

**FILE COPY**



**UNITED NATIONS  
GENERAL  
ASSEMBLY**



Distr.  
GENERAL

28228

A/CN.9/250/Add.2  
18 April 1984

ORIGINAL: ENGLISH

UNITED NATIONS COMMISSION ON  
INTERNATIONAL TRADE LAW  
Seventeenth session  
New York, 25 June - 11 July 1984

**DRAFT LEGAL GUIDE ON ELECTRONIC FUNDS TRANSFERS**

Report of the Secretary-General

(continued)

Chapter

on

**ELECTRONIC FUNDS TRANSFER SYSTEMS IN GENERAL**

**CONTENTS**

	<u>Paragraphs</u>	<u>Page</u>
A. Enhanced role of the system . . . . .	1- 5	3
B. Two types of funds transfers . . . . .	6-16	4
1. Credit transfer . . . . .	8-13	4
2. Debit transfer . . . . .	14-16	6
C. Routing of funds transfer instruction . . . . .	17-28	7
1. One-bank transfer . . . . .	18	7
2. Two-bank transfer . . . . .	19-25	8
3. Three-bank transfer . . . . .	26-28	11
D. Settlement . . . . .	29-39	12
1. In general . . . . .	29-31	12
2. Settlement through a third bank . . . . .	32	13
3. Settlement through a clearing-house . . . . .	33-39	13

Paragraphs Page

<b>E. Some particular features of electronic funds transfers .</b>	<b>40-52</b>	<b>15</b>
1. Replacement of one or more paper-based steps . . . . .	40-41	15
2. Telecommunications . . . . .	42-44	16
3. Batch transmission . . . . .	45-48	17
4. Customer-activated electronic funds transfers . . . . .	49-52	17

#### 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 1960's 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 has led to more stringent requirements as to formatting of messages and to 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 having been 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 are the most obvious and most important of them. 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 pure 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] is a non-bank.
200 Bank Transfer for Own Account	A payment order [credit transfer instruction] in which the sender [transferor bank] and the beneficiary [transferee bank] are the same bank without reference to any other transaction.

<u>Number and Name</u>	<u>Description</u>
202 General Bank Transfer	A payment order [credit transfer instruction] where the originator [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 regime 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

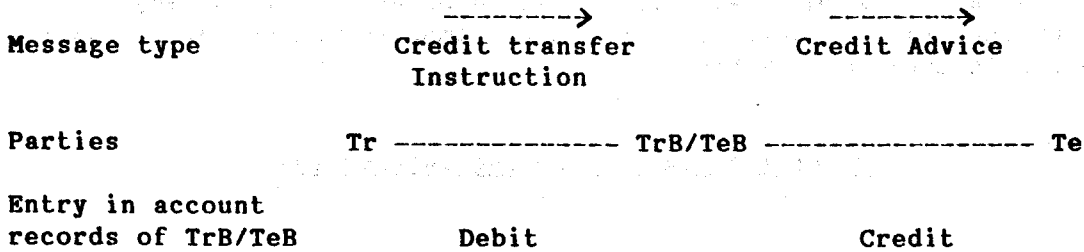
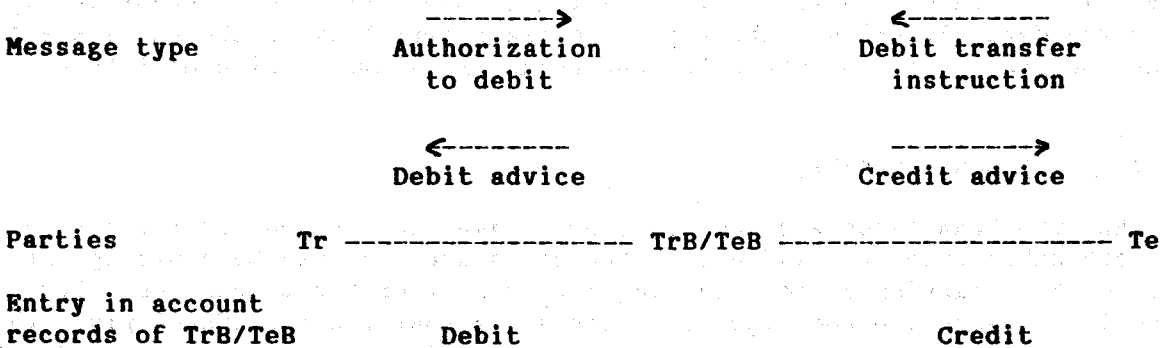


Figure 1b

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 communications 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.

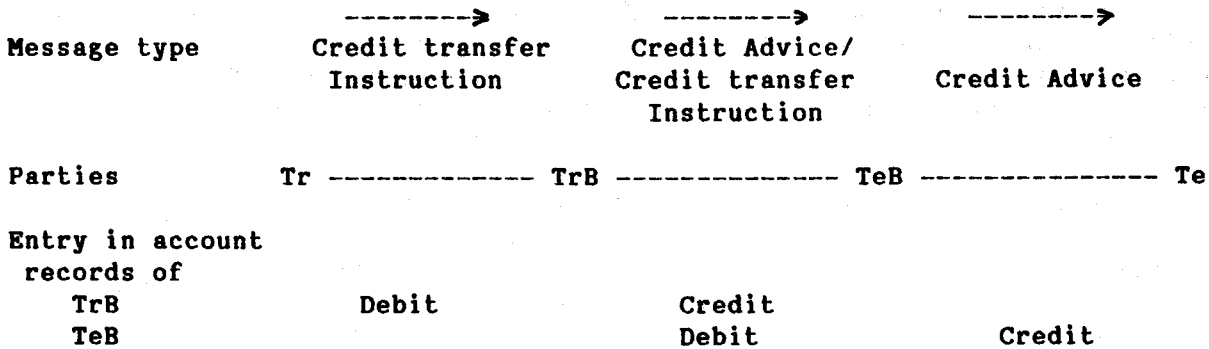
23. To the extent that an electronic clearing-house, like a communications service, switches funds transfer instructions to the correct addressee and, in some cases, carries the instruction from transferor bank to transferee bank, it is as transparent to the transmission of the instruction as is a communications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

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

Credit transfer

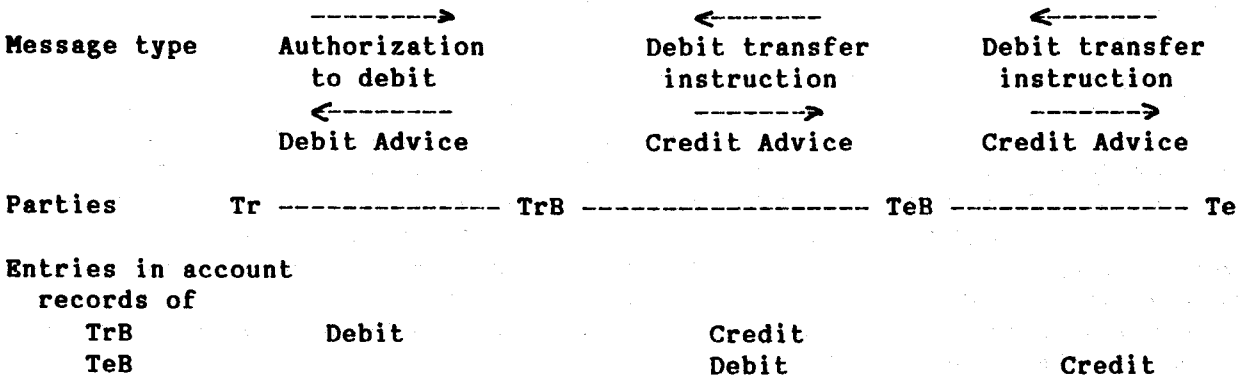


25. Figure 2b represents a debit transfer made under the same conditions as the credit transfer in figure 2a. The arrows indicate that the debit transfer instruction is given by the transferee to the transferee bank and by the transferee bank to the transferor bank. The authorization to debit given by 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

Debit transfer



3. Three-bank transfer

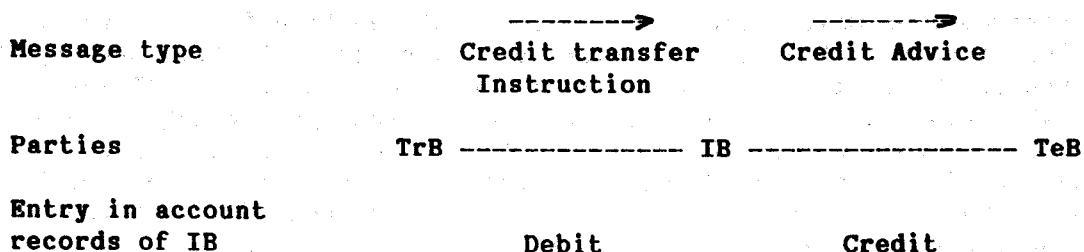
26. If the two banks are not in a direct relationship, and are not both participants in the same clearing-house, the funds transfer instruction may have to pass through one or more intermediary banks which are the correspondent bank of both. The effect of using a correspondent bank on the relations of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

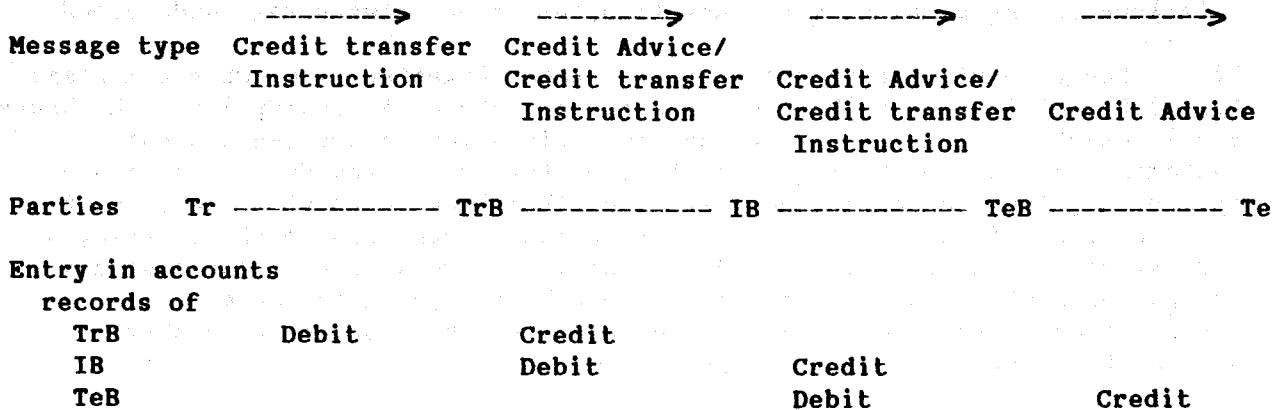


28. When a credit funds transfer is made at the request of a customer of the transferor bank for the benefit of a customer of the transferee bank, the funds transfer involves five parties. There are three separate credit transfer instructions and two separate inter-bank funds transfer transactions, in 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 accounts of two other banks

Credit transfer on instructions of transferor for benefit of transferee



D. Settlement

1. In general

29. 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.

30. 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 37.

31. 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 of this basic concept. 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. Settlement of 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

32. 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 6, 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

33. 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.

34. There are several possible variations on settlement in a clearing-house having to do with the frequency 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.

35. 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.

36. Closely associated with the time at 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.

37. 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 absorbed by some other group or body, such as the central bank.

38. 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. Position may also be covered by appropriate entries on the books of one or more large banks.

39. 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 this 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. Some particular features of electronic funds transfers

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

40. The most elementary, but perhaps most wide-spread, 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.

41. 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

42. 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.

43. 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.

44. 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.

---

<sup>1/</sup> See the fuller discussion in the Chapter on Agreements to Transfer Funds and Funds Transfer Instructions, A/CN.9/250/Add.3.



### 3. Batch transmission

45. 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 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.

46. 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.

47. 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.

48. Although batch transmission is usually accomplished by the physical exchange of computer memory devices, it has already been noted in paragraph 38 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

49. 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 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.

50. 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.

51. 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 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.

52. 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.