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Statement of
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Member, Board of Governors of the Federal Reserve System
before the
Legal and Monetary Affairs Subcommittee
of the
Committee on Government Operations
House of Representatives

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Mr. Chairman, your Committee's attention over the past five years to the nature and implication of Federal Reserve float is testimony to its doggedness and the diligence of its staff. "Float" is a highly technical phenomenon in central bank operation and one that most "experts" in finance are content to leave to the "technicians."

I believe it is a phenomenon that EDP and wire transmission technology has begun to reduce and will, in the foreseeable future, eliminate. Further, I believe that as float decreases absolutely, the Federal Reserve will not experience any difficulty in maintaining the level of reserves needed to serve adequately the economy. Changes in the Federal Reserve System's portfolio of securities, the level of discounting by member banks, or the level of reserve requirements are all available as methods of adjustment. These techniques will have no greater or lesser effect on the Government's finances, the banking system, or the economy generally than would occur if the purpose were to offset gold movements or to effect changes in any given monetary posture.

As the Committee knows, the Federal Reserve presently follows the policy of offsetting the unwanted and unsought easing or tightening effects of changes in float. This is done by appropriate open market operations. As the average level of float declines in the future, the monetary decisions made to meet the economy's financial needs will be taken in light of that fact along with all of the other factors supplying or making demands on bank reserves.

It is my understanding that you would like me to review, briefly, some background on the nature and causes of float and past System policies with respect to it and then to turn to a discussion of the ways in which technological changes in settlement procedure will reduce float to insignificant proportions.

Float is an inevitable part of any monetary settlement system that depends upon the physical movement of checks from the payee to the drawee bank as the basis for making the appropriate accounting entries. This is because it would be completely impracticable, if not impossible, to keep a record for each individual check deposited in a bank and withhold credit to the depositor until the funds represented by the check have been collected from the drawee bank and were in the hands of the depositing bank. The bookkeeping cost would be prohibitive

Commercial banks deal with the problem by giving immediate credit but they require service charges or the maintenance of minimum balances and, where large amounts are involved, they prohibit withdrawals against check deposits until there is reasonable assurance that the checks have cleared. Federal Reserve Banks, in dealing with their member banks, use a somewhat similar but more formalized procedure. The reserves which member banks are required to keep with their Reserve Banks double as clearing accounts or as the "minimum balances" which commercial banks require of their customers, and, in lieu of the somewhat rougher rules of thumb that the commercial banks use for determining a safe period for check clearances, all Federal Reserve Banks and Branches have a formalized time schedule stating when credit will be passed to member banks for checks which they deposit with the Reserve Banks for collection

Float arises when the time actually required to transfer the funds covered by a check differs from the time schedule that is used in allowing credit for the check.

Federal Reserve float is the aggregate amount on any given day of checks for which credit has been passed by Federal Reserve Banks and Branches

to their depositing member banks without receipt of payment from drawee banks, less the amount of such items (if any) for which payment has been received but credit not yet given.

Float is shown on the weekly Federal Reserve condition statement among the items that affect Reserve Bank credit; however, float does not appear on the balance sheets of the Federal Reserve Banks as a specific item, but rather is derived in the following manner. When a Federal Reserve Bank receives a check for collection the amount of the check is simultaneously entered in an asset account "Cash items in process of collection" and in a liability account "Deferred availability cash items." The amount of the check is transferred from the latter account to the reserve account of the depositing member bank in accordance with the established time schedule, but it remains in the asset account "Cash items in process of collection" until the Reserve Bank has received actual payment for the check. Thus, in an accounting sense, float is the amount by which "Cash items in process of collection" exceeds "Deferred availability cash items."

During the year 1965 the average daily amount of Federal Reserve float outstanding was \$1.8 billion. In the same year the Federal Reserve Banks and Branches handled over 5 billion checks and other cash items having an average daily value in excess of \$7 billion, or about four times daily average float. This means that on the average \$3 out of every \$4 in checks deposited for collection in the Federal Reserve Banks and Branches are collected within the time schedules.

Last year, for the first time since 1958, average daily float declined as against the previous year--dropping by \$54 million (or about 3 per cent) despite an increase in the volume of checks handled of about 6 per cent.

As of the latest statement week, total Federal Reserve Bank credit outstanding was at \$43 billion, comprised of \$40.7 billion of System holdings of United States Government securities and acceptances, \$1.9 billion of float, and about \$400 million of member bank borrowings. Federal Reserve credit is also affected by the level of reserve requirements. The reduction in requirements needed to provide an equivalent to the reserve credit made available at present levels of float, would be 1-1/2 percentage points if it were uniformly applied to demand accounts at country and city banks. Present requirements at these banks are 12 and 16-1/2 per cent, respectively.

Federal Reserve float is a combination of various factors. The most important of these is "time-schedule" float which, according to various studies, accounts for about two-thirds of total float. This kind of float results from the fact that under existing time schedules there is a maximum of two days' delay between the time an item is deposited with a Reserve Bank and the time credit is given to the depositing bank; whereas three days or more may be required to collect the payment for many items.

The next most important cause of float arises from checks which are received in time to be included in the current day's business but which cannot be processed in time to be dispatched with that day's business. Inability to process all items on the day of receipt is caused mainly by peaks in the volume of work, particularly around weekends and holidays. This kind of float is called "holdover" float, and in the past has accounted for about one-third of total float. It is in this area that the greatest strides are being made in reducing float.

Snowstorms, floods, and other conditions--such as the recent New York blackout--slow up the movement or processing of checks and add to both "holdover" and "time schedule" float.

As background for more detailed discussion of Federal Reserve time schedules, it may be helpful to mention that checks deposited with the Reserve Banks for collection fall into one of four general groupings:

- (1) Own-district city items. These are checks drawn on banks located in the same city as that of the Federal Reserve Bank or Branch to which the checks have been forwarded. For example, a check forwarded by a Providence, Rhode Island, member bank to the Boston Reserve Bank and drawn on a Boston bank would be an own-district city item.
- (2) Other-district city items. These are checks drawn on banks located in cities where there are Federal Reserve Banks or Branches other than the one in which the checks were originally deposited. For example, a check deposited by a Providence bank in the Boston Reserve Bank and drawn on a bank in Chicago would be an other-district city item.
- (3) Own-district country items. These are checks deposited by one bank and drawn on another bank which is in the same Federal Reserve District but which is not located in the same city as the Federal Reserve Bank or Branch. For example, a check deposited by a Providence bank in the Boston Reserve Bank and drawn on a bank in Bangor, Maine, would be an own-district country item.
- (4) Other-district country items. These are checks deposited by a bank in one Federal Reserve district and drawn on a bank located in a city in another Federal Reserve district where there is no Federal Reserve Bank or Branch. For example, a check deposited by a Providence bank in the Federal Reserve Bank of Boston and drawn on a bank in Indianapolis, Indiana, would be an other-district country item.

Present Federal Reserve time schedules provide for (a) immediate credit for own-district city items; (b) credit deferred one day for certain other items--mainly some other-district city items depending upon distances involved; and (c) a maximum two-day deferment for all other items.

Most of the checks given immediate credit or one-day deferment are collected within the time allowed because they can be presented by the Federal Reserve Bank or Branch concerned through a local clearing house. On the other hand, most of the other-district country items for which credit is deferred a maximum of two days require a minimum of three days to collect. For example, a check deposited in the Boston Reserve Bank on a Tuesday by a Providence bank and drawn on an Indianapolis bank would be credited to the Providence bank on Thursday. On Tuesday the Boston Reserve Bank would send the check to the Chicago Reserve Bank where it would be received on Wednesday and forwarded to the drawee bank in Indianapolis. The Indianapolis bank would not get the check until Thursday and the Chicago Reserve Bank would not get the remittance for the check until Friday, at which time it would pay the Boston Reserve Bank. Since the Boston Reserve Bank gave credit to the depositing Providence bank on Thursday but did not receive payment until Friday, it would be carrying float on the check for one day.

The Board and the Reserve Banks have recognized for some time that the present time schedule is unrealistic with regard to other-district country items but have been reluctant to change the time schedules for a number of reasons

Up until 1939 the time schedules of the Reserve Banks provided for deferment of credit for checks received for collection up to a maximum

of eight days, depending upon the location of the drawee banks. This meant that member banks were required to sort the checks they sent to Reserve Banks into nine separate groupings, with a total for each grouping. This was a costly burden for member banks and one not conducive to use of the Federal Reserve check collection system and, in fact, not inducive to membership in the Federal Reserve System.

In 1939, after a study of the matter taking into account improvements in transportation, the maximum deferred availability period was reduced to three days. This action was designed to give member banks more prompt credit for checks deposited for collection, and to reduce substantially the amount of work required in sorting and preparing checks for deposit with the Reserve Banks. Daily average float was \$9 million in 1938 prior to the change, and increased to \$57 million in 1940, the first full year after the maximum three-day deferment schedule had been adopted.

During the next five years float rose quite rapidly and in 1945 stood at \$468 million. This increase, however, was much more due to circumstances relating to World War II than it was to the adoption in 1939 of a maximum three-day deferment for check credit. During those years the number and amount of checks handled increased greatly. In addition, the war caused irregularities and other delays in the transportation of checks, difficulties in obtaining the additional equipment needed to handle the heavy volume, and difficulties in obtaining and keeping adequate personnel.

After reaching a peak of \$468 million in 1945 Federal Reserve float declined substantially in the next few years despite a continuing increase in the volume of checks handled. In 1949 float averaged \$369 million, a reduction of 21 per cent from 1945. This decrease was made possible by

greater use of air transportation, a much improved personnel situation, and increasing availability of more efficient equipment. These developments prompted a study of the possibility of further simplifying the check collection procedures by reducing the number of sorts required of checks deposited with the Reserve Banks. After extensive consideration it was decided that the System would be justified in changing the maximum deferment availability period from three days to two days, and this change was put into effect in January 1951.

At the time this change was adopted it was estimated that continued improvement in transportation and check processing procedures would be possible and that the change in the time schedule would not increase float by more than about \$200 million. In fact, however, float rose much more rapidly than had been expected; the daily average of \$1 billion in 1951 was about twice that of 1950. During the next three years float declined to \$737 million in 1954 even though there was a continuing increase in the number and amount of checks handled. However, during this period wide fluctuations in the volume of float at times presented operating problems to the Federal Open Market Committee in its attempt to maintain Bank reserve positions at agreed-upon levels.

Partly because of these developments a special System committee was established in 1956 to study all aspects of the float problem and to suggest remedial actions. One of the proposals resulting from the study was that consideration be given to reverting back to the maximum three-day deferment that was in effect before 1951, and in 1958 the Conference of Presidents, by a 7 to 5 vote, recommended this change. By that time float had risen close to \$1 billion and it was estimated that the proposed change

in the time schedule would reduce float by about \$400 million. The Board gave careful consideration to this recommendation but concluded that the benefits that would result from such a change were not clear enough or compelling enough, at least at that time, to offset the disturbances that would probably be caused by the change. Accordingly, the Board decided "to lay the matter on the table" for the time being and to give continuing attention to the float problem. I might add that since that decision the question of changing the time schedule and other aspects of the float problem have had almost continuous consideration by the Board, partly because float has continued to increase and partly because of new developments in the check collection area.

One of the reasons for the Board's reluctance to change the time schedule is the fact that "time schedule" float is the easiest kind of float to predict and hence the easiest to offset by open market transactions. If the change to a maximum three-day deferment were made today the decrease in float would probably be around \$800 million, but in all probability the remaining float--due to unpredictable holdovers, transit delays, etc.--would be subject to much the same fluctuations as before.

The Board also was concerned that the recommendation to revert to a three-day maximum deferment schedule came at a time when there were strong indications that a much more fundamental change in check collection procedures was necessary if the whole banking community were to avoid being swamped by the rapidly growing number of checks. Commercial banks, as well as Federal Reserve Banks, were hard pressed to find the space and the people to process the checks they were receiving. Steps were being taken to develop high-speed electronic equipment that would sort checks at the rate of 60,000 an hour as compared with a rate of about 1,500 per hour by previously existing

procedures. One of the brighter prospects of the new equipment was that it would cut down "holdover" float, which had been growing more rapidly than "time-schedule" float.

The Federal Reserve Banks were among the first to move toward the use of high-speed check processing equipment. Efficient use of this equipment requires the cooperation of commercial banks in imprinting and encoding their checks so that they can be handled electronically. The Board has been urging all banks to arrange for the electronic handling of their checks in order to speed up the check processing procedures at the Reserve Banks.

While it has taken some time for the electronic procedures to become established, the benefits of this program are now beginning to be clearly apparent in most areas of the country. For instance, last year 8 of the 36 Federal Reserve Banks and Branches were able to use the high-speed equipment to process 90 per cent or more of all the checks they received, and 19 other offices used the high-speed equipment for between 70 per cent and 90 per cent of their check volume. The remaining 9 offices are all smaller Branches; 5 of them as yet have no high-speed equipment and the other 4 are just getting started on the program. Because of the progress already made at the high-volume offices, the 36 Federal Reserve Banks and Branches combined handled 80 per cent of all checks received last year on the high-speed equipment. There is every reason to believe that this percentage and the accompanying benefits--including reductions in holdover float--will continue to show gains as more and more commercial banks move into the field of EDP, either directly or through agencies which offer such services on a fee basis.

In my opinion, the present high-speed processing equipment is but the first step toward much improved systems that will completely eliminate float--and probably even eliminate the need for checks--by utilizing the potentialities already existing in high-speed data communications facilities. The Federal Reserve System, alert to these possibilities, is engaged in intensive operating studies of two developments. One involves a near-range program under which all checks deposited for collection in Federal Reserve Banks and Branches would be immediately credited to the reserve account of the depositing bank and simultaneously charged to the reserve account or correspondent account of the drawee bank. Such an arrangement would, of course, eliminate float.

The other study involves a longer-range prospect that, in my opinion, has much greater potential operating advantages--namely, the introduction of a giro system which would eliminate the use of the check for the bulk of regular money settlements.

What I have been saying in my statement today is that technology will eliminate float. This has been a theme in previous statements by Federal Reserve representatives to your Committee. It has also been the prevailing judgment within the System for some time, based upon first-hand operating knowledge and numerous special studies.

Up to this point technological changes have arrested the expansion in float as transactions volume has risen but the expected absolute decline has yet to materialize in significant degree. However, technological improvement of recent years, and near-term prospects, are more persuasive than ever before that float will shortly be a phenomenon of the past.

I would like to mention two specific lines of technological development bearing on this problem. The first has to do with wire transfers of funds.

The basic idea underlying wire transfers of funds is not new. In fact, the Federal Reserve Banks and Branches have offered this service to their member banks for many, many years. The service is handled over a leased network of lines that connect each of the 36 Federal Reserve Banks and Branches, the Board of Governors, and the Treasury Department with a switching center, now located in the Federal Reserve Bank of Richmond. The system permits direct communication between any of the offices. Under this arrangement, when a Chicago member bank, for example, wants to increase its balance with a New York correspondent, it merely asks the Federal Reserve Bank of Chicago to send a telegram to the Federal Reserve Bank of New York directing that the desired amount be credited to the reserve account of the New York correspondent. At the same time, the Chicago Reserve Bank will charge the reserve account of the Chicago member bank by the amount transferred.

I might add that the same procedure and facilities are used in handling many transactions in Government securities. In such a case, if a Chicago member bank wanted to sell Government securities in New York, it would bring the securities to the Federal Reserve Bank of Chicago with appropriate instructions. The Chicago Reserve Bank would "retire" the securities--i.e., the actual pieces of paper--it received from its member bank and instruct the New York Reserve Bank to issue identical securities to the purchasing bank in New York upon receipt of payment therefor. Upon receipt of the payment in New York, the amount would be transferred to the Chicago Reserve Bank for credit in the reserve account of the member bank that had sold the securities.

The basic difference between what we have been doing along these lines and what we hope to do lies in the nature of the equipment and the range of transactions involved. At present messages are sent and received over the leased wire network by teletype machines, which are woefully slow even by present-day standards. Accordingly, transfers are generally restricted to transactions involving large amounts which come within narrowly prescribed rules. However, with the development of wide-band transmission having computer-controlled input and switching, and micro-second speed, the volume of traffic between computers that could be accommodated over such a system would be virtually without limit. Every check transaction, as we know it today, could simply become a wire transfer and this means that the bank making a transfer on behalf of a customer, charges his account, and has its account charged at the Federal Reserve Bank virtually at the same time that the account of the payee bank at another Federal Reserve Bank is credited as is the account of that bank's customer. There is no float in this process.

A second development is the beginnings of a giro system in the United States. In such a system the payor initiates the settlement process by communicating, not with the payee, but with his own bank notifying it directly whom to pay, how much, and when.

Most of this information will be received at the bank in machine language; if not, it will be converted to that form, and the bank's computer will process the bookkeeping entries internally for amounts drawn on it. If one computer handles the accounts for several banks the operation is still almost entirely an internal one. If payment is to an account in another bank, the information will be automatically routed into that bank's equipment.

Bank positions will also be adjusted frequently throughout the day by debits and credits to member bank accounts with the Federal Reserve System. The computers will transmit printed-out confirmations to the payor and advices to the payee at appropriate intervals. The print-outs could be transmitted by mail or telephone wire, at the option of the customer. In the case of larger customers, the bank's computer will communicate directly with customer's equipment.

This process of settlement and deposit accounting will be carried on concurrently at or between 250 or so computer centers located throughout the country. The number of computer centers given is conjectural but comprises an optimum operational size and a convenient geographical area. The very rapid growth of computer centers recently seems to presage the automation of all demand deposit accounting in the near future--using checks or any other settlement media. Banks will have a choice of their own equipment, a correspondent's facilities, a cooperative processing organization or a commercial service bureau.

The giro technique lends itself to still another technological development that is being adapted from earlier methods of extending convenience and instalment credit. Just as vendors' credit cards have been replacing currency, a new device is being introduced which will replace more currency, the present generation of credit cards and many check uses as well. Promotion departments have yet to establish a catch word for it, but this morning I'll simply call it a cash/credit card. Whatever it is called, it will team up with the telephone and the computer to take the drudgery out of paying bills and take much of the red tape out of getting credit.

Once your bank has issued you a cash/credit card, you will be able to pay any creditor who has a bank account simply by inserting your card in a telephone and dialing a series of numbers. The telephone line, hooked up to your bank's computer, will tell the bank how you want payment made.

Actually, using a cash/credit card, you will probably carry less cash and get fewer bills to pay, because when you buy merchandise at a department or grocery store you'll use your cash/credit card in place of cash or the old charge-a-plate. The store clerk will put it in his telephone and do the dialing for you. The merchandise would be paid for then and there.

But if you'd rather not pay on the spot, that will be taken care of, too. You can name your own preference for cash, convenience credit or installment credit, according to the terms under which your cash/credit card was issued. You will no longer have to fill out charge account applications with every vendor you patronize, carry a pocketfull of credit cards, or try to explain to your wife the complexities of various credit plans.

In the modified giro system I am describing there will be no check sorting and re-sorting, no shipment of checks from bank-to-bank or bank-to-customer, no storage requirements for checks, no kited checks, no checks returned for insufficient funds, and no float. Deferment schedules will accompany checks into the world of yesterday, and the technicalities we are discussing today will be found only in research libraries for historical evaluation.

Judgments differ, of course, as to the practicality and imminency of a new system like this. Many of those who are convinced that it is inevitable think they will not live to see it. But I believe it will come much sooner than many observers expect. Most of the innovations needed for the new system

are now in being, or are about to be placed in operation. For example, more and more employers are processing their payrolls not by issuing checks but by using their computer to instruct their bank's computer to charge their account and credit each employees' account in the bank of his choice. Some banks have already made available to their depositors the prototype of a cash/credit card. In fact, individual banks throughout the country are now adopting, piecemeal, these and other elements of a giro system. I am confident that giro is not only technically possible, but practical from a cost standpoint, notwithstanding the undoubted strains and pains of transition.

I appreciate this opportunity to share with you my view of the future money settlement system of the nation, and how funds will flow among 70 million depositors. In it there is no place for float.