferor bank and transferee bank, most of the legal problems arising out of the transmission of funds transfer instructions from one bank to another would be eliminated. Therefore, there may be no significant distinction between rules based upon the bank as an individual entity and the bank as a participant in the larger framework of the funds transfer system.

4. Where the banking system is fragmented and there are a large number of banks engaging in funds transfers, the distinction between the bank as an individual entity and the bank as a participant in the funds transfer system is naturally greater. This fact may lead in two different directions. On the one hand it may be more important for the law to recognize overtly that the bank is operating in the context of the funds transfer system. On the other hand there may be more resistance on the part of the banks to losing whatever degree of independence may be involved in such a recognition.

5. The fragmentation of the banking system is of particular importance in respect of international funds transfers. Not only do many banks from all countries participate in making funds transfers, but the different banking practices and different legal rules have tended to isolate the banks from one another. However, it may be thought that it is precisely in the field of international funds transfers that the practices of individual banks are changing most significantly in order to conform to the technological requirements of particular funds transfer networks and of the funds transfer system as a whole.

6. The important role the system plays in funds transfers may be recognized in the law in many ways. Inter-bank agreements, including clearing-house rules, may be accepted as a principal means of providing rules for the system. Those rules, or the law itself, may fix a single party responsible to the customer for errors or fraud which occur at any place in the system. Banks may be required to apply standardized procedures in order to participate in certain funds transfer networks. If they suffer loss as a result of failure of design of the system or of its implementation, they may have a right of reimbursement from the system as a whole or from other participant banks.

Issue 4

Should funds transfers between the transferor and transferee and the funds transfer transactions implementing the funds transfer be governed by the same rules? If some of the rules might be different, should the differences be reflected in the law or by inter-bank agreements?

References

Finality, paragraphs 23-30  
Issue 2, paragraphs 3-4  
Issue 5

Comment

1. Funds transfer transactions between banks implementing an inter-bank funds transfer between a transferor and transferee can be viewed in two ways. The traditional view in most countries is that the funds transfer transactions are subsidiary to the funds transfer. Inter-bank agreements in respect of funds transfers serve primarily to govern the technical relations between the banks and do not, or should not, affect the legal rights of the transferor and transferee. A second point of view, seen most clearly in regard to credit transfers transmitted individually by telecommunications, is that the primary activity taking place is the funds transfer transaction between the sending and receiving banks. Credit transfers between banks serve a number of purposes, only one of which is to implement a customer's instruction. The fact that a particular funds transfer transaction was made pursuant to a customer's instruction would be of operational interest to the transferor bank, since it would have to debit the appropriate customer account. However, it would be of no operational interest to intermediary banks except to the extent that a particular message type would be used and certain data fields in the funds transfer instruction would contain information to be passed on to the next bank.
2. Since each funds transfer transaction is treated by the banks as a separate and complete banking transaction, it could be expected that legal problems, such as the time of finality of the transaction or liability for errors, would arise just as they do in respect of the funds transfer itself. In the absence of any other rules, it could be expected that the rules otherwise applicable to funds transfers would apply. It may be thought, however, that appropriate rules for a funds transfer transaction between two banks might be somewhat different from appropriate rules for a funds transfer between two non-bank customers, even if the funds transfer transaction is implementing a customer transfer.
3. If it was desired to have rules for funds transfer transactions that were somewhat different from those governing funds transfers between bank customers, consideration might be given as to whether it would be preferable for those rules to be part of the general law of funds transfers, to be in a special section of the law governing inter-bank relations, or to be the subject of inter-bank agreements. In favour of the rules being adopted in the form of law is that, since the rules governing funds transfer transactions could be expected to have an effect upon the customer transfer, they should be prepared in such a way as not to interfere with the customer's legal rights. Therefore, it would be preferable if they were subjected to the public review normally available to proposed laws. In favour of the rules being adopted by inter-bank agreement is that different rules might be appropriate for different funds transfer networks. Furthermore, the technical nature of many of the rules and

the need to amend them as the relevant technology and banking practices evolve, might make it better for them to be in a more flexible form. It might be thought that any effect they would have on bank customers would be no more significant than the current rules or banking practices governing the technical aspects of the funds transfer transaction.

4. Special attention might be given to the desirability for agreed rules governing aspects of international large-value funds transfer transactions. Since the domestic rules governing inter-bank transfers, which might otherwise apply in large measure to international transfers as well, differ in important respects from one another, unification or harmonization of these rules to the extent possible might be expected to have important beneficial results.

5. The situation would seem to be somewhat different in respect of international credit card and debit card transactions. Before cards issued in one country are accepted in a second country, inter-bank agreements are always concluded governing both technical and legal concerns. These agreements are specific to each network. Therefore, several inter-bank agreements governing the international use of credit cards and debit cards are already in force in most countries. Since credit card and debit card funds transfer instructions are currently cleared through special channels for technical reasons, there is little conflict with other forms of international funds transfers. However, if this form of international funds transfer continues to grow in volume, consideration might be given to its relationship to the legal régime governing other forms of international funds transfers.

#### Issue 5

Should internationally agreed rules be prepared to govern international electronic funds transfers?

#### References

Draft Convention on International Bills of Exchange and International Promissory Notes, A/41/17, annex I  
Issues 4 and 6

#### Comment

1. Once the transferor instructs his bank to transfer funds to the transferee at a bank in a foreign country, an international funds transfer has begun. As a result there is a high degree of inter-mixture of domestic and international concerns in an international funds transfer. The funds transfer itself between transferor and transferee is international. The very first and last actions, the issue of the funds transfer instruction by the transferor, the debit of his account by the transferor bank and the credit to the account of the transferee, are in themselves domestic acts identical to those made in a domestic funds transfer. One or more funds transfer transactions are required between banks in different countries as well as the possibility of one or more of funds transfer transactions in the country of the transferor and in the country of the transferee.

2. The situation has some similarity to the shipment of goods from an inland point in one country to an inland point in another country in that the single economic activity of the shipper may be carried out by domestic carriers in the two countries as well as by one or more international carriers. There is a tension between the need or desire for separate legal régimes to govern each of the domestic and international segments of the shipment and the need or

desire for a single legal régime to govern the entire shipment. In the context of the shipment of goods, the desire for a single legal régime to cover the entire shipment has led to the adoption of the United Nations Convention on International Multimodal Transport of Goods. This Convention does not, however, replace the legal régimes governing the individual segments so much as it co-ordinates some of their legal effects.

3. Since there are at present no rules governing international funds transfers, with the exception of the S.W.I.F.T. rules covering aspects of the transmission of a funds transfer instruction over that network and the network rules for credit cards and debit cards used internationally, the consequence of a funds transfer being international or of one or more of the implementing funds transfer transactions being international, is that the rules of conflict of laws would refer to the substantive law of one of the countries concerned. That law may or may not have special rules governing international funds transfers or, without having specially articulated rules, may recognize the differences inherent in an international funds transfer. Among those important differences is that some part of the funds transfer is carried out in a foreign country in conformity with the local banking laws and practice.

4. The basic approach followed in the draft Convention on International Bills of Exchange and International Promissory Notes, prepared by the United Nations Commission on International Trade Law, has been that the draft Convention should govern the funds transfer instruction issued by the transferor and all of the funds transfer transactions necessary to implement that instruction. However, it may be noted that the draft Convention specifies that certain legal problems concerning the bill are not governed by it. Of particular interest is the fact that the rights and obligations of an intermediary bank that becomes an endorser of the bill would be governed by the Convention, even if the bill of exchange were to come to it from another bank in its own country. This is consistent with the traditional view noted in issue 4 that the inter-bank transactions implementing a non-bank customer's funds transfer instruction are subsidiary to the funds transfer. In the context of electronic funds transfers, the same approach would subject the funds transfer transaction between the domestic transferor bank and domestic intermediary bank to the international rules. This would be of particular significance to domestic electronic funds transfer networks which handle the domestic link in international funds transfers.

5. The potential impact of the draft Convention is limited by its article 1 on the scope of application, which provides that the draft Convention applies only if the parties have chosen it as the governing law by use of a bill of exchange which contains the words "international bill of exchange (Convention of ...)". It would not, therefore, apply to all bills of exchange used in international transactions between parties in contracting States. A similar restriction could be introduced into rules governing international electronic funds transfers, in which case the funds transfer instruction sent by the transferor bank and by every intermediary bank would have to contain that information.

6. A less radical approach than that taken in the draft Convention would be that the relations between, on the one hand, the transferor and transferee and, on the other hand, all banks in the funds transfer chain would be governed by the internationally agreed rules, but that the inter-bank funds transfer transactions would be governed by the relevant domestic law, supplemented by any applicable inter-bank agreements. If this approach was taken, a decision would have to be made as to which text controlled where the international rules gave the transferor or transferee rights as against one of

the banks but the relevant law or inter-bank agreement had conflicting provisions in respect of an implementing funds transfer transaction. For example, the international rules might give a right to withdraw a funds transfer instruction until the transferee's account had been irrevocably credited, but the rules governing a funds transfer network through which the funds transfer passed might limit the extent to which a funds transfer instruction could be withdrawn by a sending bank (see issue 33).

#### Issue 6

Should internationally agreed rules on conflict of laws be prepared for international electronic funds transfers?

#### Reference

#### Issue 5

#### Comment

1. In the absence of a generally accepted legal régime governing international electronic funds transfers, internationally accepted rules on conflict of laws might be considered.
2. The aspect of the law of funds transfers which might most benefit from internationally agreed rules of law is the relationship of the transferor and transferee between themselves and their relationship to the banks implementing the funds transfer. The difficulties may be particularly acute when the funds transfer is in the currency of a third country and banks in that country become involved either as intermediary banks or as reimbursement banks. The most evident substantive difficulty which could be ameliorated by internationally agreed rules on conflict of laws is the lack of agreement whether an intermediary bank owes any duties directly to the transferor (perhaps as the transferor's agent as nominated by the sending bank) or whether the intermediary bank's obligations are limited to the sending bank with which it is in privity of contract. Although this issue may arise most often in regard to liability for errors or delay, it may also arise in connection with such matters as whether the transferor or transferor bank could directly instruct an intermediary bank with which it was not in privity of contract to refrain from processing further a funds transfer instruction that the intermediary bank had received from another intermediary bank.
3. The conflict of laws problems in regard to the funds transfer transactions are perhaps easier to resolve, since each funds transfer transaction is a simple bilateral arrangement. Only the electronic funds transfer instruction which is sent from one country to another would probably be in question, while the domestic funds transfer transactions before and following the international transaction would presumably be governed by domestic law.
4. If rules on conflict of laws were to be prepared, it would seem that they could not be done effectively by the banking community. The courts could be expected to enforce inter-bank agreements containing substantive rules governing the relationship between the banks as well as a choice-of-laws clause governing the bilateral relationship of the two banks in a funds transfer transaction. However, it is less likely that they would enforce choice-of-laws provisions in an inter-bank agreement prepared for adoption by the banking community as a whole that was intended to provide rules for all of the possible conflicts that might arise in the various funds transfer transactions. It is also unlikely that they would enforce rules on conflict

of laws prepared by the banking community governing the relations of the transferor and transferee with the banks implementing the transfer.

5. Therefore, if it was felt desirable for internationally agreed rules on conflict of laws in regard to international electronic funds transfers to be adopted by States, it would seem best if they were prepared by an appropriate international body.

#### Issue 7

Do the rules of evidence give records of funds transfers kept in computer-readable form the same legal value as records kept in paper-based form?

#### References

Legal value of computer records: report of the Secretary-General  
(A/CN.9/265)  
Issues 21, 22

#### Comment

1. Although the rules of evidence do not form a part of the law of electronic funds transfers, in order for domestic or international electronic funds transfers to be made with legal security, the rules of evidence must give bank records kept in computer-readable form or produced from computer-based entries the same legal value as records kept or produced in paper-based form. Therefore, an important part of many national studies of the legal aspects of electronic funds transfers has been devoted to the question of evidence.
2. According to the results of a survey conducted by the secretariat of the United Nations Commission on International Trade Law, it appears that in most countries records kept in computers can be used as evidence in case of litigation. In common law countries it is the usual rule that computer records can be admitted as evidence only if the proponent of the record establishes certain facts about the record and the computer system. The most important is that the system has been properly designed and sufficiently well-managed so that the possibility that the data stored in the record is incorrect is reduced to a minimum. In some common law countries records of financial institutions are admitted with less formality. In countries with other legal systems, it is not necessary to establish that the system is properly designed and well-managed for a computer record to be admitted as evidence. However, in all legal systems, it is possible to challenge the accuracy of a computer record on the grounds, inter-alia, that the computer system was not properly designed or well-managed.
3. In several countries with an exhaustive list of types of admissible evidence, computer records are admissible in commercial disputes but may not be admissible in non-commercial disputes. Since the latter category may include most transactions made through automated cash dispensers, automated teller machines and point-of-sale terminals, the potential problems for electronic funds transfers may be significant in those countries. In particular, when a non-commercial customer denies having used a customer-activated terminal, it may be difficult or impossible for a bank to prove that he did so on the basis of the computer record of the transaction alone (see issue 21). In a few countries with statutory requirements as to the supporting information to be furnished to a court to enable the court to determine

whether a computer record should be admitted as evidence, the statutory requirements have been drafted in terms of data processing in batch-mode and there may be difficulties in using computer records in which a funds transfer instruction was created in one computer and transmitted to a second computer by handing over a computer memory device or by telecommunications.

4. There does not as yet appear to be any experience whether computer records created in one country will be usable as evidence in the courts of another country on the same conditions as computer records created in the second country. Any difficulties in this regard would be of serious concern for international electronic funds transfers.

5. Truncation of paper-based debit or credit transfer instructions and the forwarding of the essential data by electronic means may raise questions as to the evidential value of the computer record in the truncating bank or in a receiving bank in comparison with the evidential value of the paper-based instruction. Many countries may require a permanent hard copy of the original paper-based instructions, but may allow that hard copy to be retained in microfilm form.

### Issue 8

Are changes in the law required in order to permit the truncation of cheques, bills of exchange and other debit transfer instructions at the bank of deposit?

### References

Agreements, paragraphs 13-18  
Convention providing a Uniform Law for Bills of Exchange and Promissory Notes (Geneva, 7 June 1930)  
Convention providing a Uniform Law for Cheques (Geneva, 19 March 1931)

### Comment

1. It appears that in those countries in which banks truncate cheques or other debit transfer instructions they have done so without legislative changes in the governing law. The banks seem to have determined that the savings from truncation are greater than the anticipated losses they would on occasion suffer because they could not conform to the statutory requirements adopted before truncation was possible. In a number of other countries it appears that concern over the potential losses arising out of truncating cheques without changes in the statutory requirements has been a significant factor in slowing this development. Therefore, in all countries in which cheque truncation is seriously being considered, thought should also be given to amending the law on cheques and bills of exchange to eliminate any losses to banks which might occur and which are not justified by public policy.

2. The most important risk which occurs as a result of cheque truncation is that the authenticity of the drawer's signature cannot be verified by the drawee bank before the cheque is honoured. That would not constitute a major change from the current situation in many countries where banks do not compare signatures on the vast majority of cheques. Furthermore, a drawer of large numbers of cheques may give the drawee bank a list on paper or on magnetic tape of the cheque numbers and amounts of all cheques drawn, permitting substantial verification by the drawee of the authenticity of the cheques which have been

truncated. Therefore, it may seem reasonable for the drawee bank to continue to bear the risk that a truncated cheque might not be genuine. As an alternative, the statute might be changed to provide, for example, that the drawee bank could debit the drawer's account even though the drawer's signature was not genuine if the cheque was drawn on a numbered cheque furnished to the drawer by his bank and the drawer had not notified the bank that the numbered cheque was missing. This would in essence reproduce the rule generally followed in respect of debit cards and credit cards.

3. In most countries where the law seems to provide that a cheque can be honoured only if it is physically presented to the drawee bank, the provisions can often be interpreted to mean that it is the data on the cheque which must be presented and not the physical cheque as a carrier of the data. Where this interpretation is not possible or is not acceptable, the law might be changed to so permit. This question may also arise in respect of whether the cheque has been presented within any applicable periods of time and the time allowable after dishonour for notice of dishonour or protest to be made.

4. In a few countries the drawee bank is obligated to verify that the cheque has not been presented before the date on the cheque and, conversely, that the cheque is not so old as to have lost its validity. These verifications can be performed as easily by the truncating bank, and it would seem that the most reasonable action would be for banks to agree that any loss borne by the drawee bank in its relations with the drawer would be reimbursed by the truncating bank. Similarly, the truncating bank is in as good a position as the drawee bank to determine whether the cheque has been materially altered and to mark the cheque so that it cannot be presented a second time.

5. Where protest is required on a dishonoured cheque itself, it would seem reasonable to modify the law so that protest or its equivalent could be made in some other appropriate way. Similarly, where cancelled cheques must be returned to the drawer before time-limits begin to run within which the drawer can notify the bank of improper debits to his account, the law might be modified to eliminate this rule.

6. States which are parties to the Geneva Conventions on Bills of Exchange and on Cheques would be in violation of their treaty obligations if they were to modify their domestic laws so as to facilitate truncation.

#### Issue 9

Does the development of electronic funds transfer techniques require changes in the law governing bank secrecy?

#### References

Convention for the Protection of Individuals with regard to Automatic Processing of Personal Data (Strasbourg, 28 January 1981).

Guidelines Governing the Protection of Privacy and Transborder Flows of Personal Data (Organization for Economic Co-operation and Development, Paris, 23 September 1980).

#### Comment

1. Bank secrecy is one of the more important aspects of the continuing public debate over invasions of privacy that are facilitated by the storage of data in computers, the linking of the computers by telecommunications and the availability of remote access to them. An important additional concern is

that data regarding banking transactions may reveal underlying patterns of economic activity. Therefore, some States wish to limit the transborder data flows by which this information is transmitted to other States for processing or for use.

2. In many countries banks have a professional obligation to keep secret the affairs of their customers, except to the extent that disclosure of information is authorized by the customer or is required by the State in accordance with the relevant provisions of law. Violation of their professional obligation may lead to criminal penalties or to liability to their customer for the resulting harm. In the past an unauthorized disclosure was usually the deliberate act of the bank or of one of its employees. Now that unauthorized disclosure can result from access to the bank's computer by an unauthorized person or by the interception of teletransmitted funds transfer instructions, consideration may perhaps be given as to whether banks have a broader duty to establish a security system for the transmission of funds transfer instructions and their storage which limits the possibility of such access.

3. The ease of making international transfers of funds by telecommunications facilitates the hiding of funds transfers made for such reasons as payment for illegal transactions, the avoidance of taxes or the avoidance of exchange controls by shifting the funds rapidly through a series of accounts in different places. The public authorities in a number of countries have attempted to counter these activities by more thoroughly investigating bank records of funds transfers, including in some cases account records of banks or branches in foreign countries. In some instances requests for information in account records of foreign banks or branches directed either to the banks or to the foreign Governments have been resisted on the grounds of bank secrecy, or on the grounds that to make the information available would be an act of economic espionage.

4. The arguments in favour of strengthening bank secrecy in the face of the additional threats posed by the use of computers, as well as the arguments in favour of increased access to bank records in criminal investigations and increased international co-operation in this regard, are of great current importance. The resolution of the debate over these and related issues may, however, be expected to occur in a broader forum than one devoted to electronic funds transfers, or even to banking in general.

#### Issue 10

Should banks have written contracts with their customers covering rights and duties of the customers and the banks in respect of electronic funds transfers?

#### Reference

Agreements, paragraphs 1-11

#### Comment

1. Traditions vary in different countries as to the need for written contracts. In those countries where written contracts are not common, banking tradition and practice are usually called on to provide the content of the agreement between the parties.

2. It may be thought, however, that in respect of new funds transfer techniques, and especially electronic funds transfers, banking tradition and practice may not be able to provide the necessary content for many of the questions that may arise. It appears that banks always require written agreements before they issue credit cards or debit cards. Written contracts seem not to be always required before customers are allowed to participate in cash management programmes and other large-value funds transfers, although they may be particularly useful in this regard since some aspects of the bank-customer arrangement may differ from customer to customer.

3. Except for some aspects of the contracts negotiated for large-value funds transfers, bank-customer agreements are drafted by the banks and presented to their customers as a condition for opening an account. The techniques available for limiting the potential abuses of such contracts of adhesion differ in various countries.

#### Issue 11

Should there be any restrictions placed on standing authorizations to debit?

#### Reference

Agreements, paragraphs 21-23

#### Comment

1. Although a standing authorization to debit is analytically the same as an authorization to a bank to honour designated bills of exchange drawn on the transferor and domiciled at the bank, there are functional differences which may raise concerns. The most important is that the collection of bills of exchange is used only to secure payment from a commercial party, whereas the most extensive use of standing authorizations to debit is to collect amounts due on a regular basis from consumers. A second important difference is that the authorization to honour a bill of exchange can be lodged only with the transferor bank, whereas in some countries a standing authorization to debit may also be lodged with the transferee bank or even with the transferee.

2. It may be thought that a standing authorization to debit should be lodged with the transferor bank since this would permit the transferor bank to verify the existence of the authorization before acting on the debit transfer instruction received from the transferee bank or from the transferee (in a one-bank transfer). However, even if the standing authorization to debit is lodged with the transferor bank, there is no assurance that the debit transfer instruction prepared by the transferee properly reflects the obligation due on the underlying transaction. Therefore, it may be thought that in all cases the transferor should have an unqualified right for a specified period of time to require reversal of the debit if he claims that it was improper. Reversal of the debit would, of course, revive the transferor's obligation to pay the underlying obligation. Consideration might be given to exacting a penalty against a transferor who claims reversal of the debit when a valid authorization was in existence and the transferor had no substantial reason to believe the amount of the debit was incorrect.

3. The inter-bank agreements covering standing authorization to debit should provide a warranty on the part of the transferee bank that it will reimburse the transferor bank for any debits it has been required to reverse on the demand of the transferor. The transferee bank should have a similar warranty from the transferee.

4. Where the debit transfer is submitted at a frequent and regular interval for a constant amount, the transferor can easily plan his cash flow. When the transfer is irregular, infrequent or for a fluctuating amount, the transferor, especially a non-commercial transferor, may not be able to plan his cash flow properly. The significance of this concern depends in large part on the extent to which transferors, especially non-commercial transferors, are permitted to carry debit balances in their accounts at reasonable rates of interest. Where this concern is significant, consideration may be given to requiring the transferee, transferee bank or transferor bank to notify the transferor of the date and amount of the forthcoming debit in sufficient time for him to adjust his cash flow. Consideration may also be given to permitting the transferor to withdraw his authorization before the debit is entered.

#### Issue 12

Should there be a legal requirement as to the form of authentication necessary in an electronic funds transfer?

#### References

Agreements, paragraphs 26-39  
Issue 21

#### Comment

1. It appears that no country requires a funds transfer instruction to be in written form. It is for this reason that banks have been able to use various forms of electronic funds transfer techniques, including telex, computer-to-computer telecommunications, handing over of computer memory devices and, in some countries, oral instructions by telephone, without the need for express authorization by statute. In the absence of legislation authorizing funds transfers to be made electronically, there seems to be no general requirement that a funds transfer instruction must be authenticated.
2. It may be thought to be desirable to require by law that all funds transfer instructions, including those in electronic form, must be authenticated. However, it may also be thought to be unnecessary since a bank could not substantiate a debit to an account unless it had a funds transfer instruction in a form on which it could rely in case of later dispute. This should be sufficient incentive for banks to be careful in their use of funds transfer techniques where the authentication is weak or non-existent. Furthermore, in many countries banking supervisors would consider it to be an unsound banking practice for banks to transfer funds on instructions that were not adequately authenticated.
3. If it was thought desirable to require by law that electronic funds transfer instructions must be authenticated, it may also be thought desirable to indicate the type of authentication which would be legally acceptable. Not only would this limit authentications to the types which the legislator deemed sufficiently secure, it would also assure that an authentication of the required type could be relied on to authorize a debit to the transferor's account, if there was otherwise doubt on this point.
4. However, it may be thought to be impracticable to specify by law in any meaningful way the manner in which an electronic funds transfer instruction should be authenticated. In contrast to authentication of a paper-based document, where a reasonably exhaustive list of means of authentication,

including signature, could be given if desired, there are innumerable ways to authenticate a message sent by telecommunications. With the rapid development of technology, some current methods of authentication can be expected to become weaker while new and more secure forms of authentication can be anticipated.

5. As a result, it might be thought that any statutory provision concerning the authentication of an electronic funds transfer instruction should do little more than to authorize the use of means appropriate to the type of instruction involved. Questions as to the liability for loss caused by fraudulent or erroneous authentication might be dealt with separately, as might questions of which party bears the burden of proof as to whether the authentication was genuine or not.

### Issue 13

Should sending banks be required to adhere to standard formats when sending funds transfer instructions?

### References

Agreements, paragraphs 47-54  
ISO/DIS 7746, Banking-Standard telex formats for inter-bank payment messages - Part 1: Transfers

### Comment

1. A sending bank can fail to adhere to a standard format in two ways. It can fail to use the proper message type when more than one message type is available and it can fail to include all of the information necessary for automated processing, including using improper abbreviations or other standard designations, placing the information in the improper field or placing it in the field for additional information when it should go into a specific data field. It is not a violation of the format rules to include incorrect information, such as the incorrect amount of the transfer, when the incorrect information is in the correct data field.

2. The rules of S.W.I.F.T. and similar networks specify the format which is to be followed for each message type. The only question remaining is the consequence to the sending bank for failing to adhere to the format. In contrast, even when the format rules for funds transfer instructions sent by telex, which are currently in an advanced stage of preparation and are closely modeled on the S.W.I.F.T. format rules, have become an international standard, they will not thereby acquire any legal force. Unless these format rules take on the character of norms of good banking practice, they could acquire legal force only by statutory or regulatory requirements that they be followed or by agreement of the parties.

3. The legal consequences to a sending bank of failing to follow the proper format rules could be twofold. The bank could be responsible for all errors on the part of subsequent banks that could be traced to the failure to adhere to the format. Exoneration on the grounds that a subsequent bank was itself negligent, in that it should have understood the message correctly, might be permitted, but it may be thought that exoneration on this ground should be rare. The second consequence for failing to follow the format rules could be the levy of a standard charge on the sending bank to be paid to the receiving bank for its effort in correcting the error of the sending bank. If receiving banks regularly claimed the charge, such a rule might have the beneficial

consequence of making sending banks more conscientious in adhering to the format rules, to the benefit of all concerned.

#### Issue 14

Should a single electronic funds transfer format be required for all debit and credit cards in use in a country?

#### Reference

Agreements, paragraph 54

#### Comment

1. The use of a single format increases the possibility of interchanging funds transfer instructions and clearing them through a single clearing channel. It also permits the shared use of terminals by cards issued by different banks and other card issuers, although agreement on a common format does not necessarily imply shared use. If a single format is required or encouraged by the State, it is usually in order to bring about shared use.

2. The interest of the State in shared use may be to create a nation-wide system of electronic debit or credit cards. In some countries proposed point-of-sale networks have been delayed awaiting a decision on a single format and shared facilities because retail interests wish to have only one terminal at each cash register. Both retail interests and the State may wish to assure that one card issuer is not able to establish a dominant position in point-of-sale systems by virtue of a format which does not permit the use of cards from other card issuers.

#### Issue 15

Where should customer accounts be considered to be located for the purposes of the legal rules governing funds transfers?

#### References

Agreements, paragraphs 79-81  
Finality, paragraphs 62-68

#### Comment

1. So long as customer account records were maintained exclusively on paper, the usual rule was that the customer account was considered to be located for legal purposes at the place where it was maintained for bookkeeping purposes. When a bank had multiple branches, customer accounts were usually maintained at each branch, and therefore were located at the branch for legal purposes.

2. When a bank has a centralized data processing centre to which funds transfer instructions must be brought for processing, it may be thought that the basis for the old rule is eroded and that, at least for some purposes, the centralized data processing centre might be considered to be the location of the customer accounts. When a bank has remote access to the processing unit from terminals at some or all of its branches within the same legal jurisdiction so that relevant information can be entered to the account from these remote terminals, it may no longer be relevant to ask where the customer

account is maintained since any or all of these locations may serve equally well. However, where paper-based funds transfer instructions are sent to the branch at which the account was opened for purposes of comparing signatures before the funds transfer becomes final, it may be thought that the account should remain localized at the branch even if the funds transfer data can be entered to the account from one or more other locations.

3. The question as to the localization of the account records may be relevant for knowing the place where a debit transfer instruction must be presented for honour, the place where a credit must be sent, the place where the transferor of a debit transfer instruction can notify his bank of the withdrawal of the instruction and the place to which legal notices and attachments of an account can be delivered. In the case of legal notices and attachments of accounts, the relevant statute may specify a place where the notice or legal process must be delivered or the person to whom it must be delivered, which need not be connected to the place where the account is maintained.

#### Issue 16

Should the duty of a transferor bank in a credit transfer be limited to sending a proper credit transfer instruction to a proper receiving bank or should the transferor bank's duty be to see that the transferor's instruction is carried out?

#### References

Liability, paragraphs 56-60, 100  
Issues 3, 22, 30

#### Comment

1. This issue goes only to the question of the party responsible for the fulfilment of the funds transfer instruction. It deals neither with the standard of conduct to which any given bank or the banking system as a whole should be held responsible nor with the damages the transferor should be able to collect for improper performance. The extent of the duty of the transferor bank is of particular importance in international credit transfers and in domestic credit transfers in fragmented banking systems where a credit transfer may pass through several banks, communications systems or clearing-houses between the transferor bank and the transferee bank.

2. It may be thought that, since the transferor deals only with the transferor bank, has few independent means of identifying why a funds transfer was not carried out properly and can put little pressure on a distant or foreign bank to settle with it for the losses, the transferor bank should be responsible to the transferor for the proper performance of the funds transfer. This conclusion might be supported by the fact that banks participate in the design of the funds transfer system as a whole and the transferor bank normally decides which intermediary banks to use. Where the transferor bank itself was not at fault, it should normally be reimbursed for the loss, thereby eventually placing the loss on the individual bank at fault or on the system as a whole. It might be expected that one result of such a rule would be that banks might increase the pressure on other banks that consistently make loss-causing errors to improve their procedures. Further unification of banking standards and practice for international transfers might also be encouraged as an additional means of reducing loss-causing errors and delays.

3. However, it might also be thought that it would not be reasonable to hold the transferor bank responsible for errors occurring at other banks. This is particularly true of errors caused by the transferee bank, since the transferor bank seldom has any choice as to the identity of the transferee bank. Even if the transferor bank had a right of reimbursement, it may not always recover from the bank at fault in another country because of exchange control regulations or the like and it could be thought that the transferor bank should not be required to carry such risks of non-reimbursement. Furthermore, the transferor bank might be held liable to the transferor under the banking and legal standards of its country, whereas the bank in the country where the problem occurred may have been following different banking practices of its country. This raises the question whether the transferor bank's obligation should be limited to a duty to the transferor to warn him of the different banking practices of which it knew or should have known.

4. The alternative approach to liability is that each bank is directly responsible to the transferor for carrying out its obligations in respect of the funds transfer instruction. These two approaches are often determined by, or expressed by, the concepts of agency or of privity of contract. It may be thought that the consistent application of either of these concepts within a domestic legal system provides the transferor with a legal basis to hold responsible either the transferor bank or the bank at fault. However, it may be noted that in international transfers it is possible for the transferor not to be able to hold the intermediary bank responsible because of lack of privity of contract. It may, therefore, be thought desirable for a clear and consistent rule to be available, especially in international funds transfers.

5. Consideration might be given to the imposition of a higher funds transfer fee in exchange for which the transferor bank would take on a heavier burden of responsibility for losses caused by errors or delays of other parties in the funds transfer system as well as for its own errors or delays.

#### Issue 17

Is the transferee bank responsible to the transferor, to the sending bank or to the transferee for the proper fulfilment of its obligations in regard to a credit transfer?

#### References

Liability, paragraph 93  
Finality, paragraphs 5-20

#### Comment

1. The transferee bank in a credit transfer may be regarded as being in a legally ambiguous position. On the one hand, its contract with its customer calls on it to receive transfers for credit to the account. In this respect the transferee bank would seem to be contractually responsible to the transferee for the proper fulfilment of its obligations as soon as it has received the credit transfer instruction from the sending bank. Any delays on its part in processing the instruction should be consistent with that contractual obligation. On the other hand, since the funds transfer does not become final and the transferor has not completed his obligations to the transferee until the transferee bank performs the requisite act bringing about finality, the transferee bank might have an obligation to the transferor (or to the sending bank) to act promptly and accurately to perform that act.

2. One approach to determining the party to whom the transferee bank should be liable for failure to carry out the funds transfer instruction properly would be to fix a point of time before which the transferee bank acts on behalf of the transferor (or the sending bank) and after which it acts for the transferee. This point of time might be the moment when the funds transfer becomes final. Alternatively, it may seem reasonable for the transferee bank to be responsible both to the transferor (or to the sending bank) and to the transferee.

#### Issue 18

Should public telecommunications carriers, private data communications services, electronic funds transfer networks and electronic clearing-houses be responsible for losses arising out of errors or fraud in connection with a funds transfer instruction?

#### References

Liability, paragraphs 23, 24, 68-73, 78-81  
Issue 16

#### Comment

1. The question whether public telecommunications carriers should continue to be exonerated from all liability for losses arising out of a lost or delayed message or from changes in the content of the message has been reopened because of changes in the nature of the services offered and as a result of the deregulation or privatization of the service in some countries. However, in the absence of such liability, consideration might be given as to whether the transferor or one of the banks should bear the loss. In favour of the transferor bearing the loss is that the funds transfer is undertaken on his benefit and the loss occurs through no fault of any party who could be held liable. In favour of the loss being borne by one of the banks is that the banks are in the best position to design a funds transfer system using the public carriers where delays or errors would be brought to the attention of the sending or receiving bank, thereby permitting prompt correction. Amongst the banks which might be selected to bear the loss are the transferor bank, especially if the transferor bank is responsible for the proper performance of the entire funds transfer, and the sending bank of the instruction that was lost or delayed or whose content was altered.

2. Private data communications services, electronic funds transfer networks and electronic clearing-houses may contract with the participating banks to limit or exclude their liability for lost, delayed or altered funds transfer instructions. It may be thought that contractual allocation of loss between these entities and the participating banks should not violate public policy. However, consideration should be given as to whether the effect of these contractual provisions is to place the loss on the transferor. It might be thought that there is less reason for the transferor to bear this loss than when the loss occurred with the public carrier, since the networks and clearing-houses are an integral part of the banking industry and the banks have a choice as to whether to use the private data communications services for sending funds transfer instructions.

3. It might be thought that the telecommunications carrier, data communication service, electronic funds transfer network or electronic clearing-house should be liable for loss caused by the fraud of its employees. However, it might also be thought that there are limits to the extent to which an employer

should be responsible for the acts of its employees, especially when those acts are illegal. A distinction might be drawn between losses from fraud made possible by access to account records or to equipment as part of the employment relationship, for which the employer would be responsible, and losses from fraud made possible by knowledge acquired by the employee in the course of his employment, for which the employer would not be responsible.

#### Issue 19

Should a bank be free from responsibility for errors or delayed funds transfers caused by failures in computer hardware or software?

#### Reference

Liability, paragraphs 64-67

#### Comment

1. Although bank computer hardware and software have reached high degrees of reliability compared to only a few years ago, on occasion errors occur and funds transfers are lost, delayed or altered because of computer failure. On the one hand it may be thought that technical problems of this nature are beyond the control of a bank and that the bank should be free from responsibility for any losses caused to customers as a result. If free to do so, banks often include a provision to this effect in the contracts they have with their customers.
2. On the other hand it may be thought that the degree of computer reliability is such that computers should be treated the same as any other type of equipment used by banks. Computer failure may be the result of improper equipment or software or inadequate maintenance, and the consequences of computer failure can be reduced by advance planning, which may include the availability of redundant equipment, back-up power supplies, plans for using alternative means of effecting funds transfers and, in general, prompt action by the bank. As a result, a generalized exoneration from liability may be thought not to be justified, but an exemption from liability for computer failure might be justified when the bank could not be expected to have prevented the failure or reduced its consequences.

#### Issue 20

Should a bank be liable to its customer for having entered a debit or credit to the account according to the account number indicated on the funds transfer instruction it has received if the name on that account does not correspond to the name given on the funds transfer instruction?

#### Reference

Agreements, paragraphs 44-46

#### Comment

1. The accounts to be debited and credited may be indicated on the funds transfer instruction by name, by account number, or by both name and account number. Banks which keep customer account records using automatic data

processing normally rely upon the account number alone for processing. This may be the only possible means when the instructions are batch-processed. However, it should be possible to compare the account name when the instruction has been transmitted individually by telecommunications.

2. It is unlikely that entering debits and credits by account number alone needs legislative authorization under the law of any country. However, it may be thought that it would be useful to indicate whether the bank should be liable for any loss which might occur if the name of the party to be debited or credited according to the funds transfer instruction did not correspond to the name on the account. The name on the instruction and the name on the account may fail to correspond because of fraud, error, including error by the transferor, or because the transferor did not know the correct name of the account.

3. A rule fully supportive of the increased use of automatic data processing might be that a bank that entered a debit or credit according to the account number on a funds transfer instruction it received would not be liable even though the entry was made to an account bearing a different name from that on the instruction. Any loss would be borne by the transferor or the bank at which the incorrect account number was first entered on a funds transfer instruction. This might be expressed as a rule that in case of conflict between the account number and the account name, the account number prevailed.

4. It may also be thought that the bank could be expected to compare the account number and the account name and discover any discrepancy between them. In particular, this might be done with high-value funds transfers received by telecommunications. If it chooses to enter debits and credits on the basis of account numbers alone, it is for the benefit of the bank, and the customers should not suffer as a result. If this position is taken, consideration might be given as to whether the transferee bank or the transferor should suffer the loss where the discrepancy was caused through the error of the transferor or the fraud of one of his employees. The normal rule in such cases would probably be that the transferor bore the risk of such loss. If loss were attributed to the transferee bank, it would be a recognition that the loss could have been prevented by the subsequent actions of the transferee bank.

#### Issue 21

Should the bank or the bank customer carry the burden of proof as to whether a debit to the transferor's account was authorized by him or occurred through his fault?

#### References

Liability, paragraphs 13-21  
Issue 7

#### Comment

1. The issue of the burden of proof involves litigation. If the customer has the burden of proving that a debit to his account was unauthorized and can neither meet that burden nor shift to the bank the burden of proving that the debit was authorized, the customer will fail in his claim. If the bank has the burden of proving that the debit was authorized, the likelihood that the customer will succeed in his claim are increased.

2. In issue 7 it was noted that in almost all countries computer records are accepted as evidence of the transactions they record. Although all legal systems that accept computer records as evidence permit a party to raise doubts as to the correctness of the record by showing that the computer system was improperly designed, insufficiently maintained or that improper procedures were used to enter the data so that accuracy of the data entries was not assured, in most disputes as to whether a funds transfer instruction had been properly authorized electronically, it would be a practical impossibility for the customer to raise such doubts about the bank's computer system or procedures. This is particularly true of small-value funds transfers, but it would also be true of most large-value funds transfers.

3. In many cases when a customer claims that the funds transfer which was initiated through a customer-activated terminal was not authorized, the surrounding circumstances may either substantiate his claim or lead to strong doubts of its validity. However, when the surrounding circumstances neither substantiate nor raise serious doubts about his claim, a decision as to whether the customer's account may be debited often rests on whether the customer or the bank bears the burden of proof. The most frequent current example is the withdrawal of cash from an automatic cash dispenser, but the issue can be expected to arise frequently in point-of-sale transactions as well. In both cases the party who issues the funds transfer instruction departs with the cash or the goods leaving no audit trail other than the funds transfer instruction itself. A less frequent, but individually more important, case involves fraudulent large-value transfers where knowledge as to the identity of the fraudulent party might be relevant to the allocation of loss to the bank or to its customer.

4. It may be thought that it is so unlikely that the record of the account to be debited could be in error as a result of undetected computer error or that a third person could fraudulently access the computer without the aid or the negligence of the customer that the burden of proof should properly rest upon the customer to show that the entry at the customer-activated terminal was made without his aid and was not the result of his negligence. It is this argument that supports the provisions found in many bank-customer contracts that the customer is responsible for all transactions initiated by use of his debit card or other access device unless he has reported that the card was lost or that the means of access was compromised in some other way.

5. It may, however, be thought that fraudulent access to customer-activated terminals is a known and serious problem for which the banking industry should be responsible to its customers. It might even be thought that it is the duty of the banking industry to devise means of access to the computer through customer-activated terminals that are so secure that ordinary negligence on the part of the customer would not be sufficient to compromise them. It could also be thought that, unless such secure means of access are available, the banking industry should install customer-activated terminals only with great caution. This might lead to a conclusion that the bank in question should not be allowed to debit the customer's account unless the bank could show that the means of access to the computer was so secure that it was impossible, or that it was highly unlikely, for the entry to have been made unless the means of access had been compromised in the hands of the customer. At present this would probably lead to the result that the bank could not debit its customer's account unless surrounding circumstances indicated that the fraud could be attributable to him. However, as more secure forms of authentication at customer-activated terminals become available, it could be expected that banks would be able to sustain this burden of proof with greater success.

Issue 22

Should the customer or the relevant banks carry the burden of proof as to the source of error or fraud causing loss in effectuating a funds transfer?

References

Liability, paragraph 59  
Issues 7, 16, 21

Comment

1. This issue can arise in two principal ways. The first is that the customer claims to have initiated a funds transfer instruction but the bank has no record of it. Although the most frequent cases involving loss will undoubtedly arise from instructions alleged to have been sent from a customer-activated terminal at the customer's place of business, once funds transfers from automated teller machines or home banking terminals become common, cases are bound to arise involving such matters as lapsed insurance contracts for failure to pay the premium which was due. It could be expected that in most cases when the instruction was sent from a terminal at a place of business, the customer's computer would retain a record of the transmission. The issue may then focus on which party bears the risk of loss of the message, the customer or the bank. In the case of an automated teller machine or a home banking terminal, there will often be no paper receipt or computer record available to the customer to prove the transmission. Without such a receipt or record and in the absence of regular business routines by the non-commercial customer that would lend credence to his claim, it may be thought that the customer should carry the burden of proof.

2. The second way in which the issue can arise is that the funds transfer instruction was lost or delayed or contained an error when it arrived at the transferee bank but the source of the problem is unclear. When the rule selected imposes responsibility on the transferor bank for the proper performance of the entire funds transfer, it can be expected to carry the burden of proof that the loss, delay or error occurred in a manner which exonerates the bank from liability (see issue 16). When the rule selected does not impose such a responsibility on the transferor bank, the transferor could be expected to carry the burden of proof of showing which bank is liable for the loss, delay or error. Normally, the audit trail should be sufficiently clear to show the bank where the problem occurred. However, the records establishing the audit trail would be in the complete control of the banks, and in the case of an international funds transfer, some of those banks may be foreign banks with the consequent increased difficulty of securing information. If the records of the banks disagreed, the transferor would have no independent means of carrying this burden of proof. In addition, the transferor may be required to show that the loss, delay or error occurred through the negligence or other fault of the bank in question, in which case he could be expected to carry the burden of proof as to the cause of the problem.

Issue 23

Should the funds be required to be made available to the transferee within specific periods of time after the transferor bank receives a credit transfer instruction? If it should, how should the period of time be determined?

## References

Agreements, paragraphs 55-78  
Issues 16, 27-29  
ISO/DIS 7746/1.2, Banking-Standard telex formats for inter-bank payment messages - Part 1: Transfers  
ISO/DIS 7982/1, Bank telecommunication - Funds transfer messages - Vocabulary and data elements (as revised on 14 November 1984)

## Comment

1. This issue is concerned only with the question whether a time-limit should exist within which credit transfers should be completed and, if so, what the source of that time-limit should be and which banks should be liable for failure to meet it. It is not concerned with the period of float that might be created in credit transfers, since the period of float can be made longer or shorter than the period of time which is required to effect the credit transfer by establishing an interest date earlier or later than the entry date.
2. In order for a transferor to initiate credit transfer instructions in time to meet payment deadlines, the time necessary before the transferee will have available funds must be known. Banks are increasingly able to give precise estimates of the time necessary for inter-bank credit transfers to be completed, since electronic fund transfer techniques are more reliable in this regard than are paper-based credit transfers. This is true for both domestic and international credit transfers.
3. It may be thought that, if transferor banks offer a service which contemplates that funds will be available to the transferee on a specified pay date, transferors will tend to rely on that fact in planning their transactions. In such a case, the transferor may well have a basis for claiming for losses that might have occurred because of unexcused delay.
4. It may be thought that the transferor bank should be required to act upon a credit transfer instruction it has received within a limited period of time appropriate to the type of funds transfer involved. If it was felt necessary, it should be possible to agree on standard time-limits for all types of credit transfer instructions in use in a country. These time-limits should, of course, take into consideration the normal causes of delay which prevent all funds transfers from being completed within the optimal period of time. Where the credit transfer is a one-bank transfer, the bank might be held responsible for completing the transfer within the appropriate period of time. A different period of time might apply when the transferee's account was at another branch within or outside the country where the transferor held his account and the data processing of the transferee's account was performed at a different location from that servicing the transferor's account.
5. In a funds transfer involving two or more banks, each of the banks receiving the instruction would seem also to have an obligation to act within a limited period of time. Where the receiving bank received the funds transfer instruction through a network, the period of time might be established by network rules. In other cases, it may be established by banking custom, by inter-bank agreement or by law. This obligation of the receiving bank might be considered to run either to the transferor or to the sending bank. In either case, there would be an increased likelihood that the estimated time for the entire funds transfer would be accurate.

6. Since the transferor must rely upon the transferor bank to furnish the estimate of time necessary for the funds transfer and to serve as the entry point to the entire funds transfer system, it seems appropriate to consider whether that bank should be legally responsible for the funds transfer being carried out on schedule. On the other hand the transferor bank cannot control the actions of the other banks in the chain, and can rarely even select the transferee bank (see issue 16).

7. When the transferor specifies a pay date, i.e. the date on which the funds are to be made available to the transferee, the generalized obligation of the transferor bank or other banks in the chain becomes more specific. The acceptance of a funds transfer instruction with an indicated pay date might be understood to create a contractual obligation on the part of the transferor bank that the funds would be available to the transferee by that date. At a minimum it might be thought that the transferor bank would be obligated to include the pay date in its funds transfer instruction to the next bank in the chain. However, since standard message formats for telex and computer-to-computer funds transfer instructions do not contain a field for the pay date, that information would have to be included in the field for receiver information. It may also be noted that the term "pay date", which had been in earlier drafts of the proposed vocabulary for use in banking telecommunications, has been eliminated from the most recent version.

8. It might be thought that, when the transferor had provided insufficient time to be certain of meeting the pay date, the transferor bank would also be obligated to inform the transferor of that fact. Furthermore, if a receiving bank is not obligated to credit its credit party until it has received value, the transferor bank as sending bank would be obligated to provide its receiving bank with value in time for that bank to act within the necessary period of time.

#### Issue 24

How often should a bank be required to send its customers a statement of account activity?

#### Reference

Liability, paragraphs 47-50

#### Comment

1. A bank and its customer could agree that a statement of account activity would be given more often than might be required by law. This would be particularly true of business accounts, where daily statements of account activity are often given. Therefore, this issue relates only to the minimum requirements that might be imposed by law.

2. In those banking systems where a notice is given whenever a debit or a credit is entered to an account, that notice serves as a statement of account activity. In other banking systems where a notice of debit or credit is not given automatically, periodic statements might normally be expected. However, an appropriate minimum requirement might vary for different types of accounts and different levels of account activity. In some cases, such as where the account is secret and designated only by number, it might be considered inappropriate for any periodic statement of account activity to be sent in the mail to the customer. Therefore, it might be thought that the frequency of statements of account activity is a matter which could be left to the agreement of banks and their customers.

3. It may, however, also be thought that for at least certain types of accounts minimum requirements established by law would be appropriate. This would most likely occur with regard to non-commercial accounts in countries where a notice of debit or credit was not necessary for the debit or credit to become final. This may be thought to be of increasing importance as larger numbers of individuals than in the past use bank accounts for funds transfers. It may be thought that these individuals are less likely to keep adequate records of their funds transfers. Where the transferor has an unqualified right for a period of time to demand reversal of a debit transfer made pursuant to a standing authorization to debit, the transferee would have an interest in knowing that the transferor had received notice of the debit and that the time for reversal had begun to run. Furthermore, the increased amount of fraud that has been reported as a result of the use of customer-activated terminals may be thought to call for relatively frequent statements of account activity as an aid in discovering the fraud.

4. If a statement of account activity is required by law, some consideration might be given as to whether the statement must be on paper and be sent to the customer or whether the requirement is satisfied when the statement is made available at the bank. In particular, the statement might be made available through the use of a customer-activated terminal that the customer has in his home or place of business or through an automated teller machine.

#### Issue 25

How much time should a bank customer have to notify his bank of improper entries to his account?

#### Reference

Liability, paragraphs 51-54

#### Comment

1. In some countries the period of time during which a bank customer should notify his bank of improper entries to an account is a part of the law concerning funds transfers. In other countries the period of time is determined by general rules of law. In either case the period of time should be relevant to current banking procedures.

2. The total period of time available to a bank customer to notify the bank of improper entries to his account, starting from the time when the entry is made to the customer's account, is determined both by the event which causes the period to commence to run and the duration of the period. The period could commence when the entry was made. In some countries, in accordance with general rules of law, the period commences when a formal balance of the account is stated by the bank, which may be semi-annually or annually. It may be thought, however, that it is more relevant for the period to commence when the bank gives the customer a statement of account activity showing the entry, since that is the event that brings its existence to the attention of the customer. If a statement of account activity is available to the customer through a customer-activated terminal, it might be thought that the period of time should commence to run as soon as the entry could show on the terminal on a request by the customer. If no statement of account activity is sent to the customer or available through a customer-activated terminal, the period might commence when information that the entry has been made is available to the customer at the bank on request.

3. When the period of time for the customer to notify his bank of an improper entry is limited only by the statute of limitations or period of prescription, i.e. the limitation period for commencing legal action, the period is often several years long, and may be considerably longer. It may be thought, however, that a shorter period of time, which might be measured by months rather than years, would be appropriate for giving notice. Especially where the improper entry appears to have arisen out of fraud or where the entry was made to an incorrect account, prompt notice to the bank may permit the bank to pursue the fraudulent party or correct its error by entering the amount to the correct account.

4. Consideration might be given as to whether there should be different periods of time for different types of account or for different types of customers. It might be thought, for example, that commercial customers should have a shorter period during which to notify the bank of an improper entry than would most non-commercial customers, since it can be assumed that commercial customers reconcile their statements of account activity sooner and with more care. Furthermore, the average size of individual commercial funds transfers is larger than non-commercial funds transfers, making it of greater importance that individual errors or fraud be found promptly.

5. It may be thought that the period of time available to a bank customer to give notice of an improper entry should be a matter of mandatory law not subject to being reduced by agreement between banks and their customers. However, it may also be thought that, particularly in the context of commercial accounts or of large-value funds transfer networks, it would be desirable for the parties to be able to adjust the legally prescribed period of time to the circumstances of the account and its activity.

#### Issue 26

Should there be a clearly articulated error resolution procedure?

#### Reference

Liability, paragraph 55

#### Comment

1. Since bank customers may question a certain number of entries to their account which may have been made in error or may be a result of fraud, every bank will of necessity have a procedure for investigating and resolving those errors. In some banks the procedure may be unwritten and informal. In many banks, and particularly banks with a large number of accounts and entries, the procedure tends to be written and formal.

2. It may be thought that every bank should have a written error resolution procedure. Such a procedure might be expected to contain certain minimum requirements in regard to the time the bank has to respond to the enquiring customer and the information that must be contained in the response. It may also be thought that the error resolution procedures of the bank should be made known to the bank's customers in an appropriate form.

3. Since error or fraud in a funds transfer often involves actions of banks other than that of the enquiring customer, any such procedure adopted by only one bank would of necessity be limited in its scope. Particular difficulties might be encountered where the other banks involved were in other countries and those banks had different standards in regard to investigating and correcting errors or reporting on apparent fraud.

4. It may be thought, therefore, that inter-bank agreements might be developed regarding error resolution procedures. These agreements might be incorporated into the rules of funds transfer networks, adopted by banking associations or by bilateral agreements between correspondent banks. It could be expected that the provisions of any such agreements relating to small-value funds transfers might be significantly different from those in agreements relating to large-value transfers.

5. In some countries it may be thought useful to prescribe by law the required error resolution procedures. It may be thought that, especially in regard to non-commercial accounts, mandatory error resolution procedures are an important measure of protection to bank customers who are otherwise in a weak position to argue with their bank about an alleged error on the part of the bank. However, it may also be thought that any error resolution procedure prescribed by law would be apt to be either too general to be of much protection to bank customers or so detailed as to generate unnecessary expense. It may also be thought that in most countries experience does not necessitate legislation on this point.

#### Issue 27

Should either the transferor or the transferee recover interest for a delay of a funds transfer?

#### References

Agreements, paragraphs 55-78  
Liability, paragraphs 92-95  
Issues 23, 30

#### Comment

1. Issue 23 discussed whether the banking system should be required to make a credit transfer available to the transferee within specific periods of time after the transferor bank receives a funds transfer instruction. Implicit in that question was the question of the nature of damages that might result from a failure of the banking system to meet the time schedule. The most natural element of damages for delay in paying a sum of money on time is interest.

2. It should be noted here, as was alluded to in issue 23, paragraph 1, that in some banking systems an implicit interest charge is built into the funds transfer schedule by debiting the transferor with an interest date of day 1 and crediting the transferee with an interest date of day 3. This implicit interest charge is not present in other banking systems where both the debit and the credit have the same interest date, e.g. day 3. However, in either case if the transfer is delayed and the credit is entered with an interest date of day 5, there has been a two-day loss of interest to the transferee.

3. When a large-value funds transfer is delayed, the transferee's interest loss may be significant. However, in some banking systems it may be as difficult to determine which of several rates of interest is the appropriate rate of interest to compensate the transferee as it is to determine the appropriate rate of interest to compensate the transferee bank in case of delay (see issue 30). One solution would be to give the transferee the rate of interest he would have received in the account. This is the solution implicit in the procedure of back-dating the credit mentioned in paragraph 4, below. Another solution would be to tie the interest rate used in calculating compensation to the transferee to the interest rate used for inter-bank compensation as described in issue 30.

4. Although it is the transferee who has suffered the lost interest, it is not clear from whom the transferee should be able to recover. It could be thought that the transferee should be able to recover from the transferor if the delayed entry of the credit constituted breach of the underlying contract. If this were to happen and if the delay did not occur at the transferor bank, the question would arise as to whether the transferor could seek reimbursement, and from which bank. If the delay occurred at the transferee bank, the transferee should probably be able to recover from it on the grounds of the pre-existing contract of account. However, if the delay appeared to have occurred at any other point in the funds transfer chain, including at the transferor bank, the transferee may not have a direct claim against that party. A practice which reduces the theoretical problems is that the interest date of the credit in the transferor's account may be back-dated to the appropriate date, with interest and fees adjusted to what they would have been if the transfer had not been delayed. In most cases this procedure would compensate the transferee adequately for the delay.

5. In the vast majority of delayed small-value transfers no claim for compensation for lost interest could be expected. The size of the individual claim would be small and transferees receiving small-value transfers often are not aware of the appropriate interest date for the funds transfer. If delay in completing small-value transfers beyond the established time-limits is a serious problem in a banking system, consideration could be given to administrative solutions that would eliminate this effect of delay on the transferee. One such solution might be to provide that the interest date of the debit to the transferor and the interest date of the credit to the transferee must be the same or separated by a specific number of days.

#### Issue 28

Should either the transferor or the transferee recover exchange losses for delay of a funds transfer?

#### References

Agreements, paragraphs 55-78  
Liability, paragraphs 96-97  
Issues 23, 27

#### Comment

1. As is true of a claim for lost interest, a claim for exchange loss can be made only if the time schedule for the funds transfer is so precise that the time when the exchange should have been made is clearly determined or determinable. In a period of floating rates, with daily movements of several per cent between major trading currencies not unknown, the precise determination of the hour or even the minute when the exchange should have been made could be relevant in particular cases.

2. Putting aside the influence of hedging operations by the parties, the transferor may suffer exchange loss if his obligation to pay is denominated in a foreign currency and his currency of account devalues against the currency of payment between the time when the exchange should have been made and the time when it was made. Similarly, the transferee may suffer exchange loss if the currency of payment is a foreign currency which devalues against his currency of account between the time when the exchange should have been made and the time when it was made. The fact that there was an exchange loss, and

the amount of that loss, might be established by a subsequent cover purchase of the foreign currency by the transferor or transferee, as the case may be. The transferee suffers no exchange loss during the transfer itself if the currency of the account to which the transfer is credited is the same as the foreign currency of payment. However, consideration might be given as to whether a claim for exchange loss should be allowed when the transferee intended, or was required by currency control regulations, to sell the foreign currency promptly after receipt and the transferor knew of this intention or requirement.

3. Where the exchange loss occurred because of delays at a bank prior to the transferee bank, the same difficulties exist in determining from whom, and in what manner, the transferee could recover his loss as there are in regard to recovering lost interest arising out of delay (see issue 27).

4. If no recovery for exchange loss is permitted, the transferor and transferee are required to accept the rate of exchange prevailing when the exchange was made in fact. If recovery of exchange loss is permitted, consideration might be given as to whether the customer, i.e. transferor or transferee, as the case may be, should have the choice between the rate of exchange prevailing when the exchange should have been made and the rate of exchange prevailing when it was made in fact. Alternatively, the governing rate could be deemed to be the rate of exchange prevailing when the exchange should have been made. In this latter case the banks would have the right to apply that exchange rate to the transaction even though the rate had moved in favour of the customer before the exchange occurred. As noted in the chapter on Liability, paragraph 97, in the draft Convention on International Bills of Exchange and International Promissory Notes, the holder of the instrument is given the choice of dates "in order to protect him against any loss he may suffer because of speculation by the party liable."

#### Issue 29

Under what circumstances should the bank be liable for consequential damages?

#### References

Liability, paragraphs 98-100  
Issues 16, 23

#### Comment

1. Although delay or error in the processing of a funds transfer instruction can usually be fully compensated by payment of interest or exchange loss and similar financial adjustments, in a few cases the failure to complete the funds transfer by the anticipated date may cause consequential damages to the transferor arising out of the cancellation of a contract, incurring of a penalty or forfeiture of rights, with damages far exceeding compensation measured as interest.

2. It may be thought that, in accordance with the general rule, the bank should not be liable for consequences it did not foresee and could not reasonably have foreseen. Since a delay in executing a funds transfer only rarely causes such loss, even where the amount transferred is large, liability for consequential damages would be correspondingly rare. This might be thought to be in accordance with the fee schedule for funds transfers since that schedule is usually too low to support even occasional claims for the large damages which might result.

3. However, there are occasions when the transferor bank knows the purpose of the transfer and the consequences that would follow from delay or error in its transmission. It might be thought that in such cases the normal rules of liability should follow. If this approach was taken, the transferor bank would be liable for the consequential damages arising out of its own errors or delays in processing the funds transfer. On the other hand, banks often know a considerable amount about the affairs of their customers without that knowledge being available to the funds transfer department. It could be questioned who within the bank should have the requisite knowledge for the bank to be responsible for consequential damages.

4. If the transferor bank was responsible for the entire funds transfer, including the actions taken by other banks (see issue 16), it would be responsible for consequential damages arising out of any delay or error in the funds transfer. However, if the transferor bank was responsible only for its own actions and the delay or error occurred at a subsequent bank in the transmission chain, the question would arise whether the subsequent bank should be bound by the knowledge of the transferor bank or whether it could defend on the grounds of unforeseeability.

5. It should be noted that under current banking practice it would be unusual for the transferor bank to explain to its receiving bank the potential consequences if the funds transfer instruction was delayed. However, there is no intrinsic reason that it should not have such a duty. At a minimum it might be thought that the transferor bank should include the pay date in the funds transfer instruction (see issue 23). It might also be thought that inclusion of such a pay date would give the banks in the transmission chain the knowledge that some business consequences might occur if the funds were not available to the transferee by that date, even if they did not know the exact nature of those consequences.

6. It may be thought that there should be a standard procedure available whereby a transferor could notify the transferor bank that it was of particular importance that the funds transfer be completed on time. An additional fee might be charged based on a special priority procedure required for handling the funds transfer. Such a procedure would seem to have its greatest utility in international funds transfers, where the possibilities of delay or error are the most significant and the difficulties of recovering substantial damages from an intermediary bank at fault are the greatest, although it might also be instituted for domestic funds transfers.

### Issue 30

Should there be special rules governing the inter-bank liability for late reimbursement or for erroneous funds transfers?

### Reference

Issue 16

### Comment

1. In addition to any loss to the bank customers (transferor and transferee) that may be caused by an error on the part of the sending bank, the receiving bank may also suffer a loss. Although general rules of law would furnish a basis for determining when liability exists and for calculating the loss, they may not be completely satisfactory when applied to banking situations without

interpretation. Furthermore, the general rules of law differ from one country to another and the use of conflict of laws to determine the appropriate compensation may be thought not to be satisfactory for the routine calculation of compensation. Therefore, it may be thought desirable for inter-bank rules to be prepared, especially for international funds transfers.

2. If the receiving bank should be required to pay damages to its credit party for losses arising out of errors or delay experienced prior to receipt of the funds transfer instruction by the receiving bank, that bank could be expected to receive reimbursement for the loss from the sending bank. An inter-bank agreement might be prepared to govern that reimbursement. A threshold question would be whether any such agreement should cover matters that would otherwise be governed by general rules of law. Other issues might include: Would the receiving bank receive reimbursement from the sending bank if the error was caused by yet an earlier bank in the chain? Could the receiving bank receive full reimbursement from the sending bank for all damages it has paid or would it have to justify the damages by showing a court order or arbitral decision? If the damages paid to the transferee consisted of interest only, should the transferee bank recover that interest as reimbursement in addition to the inter-bank interest discussed in the following paragraph? Similar questions are faced and might be settled by an inter-bank agreement if, as suggested in issue 16, the transferor bank in a credit transfer is responsible to the transferor for the proper performance of the entire credit transfer.

3. When the receiving bank has credited its credit party as requested but has not received reimbursement on the date indicated, there is no loss to the credit party but there is a loss of interest to the receiving bank. Similarly, when a sending bank requests a receiving bank to correct an error of the sending bank by entering a credit to the account of the credit party as of a date earlier than the date of receipt of the instruction, the receiving bank has lost the opportunity to invest the funds it should have received at that earlier date. A contrary situation occurs when a bank sends a credit transfer instruction to the wrong receiving bank and that bank, at the request of the sending bank, subsequently reverses the credit entered to the account of its credit party and returns the funds to the sending bank. The receiving bank has had the use of funds to which it should not have been entitled. In some legal systems the receiving bank may be obligated to reimburse the sending bank under a theory of unjust enrichment or the like even though the error was that of the sending bank.

4. In many banking systems there may be more than one interest rate that might appropriately apply to the inter-bank compensation. For international funds transfers there would certainly be more than one applicable rate. It may, therefore, be thought to be useful for inter-bank rules to specify the conditions under which interest would be given by one bank to the other as compensation and to give appropriate formulas for calculating the amount of interest. Furthermore, errors are time-consuming to rectify. Therefore, it might be thought appropriate for inter-bank rules to specify an amount of compensation to be paid by a sending bank to the receiving bank for the inconvenience and time spent in rectifying the error.

#### Issue 31

What should be the consequences of a funds transfer or funds transfer transaction becoming final?

Reference

Finality, paragraphs 49-96

Comment

1. The consequences of finality of a funds transfer are not the same in all countries. Legal results which are the consequences of finality in some countries may arise before or after finality as viewed in other countries, or in the same country may arise at different times depending on the type of funds transfer involved. Therefore, there could be no universal list of consequences which should be described as the result of finality; there can be only a list of consequences often associated with finality of a funds transfer. The exact time when each consequence occurs must be determined separately for each type of fund transfer in each country.

2. The consequences most often associated with finality are that:

(a) The balance in the transferor's account is reduced and the funds transfer can no longer be stopped by the death of the transferor, the commencement of insolvency proceedings against him, his supervening legal incapacity, attachment of his account, set-off by his bank or withdrawal of the funds transfer instruction by him;

(b) The credit balance in the transferee's account is increased and is subject to action by his creditors;

(c) The transferee has a right to withdraw the funds and might earn interest on the new credit balance (or cease paying interest on the previous debit balance);

(d) The transferee bank may be precluded from debiting the transferee's account to correct alleged erroneous credits to that account without the permission of the transferee;

(e) An underlying obligation between the transferor and transferee may be discharged.

3. Essentially the same consequences in respect of the accounts of one bank with another seem to occur as the result of finality of a funds transfer transaction between two banks. However, finality of the funds transfer transaction may also bring with it the obligation of the receiving bank to credit the account of its credit party, to pay interest on the new balance in the account of the credit party, to send a credit advice to the transferee or a new funds transfer instruction to the next bank in the transmission chain and to make the funds available to the credit party.

Issue 32

Should funds transfers be final for any or all purposes on the happening of a specific event or at a particular point of time in the day?

Reference

Finality, paragraphs 4-48

Comment

1. A funds transfer may be final either on the happening of a specific event, e.g. the entry of the debit or the credit to the relevant account, on the happening of an event which is common to a large number of funds transfers, e.g. the placing of a computer memory device containing funds transfer instructions into the computer for processing, or at a specific time of the day, e.g. midnight of the day on which the funds transfer instruction was received or on which the debit or credit was entered. If the funds transfer becomes final upon the happening of a specific event, the rule treats each funds transfer as a unique transaction. If the funds transfer becomes final on the happening of an event common to a large number of funds transfers or at a particular time of the day, the rule places each funds transfer within the normal data processing cycle for the type of funds transfer in question.

2. Although some countries may find it desirable to establish a relevant event or point of time as the moment of finality for all types of funds transfers and for all consequences, other countries may find it preferable that certain funds transfers become final for some or all purposes on the happening of events while other funds transfers become final at a particular time of the day.

3. The one event which is likely to make all types of funds transfers final in all countries and in regard to all consequences is the handing over of cash by the transferor bank (debit transfer) or the transferee bank (credit transfer) pursuant to the funds transfer instruction. However, when the cash is handed over by a third bank, with or without recourse, the funds transfer is not considered to be final until the funds transfer instruction has been honoured by the transferor bank or transferee bank as the case may be. In the light of these prior rules, consideration may be given as to whether a funds transfer is final when the transferee withdraws cash from a cash dispenser in an off-line shared system where the bank maintaining the cash dispenser is not reimbursed and the debit is not entered to the customer's account until a later time.

4. Some types of funds transfer seem to call for fixing different events or points of time for the various consequences flowing from the funds transfer. For example, the transferor loses the right to withdraw a funds transfer instruction when it is issued if the instruction is of a type which the transferor bank guarantees to honour. Because of the general desirability of certainty and of early finality in high-value electronic funds transfers, network rules often provide that the funds transfer instruction is not subject to reversal by the sending bank (or its instructing party) once it is sent. In the case of a net, or net-net, settlement network, the funds transfer may become final at the time when settlement occurs in the sense that there is then no longer the possibility that the funds transfer instruction may be returned to the sending bank because of a failure to settle, although other network rules may require immediate irrevocable credit to the account of the credit party.

5. Where the funds transfer instructions are processed in batch, it may be considered desirable for the rules on finality to fix a specific time of the day when the funds transfers become final, since batch processing of funds transfer instructions does not lend itself as well as does individual processing to fixing a single event during the processing period as the relevant event for finality. However, if a single event is desired, it has been suggested that it be an event which is easy to identify, such as the insertion of the computer memory device containing the batch of funds transfer instructions into the computer.

6. Furthermore, it may be considered desirable, as it is in some countries, to permit the data processing to take place in any order convenient to the bank. If this is to be permitted, it may be considered desirable to permit a bank to enter all debits and credits without regard to account balances or other reasons for refusing to honour the funds transfer instruction and to reverse the entries that the bank later determines it should not honour. If this is considered desirable, it may also be considered desirable to fix a maximum period of time during which the bank could reverse the entries, which would probably be best measured as terminating at a particular time of the day.

### Issue 33

What should be the effect on a credit transfer between two customers of the fact that a funds transfer transaction between two banks has become final?

### References

EFT in general, paragraphs 26-28  
Finality, paragraphs 23-30, 58, 61, annex  
Issue 4

### Comment

1. The relationship between the finality of a funds transfer transaction between two banks and a credit transfer between the transferor and transferee is emerging as one of the more important legal issues to be faced in the design of high-value funds transfer networks and in the potential preparation of rules to govern international funds transfers.
2. The issue seems not to have raised concerns so long as high-value electronic funds transfers were made only by telegraph or telex between a relatively small number of large banks with well-established correspondent relationships. In many countries the inter-bank transfers were regarded only as acts implementing the instructions of the transferor. Therefore, when the transferee bank acted upon the funds transfer instruction, it was natural to conceive that the transferee bank was honouring the instruction of the transferor, even though the telegram or telex had been sent by the transferor bank or an intermediary bank.
3. The network rules of the various high-value electronic funds transfer networks that have been organized to take advantage of computer-to-computer technology include rules as to when funds transfer transactions made through that network are final. These rules seem to have two main purposes. The first is to protect the settlement. Although this purpose may seem to be of particular significance in regard to net or net-net settlement networks where the unravelling of a settlement would cause immense difficulties, it may in fact be of more importance to a network operated by a correspondent bank, including a central bank. It may be obvious that a net settlement must be irreversible as to all of the participating banks. However, in the absence of rules in the general law of funds transfers as to when a funds transfer transaction becomes irreversible, the transaction might be reversed on the instruction of the transferor. As a result, the correspondent bank might have to reverse the credit to the account of its receiving bank. This could leave the account with a debit balance that would be unacceptable to the correspondent bank.

4. The second reason for adopting network finality rules is to assure the receiving bank that the credit it has received is irreversible. With that assurance the receiving bank can also give irrevocable credit to its credit party, who may be either the transferee or another bank.

5. The first consequence of the network finality rule is that the sending bank in the fund transfer transaction cannot withdraw its instruction once it is sent through the network. Therefore, the transferor also loses his right to have the instruction withdrawn from the network. However, if the funds transfer has not yet become final in respect of the transferee, the transferor may still have the right to withdraw his instruction in regard to the entire funds transfer. It may therefore be questioned whether the receiving bank in the funds transfer transaction would have an obligation to pass on the notice of withdrawal of the funds transfer instruction. If the receiving bank does not have such an obligation, consideration should be given whether the transferor or transferor bank should have the right to bypass the intermediary banks involved and instruct the transferee bank directly. The question is of particular delicacy because it may arise most often in international funds transfers where the substantive and procedural law of several countries may be involved.

6. Although the problem may arise most often in respect of the withdrawal of a funds transfer instruction on the instruction of the transferor, the same question can arise in respect of notice of the death of the transferor, commencement of insolvency proceedings against him, attachment of his account or other legal proceedings that would interfere with the completion of the funds transfer.

7. If the funds transfer can be stopped by bypassing the receiving bank in the funds transfer transaction and by giving the requisite notice to a later bank in the chain, or directly to the transferee bank, it would seem that a procedure for reimbursing the various banks may need to be established that would also bypass the receiving bank in the funds transfer transaction. If the receiving bank were required to reimburse the sending banks, the funds transfer transaction would not have been final. In this respect a network finality rule is different from some clearing-house rules that provide that a dishonoured cheque may be returned through the clearing-house for a certain period of time after which it can be returned only outside the clearing-house.

8. On the other hand, each funds transfer network must necessarily have a procedure for the return of credit transfer instructions on the request of the transferor bank because of an error it has made or on the initiative of the transferee bank because it cannot execute the instruction, for example, because there is no such account. Since these returns do not seem to disturb the principle of finality of the original funds transfer transaction, perhaps returns arising out of notices of the type under discussion should also not be considered to disturb the principle of finality of the funds transfer transaction.

9. If the conclusion is reached that finality of a funds transfer transaction between intermediary banks has the effect of blocking notice of these various causes for terminating the funds transfer before the transfer becomes final, the effective result is that in respect of these matters, the funds transfer becomes final at the same time the funds transfer transaction becomes final.

Issue 34

Should the time of finality of a funds transfer be affected by a guarantee of honour of the funds transfer instruction by the transferor bank?

Reference

Finality, paragraphs 41-43

Comment

1. Although guarantee of honour by the transferor bank is usually associated with paper-based debit transfers, such as guaranteed cheques and credit cards, it can also be associated with electronic debit or credit transfers. In particular, any point-of-sale system with delayed debit is likely to guarantee the credit to the transferee (merchant) once the authorization to enter into the transaction has been given to the merchant.

2. One of the immediate consequences of guarantee of honour is to terminate the right of the transferor to withdraw the funds transfer instruction. If the guarantee is considered to be the equivalent of acceptance of a bill of exchange (or certification of a cheque where that is permitted), other consequences associated with finality might also be thought to occur. The subsequent debiting of the transferor's account would not be impeded by the supervening death of the transferor, the commencement of insolvency proceedings, attachment of the transferor's account, set-off by the bank or the transferor's legal incapacity. The underlying obligation might be thought to be discharged upon issue of the guaranteed instruction. It is evident, however, that the transferee would not have a right to availability of the funds until the instruction had been presented for honour or until the time the funds were to be available as provided in the point-of-sale system agreement.

Issue 35

Should there be a specific rule as to whether a transferee bank to which funds have been sent for delivery to the transferee upon identification holds the funds for the transferor or for the transferee?

Reference

Agreements, paragraph 4

Comment

1. This issue differs from the general issue of finality of a funds transfer since the funds transfer cannot be completed by crediting the transferee's account. Furthermore, in the majority of cases there is no pre-existing contractual relationship between the transferee and transferee bank directing the bank to hold funds received for the future disposition of the transferee.

2. Although the practice of sending instructions to a bank to pay a sum of money in cash to a specific person upon identification constitutes an extremely small percentage of all funds transfers, it may be worthy of a specific rule. Such transfers are most often sent for small sums through the postal funds transfer system, but bank transfers for significant amounts of

money are not infrequent. It is common for the transferee not to present himself over a period of time. This increases the possibility that the transferor may wish to withdraw the funds transfer instruction or that some event such as the transferor's insolvency or legal process against his account may occur before the transferee identifies himself.

3. It may be thought the funds transfer does not become final until the transferee presents himself and claims the cash. In that case the transferee bank would hold the funds at the direction of the transferor and subject to any claims made against assets of the transferor.

4. It may, however, also be thought that once the transferee bank notified the transferee of the availability of the funds, the transferor would have discharged his obligation to the transferee. Since the transferor would have lost all control over those funds, they would remain at the risk of the transferee. The funds would be treated the same as if they had been deposited to an account of the transferee at that bank.

#### Issue 36

Should the time when an underlying obligation is discharged by means of a funds transfer be dependent upon the means used by the banks to effect the funds transfer? Should the time of discharge be the same as the time when the funds transfer becomes final?

#### References

Finality, paragraphs 41-43, 92-96.  
Issue 35

#### Comment

1. Especially in large-value transactions, the time when an underlying obligation is discharged by means of a funds transfer may be established by the parties in the underlying agreement. When it is not established by the parties, the relevant legal rules usually establish the time of discharge in relation to the type of funds transfer and the procedures followed by the banks. For this reason, the legal rules on discharge of the underlying obligation may be found in the law governing funds transfers, although they may equally well be found in the law governing the underlying obligation.

2. It may be thought that, as the banking practices relevant to funds transfers change, consideration should be given to whether the current rules on when the underlying obligation is discharged continue to be appropriate. The question may be most pertinent in countries where funds transfers have usually been made by cheques and the rules in regard to discharge of an obligation by credit transfer may not be clear. Furthermore, the rules applicable to cheques may not be completely applicable to electronic forms of debit transfer, such as ones made pursuant to a standing authorization to debit.

3. In countries where funds transfers have usually been made by credit transfer, it may be thought that the traditional rules might serve well in the new context. This might particularly be thought to be the case where the underlying obligation is discharged when the funds transfer becomes final, at least if the time of finality of the funds transfer is clear under the relevant law and the current means of making funds transfers. However, where the rules on discharge of the obligation are dependent on a specific action by

the bank, perhaps because it is that action which has marked the finality of the funds transfer, it may be thought appropriate to review those rules to determine whether banks continue to take that action or whether some other action by the bank would be more appropriate. Where, for example, the underlying obligation has been discharged when the credit has been entered to the account of the transferee, thought might be given as to when the credit is considered to be entered in the context of batch-processing.

4. There has been a considerable growth in the types of funds transfers where the transferor bank guarantees honour of the instruction. Even though the instruction itself has not as yet been honoured, the addition of the bank's guarantee to the obligation of the transferor may be thought to be sufficient reason to consider the underlying obligation discharged.

#### Issue 37

Should the rules governing funds transfers take into consideration the possibility that a bank may fail to settle?

#### Reference

Finality, paragraphs 97-99, annex

#### Comment

1. In countries where there is a distinct possibility that a domestic bank may fail to settle for funds transfers, the legal rules anticipate the need to distribute the loss which arises from such failure. The discussion of system risk indicates that the creation of high-value on-line funds transfer networks has increased that risk in some countries to the point that new measures have been taken or contemplated.
2. In countries where failure of a domestic bank to settle is considered to be unlikely and where current or future domestic high-value on-line funds transfer networks would not increase the risk, the rules need not necessarily take such possibilities into account. The unexpected occurrence of such an event would have to be handled under rules designed for other purposes, as would the failure of a foreign bank to settle for an international funds transfer.
3. The allocation of the loss between banks arising out of a failure of a bank to settle an international funds transfer might depend upon the law of either of the countries involved. When the failure to settle is of a funds transfer transaction made through an electronic funds transfer network, there may be specific provisions in the network rules to allocate the loss. The loss may also be allocated by application of the rules on finality. These rules may be found either in the law governing funds transfers or in inter-bank agreements.
4. Although inter-bank agreements may affect the rights of the non-bank transferor or transferee by determining the allocation of loss between the banks, those agreements would not be the source for rules determining whether a bank could pass on to its non-bank customer the loss arising out of a failure to settle. However, it is to be expected that if the transferee bank bears the risk that its sending bank will fail to settle, and if this risk is significant, means will be found by the transferee bank not to enter an irrevocable credit to the account of the transferee before settlement is final.

Issue 38

Can a funds transfer become final outside the normal working hours?

Reference

Finality, paragraphs 13-14, 32

Comment

1. The banking industry is moving towards a twenty-four-hour day for many of its functions, and this may affect the time of day when a funds transfer becomes final. In respect of paper-based funds transfer instructions, it has been common for the data processing flow to be completed after the bank is closed to the public but before personnel go home in the evening. Items received after some cut-off point late in the day have often been considered as having been received the following day and have been processed with that day's activity. Whatever may have been the specific rule on finality, it took effect during normal working hours for the bank's personnel. The practice of completing the act of finality during the normal working hours may have had the character of being a rule of law in some countries.

2. At present the data processing flow in many banks goes on through the night. In many cases the acts that constitute finality take place outside normal working hours. With customer-activated terminals available in many places on a twenty-four-hour basis, funds transfer instructions can be entered at night as well as during the day and, if the system is fully on-line, many of those transactions can be completed immediately. As a result, international funds transfers initiated during the day from a bank in one time zone may be completed during the night in another time zone. This result may also occur in domestic funds transfers made in countries which cross several time zones. It could be expected that the normal operation of the finality rules would lead to the conclusion that these funds transfers had become final at that time. Although this would be a normal result from one point of view, it disturbs the commonly expected pattern that funds transfers are processed and become final during normal working hours.

3. It should also be noted that in those countries where reversal of the debit or credit entries is permitted for a limited period of time, that period for reversal may end outside normal working hours, e.g. at midnight, and the funds transfer would become final at that time.

4. Special problems may arise when an on-line computer-to-computer funds transfer becomes final on one day at the sending bank, but because of the difference in time zones, it becomes final on the previous or following day at the transferee bank.

Issue 39

When should a debit or credit be considered to be entered to an account?

Reference

Finality, paragraphs 8, 33, 36

Comment

1. Rules on finality are often based upon the time of entry of the debit or credit to the relevant account, since this was an objective act which seemed to indicate that a decision had been made to honour the instruction and seemed to symbolize the transfer of the claim against the bank from the transferor to the transferee.

2. Modern data processing techniques have reduced the clarity of the act as well as its value as a symbol. Banks often enter the data into the accounts as soon as possible after the funds transfer instructions are received, subject to reversal for a period of time during which the banks can decide whether they wish to honour the instruction. If reversal of an accounting entry is not allowed by law, the entries may be made to a provisional account and only at a later time are the entries in the provisional account merged with the real account. When the instructions are lodged with the bank for action one, two or more days later, they may also be entered immediately into the provisional account, with indication of their effective date, at which time they are also merged with the real account. These operations were not technically feasible prior to the use of computers.

3. The time of entry of the debit or credit to the account could be considered to be either the time it was entered to the provisional account or the time it was merged with the real account. It may be thought, however, that considering the entry to have been made when it was entered to the provisional account would give that entry a legal value that was specifically intended to be avoided. Furthermore, it seems obvious that the use of a provisional account was intended to give the bank the same opportunity to reverse the entry as is given to banks in countries where the entry is specifically understood to be reversible for a period of time.

4. It may be noted, however, that the two approaches do not give the same result as to the point of time when the debit or credit is entered to the account, or to be more precise, when it becomes final. In legal systems where the entry is reversible for a period of time, it automatically becomes irreversible at the end of that period of time, and the moment is a fixed one. Where the entry of the debit or credit depends on the merger of the provisional account with the real account, entry - and finality - depend upon the act of merging the account. This act can be assumed to consist of a human act to put in motion the computer file up-date. Although this act could be expected to occur at approximately the same time each day, the time might vary for a number of reasons. Of course, the merger could also be notional or, if a file up-date is necessary, it could be set in motion automatically by a clocking mechanism, unless there had been human intervention to delay the merger. All of these possibilities reduce the clarity of the concept of entering the debit or credit to the account.

5. Furthermore, there are difficulties in knowing when batch entries from a computer memory device have been entered to an account. To the extent that entry symbolized a decision to honour the instruction, the entry could better be deemed to have been entered at the time the computer memory device was placed in the machine for processing - or even when it was prepared and ready to be further processed. The point of time when the computer reached a particular item in the batch, even if that moment is recorded by the computer, would seem to have little relevance to the rights of various parties to the instruction or the account.

Issue 40

In what order of priority should the various entries to an account be considered to have been made?

References

Finality, paragraphs 32-37  
Issues 38-39

Comment

1. When all entries to an account were made by a single individual by hand, the order in which they had been entered was evident and it was rational to base various rules of priority on that order. At present debit and credit entries arrive from a number of different sources and can be entered to the accounts in different ways. Paper-based items received over the counter or through the mail may be sent to the data processing centre either for entry directly to the account or for entry to a computer memory device that will later be used to enter the items to the accounts. Alternatively, the clerk who receives the item over the counter or opens the mail may key in the data from a terminal at his work station. Instructions may arrive from automated teller machines either on-line or off-line. Although the bank may treat them as identical for the purposes of the interest date, the actual entry to the account may vary by one or more days. Paper-based instructions and electronic instructions that arrive in batches from other banks or clearing-houses may have processing schedules that are independent from the other items processed by the bank. Individual high-value items that arrive by telecommunications may be entered directly to the accounts. Items that are received for processing on a later day may be entered to provisional accounts, and those provisional accounts may be merged with the real accounts at any point of time convenient to the data processing centre.

2. Although it is always possible to establish priorities on the basis of the order in which the debits and credits from the various instructions were entered to the account in question, it may be thought that in the current situation this does not necessarily lead to satisfactory results. It is difficult to know, however, what basis for ranking priority would be better. At least three possibilities which emerge are that the smallest items might be considered to be processed first so that as many as possible can be satisfied, all items might be considered to have the same priority, so that they would share pro-rata, or the bank may be permitted to decide the order in which to enter the items.

3. A network may have a rule that if a bank fails in the settlement, all credits to that bank remain valid but that the debits to that bank, i.e. credit transfer instructions sent by that bank or debit transfer instructions received by it, are satisfied in the order in which they passed through the clearing-house. This rule causes no difficulties based on the current discussion if the items pass through the clearing-house as individual items. In fact, it has the advantage of encouraging banks to rely on credit transfer instructions received early in the day, and to pass on the credit to their customers, since those instructions will have a high priority in case of the sending bank's failure to settle. However, if settlement is by entry of debits and credits in accounts held with the central bank, or with any other single settlement bank, and items other than those received through the network were submitted to the central bank for debit to the account of the failing bank on the day in question, a decision, similar to that described in

paragraph 2, would have to be made on the priority of the items received through the network for debit to the account of the failing bank as against other items received for debit to that account.

Issue 41

Should a bank have a right to recover an erroneous credit by reversing an entry to the account of the credit party?

Reference

Finality, paragraphs 79-80

Comment

1. The most efficient way for a bank to recover an erroneous credit entered to the account of its credit party is to reverse the entry by debiting the account. This method is particularly efficient if the account is that of the non-bank transferee with the transferee bank or the loro account of the receiving bank held with the sending bank.
2. Reversal of the credit is permissible without question if the credit has not as yet become irrevocable, either because in that country credits may be revoked for a period of time after they are entered to the account or because the credit was entered to a provisional account that has not yet been merged into the real account. However, once the credit has become irrevocable under the relevant law, it may be thought that reversal of an erroneous credit by debit to the account without the prior permission of the credit party should be permitted only with caution. In some countries a transferee bank is permitted to reverse a credit arising out of its own error but not one arising out of an error of the transferor or of the transferor bank.

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