

A Primer on Federal Reserve Float

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Federal Reserve float arises in connection with collections and transfers of funds through the Federal Reserve System when credit is passed to an institution receiving funds on a different day than the corresponding charge is made to the institution making payment. This can occur for a variety of reasons, but generally the cause is a slow-down or speedup *vis-à-vis* the usual time schedule in the complex processing of check collections and funds transfers.

Both the Federal Reserve System and Federal Reserve member banks are keenly interested in Federal Reserve float because it influences the amount of reserves available to member banks to support outstanding deposit liabilities, and it is subject to wide short-run variations which sometimes are difficult to anticipate and interpret. In 1974, for example, Federal Reserve float provided a daily average of \$2.3 billion in member bank reserves—about 6 to 7 percent of the roughly \$36 billion of total member bank reserves—and day-to-day movements averaged over \$500 million.

Since the specifics of the arrangements for collections and transfers through the Federal Reserve are continually evolving to meet the needs of the economy, Federal Reserve regulations and practices that bear on Federal Re-

serve float are continually being reviewed and adjusted. Changes in recent years have resulted in a sharp decline in the level of Federal Reserve float and shifts in the pattern of day-to-day changes. This article describes some of the main mechanics of Federal Reserve float to provide a background for evaluating ongoing events. In addition, it describes some of the broad developments recently in the behavior of Federal Reserve float.

WHAT IS FEDERAL RESERVE FLOAT?

Each day the Federal Reserve System transfers many billions of dollars on behalf of depositors at Federal Reserve Banks. These deposits are held primarily by the commercial banks that are members of the Federal Reserve System and also by the United States Treasury, various United States Government agencies, foreign governments, foreign central banks, and international organizations. Similar to the way in which customers at commercial banks deposit funds into and make payments out of their checking accounts, depositors at Federal Reserve Banks transfer funds into and make payments out of their accounts at Federal Reserve Banks.

In the majority of transfers through the Federal Reserve, a depositor receiving funds is credited on the same day that the institution paying the funds is charged. For a variety of reasons, however, the crediting and charging may not be accomplished on the same day. In these circumstances, Federal Reserve float is created. Depending on whether the receiving institution is credited before or after the paying institution is charged, the Federal Reserve float created may be either positive or negative. If the receiving institution is credited *before* the paying institution is charged, debit (or positive) Federal Reserve float results. If the receiving institution is credited *after* the payor is charged, then there is credit (or negative) Federal Reserve float. At any time, of course, both

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circumstances are occurring. In the aggregate, therefore, Federal Reserve float is the difference between two quantities—positive Federal Reserve float and negative Federal Reserve float. In practice, positive Federal Reserve float is almost always much larger than negative Federal Reserve float.¹

While this general explanation of Federal Reserve float generation is quite simple, in practice float is created by a wide variety of specific and different problems which affect various aspects of the collection and transfer processes. The Federal Reserve collection process is concerned primarily with checks drawn on commercial banks, while the main transfer processes are for wire transfers of deposits at Federal Reserve Banks and United States Government and Federal agency securities. The following sections, therefore, describe first the check processing system and then the wire transfer network, showing the relevant details that bear on float creation. Where appropriate, brief historical descriptions are included.

CHECK PROCESSING AND FEDERAL RESERVE FLOAT CREATION

Prior to the establishment of the Federal Reserve System in 1913, there existed no centralized check-clearing mechanism. Many banks were affiliated with local clearing associations and cleared checks drawn on more distant banks through correspondent banks or by means of direct presentation. All these arrangements were complicated and had drawbacks. For checks cleared locally, settlement was accomplished in a variety of ways. In some clearing associations, for example, settlement had to be in gold or with drafts drawn on one large bank doing business with other local banks. In other cases, local clearing associations permitted banks to carry accounts with the association itself.

The clearing of checks outside local areas was com-

monly accomplished through a network of correspondents. Banks sent out-of-town checks to their correspondents and received payment through credits to their accounts at the correspondent banks. To cover expenses, correspondents charged customer banks fees for collection services. An alternative for collecting banks was to mail the checks directly rather than presenting them through a correspondent. In such cases, the bank on which the check was drawn acted as its own collection agent and remitted slightly less than the full face value of the check as a service charge. This latter practice was known as nonpar check collection. In attempting to minimize these charges, banks frequently developed lengthy, circuitous clearing routes. In one notable instance, a southeastern bank in collecting payment for checks drawn on a bank four miles away routinely shipped the checks over a 2,250-mile route.

When the Federal Reserve System was formed, check collection was one of the major responsibilities assigned to it, with the objective of providing efficient, centralized payment at par for checks drawn either locally or on distant banks. After the first few years, no charges were made for check collection, even for checks traveling across the country. The mechanism for clearing checks among local banks followed the pattern set earlier by some clearing associations; payments and charges were made to member banks' accounts with the District Federal Reserve Bank.

For checks drawn on banks in other Federal Reserve Districts, a new mechanism was created where settlement among Federal Reserve Banks was made through the Gold Settlement Fund, which was administered by the Board of Governors of the Federal Reserve System. Each Federal Reserve Bank deposited gold with the United States Treasury, and gold certificates were issued in receipt. Ownership in the Gold Settlement Fund, subsequently called the Interdistrict Settlement Account, was maintained by entries on the books of the Board of Governors and on the books of each Federal Reserve Bank.

Initially, the Federal Reserve attempted to avoid all float on local items by establishing a voluntary plan involving simultaneous credits and charges. This plan had a major shortcoming, however, in that checks were charged to paying banks before physical presentation was made. This made it necessary for paying banks to hold greater reserve balances than desired in order to avoid overdrafts as a result of unanticipated check payments. Few banks joined the plan, therefore, and the system was replaced in 1916 by a countrywide clearing arrangement which is the basis of today's system.

The new arrangement was based on the principle of deferred credits and charges. The depositing bank re-

¹ From an accounting point of view, Federal Reserve float does not appear as a separate item on the consolidated balance sheet of the Federal Reserve Banks. Rather, it is calculated as the difference between the asset account "Cash items in process of collection" and the liability account "Deferred availability cash items". In addition, any balance in another liability account entitled "Due to other Federal Reserve Banks—collected funds" also is deducted. This account does not appear separately on the Federal Reserve Banks' Consolidated Statement of Condition as reported in the *Federal Reserve Bulletin* but is included in "Total deposits". The balance in this account is zero except, for the most part, in circumstances where some Federal Reserve offices are open and others are closed.

ceived delayed credit, and the paying bank was allowed time to remit. The delays set on both sides of the transaction allowed sufficient time for the paying bank to receive notice that payment was due. Each Federal Reserve Bank developed its own time schedule for deferred credits covering the entire country, based on shipment times between Federal Reserve Banks and banks on which the checks were drawn. As shipment times changed, the deferment schedules were appropriately adjusted.

As in the past, today's check collection cycle is initiated by the deposit of a check at a commercial bank. If a check is drawn on the same bank at which it is deposited, the collection cycle is completed internally. If the check is drawn on another bank, however, one or more other procedures must be employed to complete the collection cycle.

Under one common arrangement, checks are sent directly to the bank on which they are drawn and the banks settle with each other. Alternatively, checks may be sent to correspondents which provide clearing services or may be cleared through a clearing association of which the bank is a member. Finally, the checks may be cleared through the Federal Reserve System. To demonstrate how most check-related Federal Reserve float is generated, only the fourth method—clearing through the Federal Reserve System—is described.

A Federal Reserve office receives checks from other Federal Reserve offices and directly from commercial banks both in its own territory and in other territories.² The checks received from senders in other territories are payable at banks in its own territory, while checks received from banks in its own territory may be payable at banks either within or outside its territory.

Commercial banks usually sort checks into categories as specified by each Reserve office, according to availability of credit and condition. Transmittal letters—called cash letters—are prepared indicating the total dollar amount for each category and are sent with the checks by first-class mail, messenger, or courier service. On arrival at Federal Reserve Banks, the cash letters are marked to indicate the date on which the depositing bank will receive reserve credit according to published time schedules. This can range from the same business day the items are received to two business days later.

Depending on their physical condition, checks are

processed either on computers or on manually operated proof machines that list and cumulate the values of the checks in a deposit and sort the checks according to the banks on which they are drawn. Checks drawn on banks in other territories are simply sorted to the Federal Reserve offices serving those territories. The cumulated totals are verified against the amounts calculated by the depositing banks and discrepancies are resolved. Accounting data, indicating the dates and amounts by which depositors are to be credited and payors are to be debited, are generated during the processing cycle and are submitted to a computer for final entry to member bank reserve accounts. On the day credit is due, the depositors' reserves are automatically increased and, on the day that payment is made, the payors' reserves are reduced.

Checks drawn on banks in the same territory are delivered to paying banks by first-class mail or courier service, while those drawn on banks in other territories are dispatched to the appropriate Federal Reserve offices where they are further processed and delivered to the paying banks.³ Separate daily statements are delivered to each bank showing the items that the Federal Reserve office has received from and sent to the bank. When discrepancies of significant magnitude arise, the banks notify their Federal Reserve offices so that adjustments can be made to their reserve accounts.

As noted earlier, credit for items deposited at Reserve offices is passed on a deferred basis in accordance with published schedules. The credit availability date is established to correspond to the date payment is *expected* to be received, assuming the collection process goes smoothly. However, it is important to note that credit is passed regardless of whether or not the collecting Reserve office actually has received payment. Consequently, on those occasions when credit is passed before payment has been received, float is generated.⁴

³ About 55 percent of the checks (72 percent of the dollar volume) shipped between Federal Reserve offices is directly controlled by the Interdistrict Transportation System. This organization, headquartered at the Federal Reserve Bank of Chicago, was formed in 1971 to improve interterritory check deliveries. As a result of its investigations, an air charter service was made available to Federal Reserve offices in 1973. The organization also collects comprehensive data on interterritory check shipments and maintains close contact with the Federal Reserve Bank of New York, informing forecasters when possible of major transportation delays which can affect daily movements in float.

⁴As mentioned above, payment alternatively may be collected before credit is extended, creating credit (or negative) float. In practice, however, credit float is much smaller than debit float.

² A "territory" is the area assigned to a particular Federal Reserve office within a Federal Reserve District.

There are, of course, a variety of substantive reasons why payment may not be received on the day credit automatically is passed. Thus, Federal Reserve float associated with check collection can be broken down into various components related to the underlying reason for the disruption of the check collection cycle. The categories which are useful to the Federal Reserve in monitoring float are described briefly below. The overall behavior of Federal Reserve float primarily reflects the combined behavior of these categories.

HOLDOVER FLOAT. Holdover float arises from delays in processing checks at Federal Reserve offices. These delays can arise from unexpected volume peaks, unusually high staff absences, computer malfunctions, and a variety of other causes. Whatever the cause, however, credit for the value of cash letters as calculated by depositing banks is passed as specified in published schedules. Thus, depositing banks receive reserve credit as scheduled, but before payment is collected. As a result, Federal Reserve float occurs, lasting until the processing cycle is completed.

TRANSPORTATION FLOAT. The time schedules specified by Federal Reserve offices in passing credit for checks depend critically on shipping times between Federal Reserve offices and commercial banks. When checks do not reach their destinations as scheduled, payment is made after credit is extended to depositors, creating float. Transportation delays which cause bulges in Federal Reserve float can arise from a variety of causes, such as bad weather, strikes, mechanical breakdowns, fuel shortages, and other problems.

REJECTED ITEMS FLOAT. Among checks deposited as qualified for processing on high-speed computer sorting equipment, some may for various reasons be rejected by this equipment, necessitating handling on slower manually operated machines. The result is that all the rejected items may not be processed as normally scheduled on the day they are deposited at a Federal Reserve office. Consequently, payment for the rejected items which are not processed will be made after credit has been passed, thereby generating Federal Reserve float.

INTRATERRITORY DELAYED PRESENTMENT FLOAT. In some circumstances, a Federal Reserve office and some commercial banks in a Federal Reserve territory may be open while other commercial banks in the same territory are closed. For example, in the Federal Reserve Bank of Chicago's territory, some Illinois banks close regularly on Wednesdays and remain open on Saturdays. The Fed-

eral Reserve Bank of Chicago extends credit as scheduled to depositing banks that are open for checks drawn on the closed banks but does not collect payment until the following business day. As a result, Federal Reserve float occurs until the banks on which the checks are drawn reopen on the next business day and payment is collected.

The practice of passing credit despite the fact that a paying bank is closed is followed because of the cost of sorting and processing separately the checks drawn on closed banks. Patterns of simultaneously closed and open banks within a territory occur both on a regular basis, as described in the example, and also occasionally due to differential patterns of state holidays in Federal Reserve territories that cross state lines.

Intraterritory delayed presentment float also arises in several territories in which there are some remotely located banks where the combination of high transportation costs and low volume make uneconomic the regular overnight delivery of checks from Federal Reserve offices to the banks on which they are drawn. As in the case of closed banks noted above, the costs of sorting and processing separately checks drawn on these banks cannot be justified economically. As a result, payment cannot be collected until after credit is given to depositors.

INTERTERRITORY DELAYED PRESENTMENT FLOAT. Float also occurs when one or more Federal Reserve offices are closed for a holiday while other Federal Reserve offices remain open. This category of float has both positive and negative components that are significant. Checks drawn on commercial banks in territories where the Federal Reserve offices are closed, but which are deposited prior to the deposit deadline in open Federal Reserve offices, generate positive Federal Reserve float. Credit is extended to depositor banks in open territories, even though the open Federal Reserve offices cannot collect payment from closed Federal Reserve offices until the next business day.

Conversely, checks which are drawn on open banks and are deposited prior to the deposit deadline in closed Federal Reserve offices generate negative Federal Reserve float. Payment is collected from banks in open territories as scheduled, but credit cannot be extended to banks in closed territories until the next business day when the Federal Reserve offices reopen. The relative magnitudes of the positive and negative float depend both on the patterns of Federal Reserve office closings and on the alternate routing patterns that commercial banks use when closings in some territories occur during the week.

On January 1, 1976, this category of Federal Reserve float should be reduced significantly. At that time, new

procedures are scheduled to be implemented, under which an open Federal Reserve office generally will defer the extension of credit for checks drawn on banks in a closed territory one business day longer than otherwise would be the case. Conversely, to reduce the incentive for member banks in a closed territory to use alternate routing patterns, adjustments will be applied to their reserve accounts for credit which would have been granted to them if the Federal Reserve office of the territory in which they are located had been open.

MIXED CASH LETTER FLOAT. Some cash letters delivered to Federal Reserve offices for collection are not sorted according to credit availability. These "mixed cash letters" are made up of checks ordinarily entitled to different credit availability, ranging from immediate to two business days. Thus, if uniform credit availability is assigned to a mixed cash letter, Federal Reserve float arises since the credit and payment dates for at least some checks in these letters differ.

To encourage depositor banks to sort checks into cash letters that have uniform credit availability, a number of Federal Reserve offices assign credit availability to mixed cash letters according to the items in the letters that have the longest collection time. For example, if a mixed cash letter consists of some checks for which credit is normally given immediately and others for which credit is given in two business days, all items in the letter are assigned a deferred availability of two business days. Since payment for some items in the mixed cash letter is collected immediately, negative Federal Reserve float is produced in the amount of these items since credit is given two business days later.

Special provision has been made for Federal Reserve offices to accept mixed cash letters from Government agencies and member banks with very small volumes of check deliveries, since it would be quite costly for such senders to acquire the staff and machinery necessary to sort checks according to credit availability. To minimize the effect of these letters on daily fluctuations in Federal Reserve float, they are assigned automatic credit in one business day. Checks drawn on banks for which payment is collected immediately generate negative Federal Reserve float, since credit is extended on the next day. But this negative float is offset by the effect of checks drawn on banks for which payment is collected in two business days. These generate positive Federal Reserve float since credit is extended in one business day.

TIME SCHEDULE FLOAT. Prior to November 9, 1972, reserve credit for items drawn on "country" banks in other

Federal Reserve territories was extended to banks in a maximum of two business days following the day of deposit with a Federal Reserve office. But Federal Reserve offices normally did not collect payment for these checks until the third business day, usually one day after presentment. Consequently, float was created on the second business day following deposit. However, an amendment to Regulation J, which became effective on November 9, 1972 and was directed at eliminating time schedule float, provided that paying country banks would be debited on the business day of presentment in order to coincide with the day on which Federal Reserve offices extended credit to depositors.

THE FEDERAL RESERVE WIRE TRANSFER NETWORK AND FEDERAL RESERVE FLOAT

While the largest part of Federal Reserve float is associated with the clearing of checks drawn on commercial banks, occasionally large amounts also are associated with transfers of Federal Reserve deposits and United States Government and Federal agency securities by the Federal Reserve. These transfers are accomplished over the Federal Reserve's nationwide wire transfer network. This section describes how such transfers are effected between major commercial banks that have access to the network and the manner in which they sometimes affect Federal Reserve float.

Suppose that a business firm or individual wishes to withdraw some funds from an account at a New York City bank and have them transferred to an account at a bank in San Francisco that same day. In the morning, the firm telephones its New York City bank and requests that the funds be transferred to the San Francisco bank. After verifying the caller's authority to withdraw funds from the account, an operator in the bank's wire transfer division, if the bank is directly "on line", typically punches information onto perforated paper tape indicating the banks involved in the transfer, the amount of money, and the customer's account to which the money should be credited. If the bank is not "on line", an operator at the bank telephones the Federal Reserve Bank of New York, which processes and transmits the message for the bank. Whatever the procedure followed, the message is verified and entered into a computer terminal which is linked directly by wire to a computer switch at the Federal Reserve Bank of New York. This switch, in turn, is linked directly to the Federal Reserve System's interdistrict computer switching facility at Culpeper, Virginia.

Once the message is entered, computers located in the Federal Reserve Bank of New York automatically reduce

the New York City commercial bank's deposit or reserve account, credit the "Due to the Federal Reserve Bank of San Francisco" account for the account of the receiving bank, and route the message to the Culpeper facility.

The message is received by the Culpeper computers and, when a line becomes available, is transmitted to the Federal Reserve Bank of San Francisco. There the receiving commercial bank's deposit or reserve account is automatically credited, an account "Due from the Federal Reserve Bank of New York" is debited, and the information is routed through the computer switch to the San Francisco commercial bank. Having these funds, the San Francisco commercial bank then credits the account for which the funds are intended. That evening the Federal Reserve Bank of San Francisco receives payment from the Federal Reserve Bank of New York through the Interdistrict Settlement Account.

In 1974, about 14.5 million of the foregoing types of money transfers involving about \$30 trillion were processed through the Federal Reserve wire transfer network. Typically, they have no impact on Federal Reserve float since the receiving bank is credited and the sending bank is debited on the same day. Despite extensive precautions, however, from time to time there arise operational problems within the transfer network. In such circumstances, the Culpeper facility is immediately alerted, transmissions to and from the affected office are terminated, and incoming transfers to the affected office are stored by the computers at Culpeper until the problem is eliminated. In most cases, the problems are resolved before the end of the day and normal operations are completed still without any impact on Federal Reserve float.

Occasionally, however, problems cannot be resolved before the Reserve offices *not* experiencing difficulties must close for the day. In these instances, credit (or negative) Federal Reserve float typically is created. This occurs because the office experiencing difficulty generally remains open until all work, both incoming and outgoing, is processed. With other Reserve offices closed, however, all outgoing work from the affected office is not received until the next day. Thus, the reserve accounts of the sending commercial banks at the affected office are reduced as scheduled, but the accounts of the receiving banks at the offices that experienced no problem are not increased. Similarly, Federal Reserve Banks do not complete settlement through the Interdistrict Settlement Account. The level of net Federal Reserve float plunges, therefore, until the following day when the funds transferred and interdistrict settlement are completed. In practice, member banks with accounts at unaffected offices are usually compensated for reserves lost through such interferences

by appropriate reserve adjustments.⁵

The transfer of United States Government and Federal agency securities over the Federal Reserve communications network can also create float on occasion. The mechanics of a securities transfer closely parallel those just described for the movement of Federal Reserve deposit balances. Similar messages are prepared by banks wishing to send securities, usually a bank selling or acting on behalf of a dealer, corporation, individual, or other bank wishing to sell a security. These messages contain information concerning the security in addition to normal accounting data. Where the transfer crosses Federal Reserve District lines, payment is accomplished through the Interdistrict Settlement Account, exactly as in the case of a money transfer.

When problems arise that prevent securities transfers from being completed on a same-day basis, Federal Reserve float occurs. However, in contrast to the money transfer case, delayed securities transfers create positive float. Since the seller initiates the transaction and receives simultaneous payment, a delay means that the buyer is not charged on a timely basis. Such float continues until settlement is completed through the Interdistrict Settlement Account. Because the dollar volume of securities transfers is very large, breakdowns can create sizable bulges in net float. However, because the entire network is automated, such bulges seldom occur and even then rarely last more than one day.

⁵A reserve adjustment is an after-the-fact correction to the amount considered as "maintained reserves"—vault cash, balances on the books of the Federal Reserve, and prior reserve adjustments—for an individual bank for a particular reserve period. A reserve adjustment is never made as an accounting entry on the Federal Reserve books. A member bank meets its reserve requirements by having adequate "maintained reserves". In some cases, reserve adjustments affect Federal Reserve float, and in other cases they do not. Because of the small size of many adjustments and the cost involved, it is not feasible to determine in all cases whether float is affected.

Reserve adjustments create certain statistical problems. The most important of these involves the level of float as calculated from the "Consolidated Statement of Condition of All Federal Reserve Banks" and in a table titled "Member Bank Reserves, Federal Reserve Bank Credit, and Related Items", both published monthly in the *Federal Reserve Bulletin*. The former never includes reserve adjustments, while the latter usually does, creating a discrepancy between the alternative float numbers. The discrepancy persists because the two tables serve different purposes. The Consolidated Statement of Condition reflects book balances and is prepared on the basis of standard accounting principles, while the Member Bank Reserves table is for statistical purposes and is adjusted where possible to remove known distortions. Federal Reserve float data from this table also are used in money supply calculations and are occasionally adjusted for this purpose when large reserve adjustments are known not to have affected float.

**FEDERAL RESERVE FLOAT AND
EXTENDED DISBURSEMENT FLOAT**

The foregoing discussion of Federal Reserve float provides a useful background for viewing a phenomenon sometimes termed "extended disbursement float", which has been the subject of recent business and financial community discussion. Briefly stated, extended disbursement float arises from the practice, apparently followed by some corporations, of writing checks on banks distant from the creditors to whom they are sent. The purpose of this practice is to maximize the time it takes for the checks to clear against a corporation's accounts and thus to defer as long as possible the date on which it is necessary to provide funds to cover its checks. This, in turn, enables the firm to stay invested in interest earning assets or to delay borrowing as long as possible. The key to this scheme, it has been asserted, lies in a "structural defect in the Federal Reserve System", wherein the Federal Reserve grants "good money"—i.e., gives deposit or reserve credit to the bank presenting the check for collection—before payment is received from the bank on which it is drawn.

Contrary to the foregoing view, Federal Reserve float is not the "key" in any meaningful sense to extended disbursement float. Rather, the essence of extended disbursement float lies in the fact that it generally takes longer to collect payment for checks drawn on banks remote from the banks in which the checks are deposited. This is true because checks drawn on distant banks typically pass through additional hands and processing steps and are transported greater distances. Moreover, there is the possibility of additional delays at every additional step in the collection process. Federal Reserve float may or may not be involved in extended disbursement float, but even if it is its contribution is unlikely to be large. For the most part, extended disbursement float depends on a combination of what are usually termed "mail float", "bank float", and delays in processing by creditors receiving payments.

Mail float arises when a corporation draws a check to the order of a creditor and dispatches it through the mails. In many transactions, the drawer considers itself—subject to successful collection of the check—to have discharged its obligation. So long as the check is in the mails, however, the issuing corporation can defer the funding of the check since the bank on which it is drawn has not yet had to make payment for it through a reduction of its deposits at a Federal Reserve Bank or correspondent bank. Float arises in the sense that the firm has discharged its obligation but has not yet had to provide funds to do so. Mail float persists until the check is deliv-

ered to the creditor by the postal service, which may be several days or more after the check is written. The Federal Reserve, of course, is not at all involved in mail float.

After a check is delivered to a creditor, it ordinarily takes some period of time for the creditor to process and deposit the check in its commercial bank. During this interval, the drawer continues to have the use of its funds, and in this sense float continues, even though it typically is not categorized as a particular type of float. This additional period of processing time, which again could amount to several days or more, contributes to extended disbursement float, but again the Federal Reserve is in no way involved.

Once the creditor deposits the check in its commercial bank, there arises what typically is referred to as "bank float", which persists until the bank where the check is deposited (or its correspondent bank, if the check is forwarded for collection) either receives credit from the Federal Reserve or collects for it in some alternative manner. Bank float again may extend for several days, since the drawer continues to have the use of its funds. The Federal Reserve System may be involved while bank float persists, in the sense that it may be in the process of collecting payment for the check. However, Federal Reserve float does not arise during this period.

Federal Reserve float may arise only after so-called bank float has disappeared, when the commercial bank sending a check to the Federal Reserve for collection receives reserve or deposit credit before the Federal Reserve collects payment. During any such period, of course, the corporation that issues the check continues to have use of its funds. It is unlikely, however, that Federal Reserve float, if it does happen to arise, would persist for more than a day or two at most, a relatively short period compared with the overall period of extended disbursement float. Thus, while Federal Reserve float conceivably can be involved in the extended disbursement sequence, it does not constitute the key to the scheme.

Regardless of whether Federal Reserve float is involved in extended disbursement float, the Federal Reserve is interested in curtailing the development of the practice. The reason is that the entire procedure leads to an unnecessary use of resources. The drawing of checks on banks in distant locations results in higher collection costs than if the checks were drawn on banks in closer proximity by using more labor, equipment, and transportation facilities. Ultimately, of course, these higher costs are paid by the general public through increased expenditures by the postal service, commercial banks, and the Federal Reserve.

FEDERAL RESERVE FLOAT AND OPEN MARKET OPERATIONS

From the viewpoint of monetary policy, Federal Reserve float is of interest primarily because it bears on the conduct of Federal Reserve open market operations. These operations consist of purchases and sales of United States Government and Federal agency securities in the open market for the purpose of providing an appropriate supply of reserves to the banking system. It is through this means that the Federal Reserve influences financial liquidity in the economy generally and implements its monetary policy objectives. In addition to being influenced by open market purchases and sales, however, the supply of reserves available to the banking system also is affected by other factors not under direct Federal Reserve control. Federal Reserve float is prominent in this group, which also includes currency in circulation and balances at the Federal Reserve Banks of the United States Treasury, other Government agencies, and foreign and international agencies. At times, shifts in these factors coincide with desired open market operations, but at other times they change to the contrary and must be offset. Indeed, a substantial share of day-to-day operations are for this purpose. Float is among the most variable and least predictable of the factors affecting reserves, the combination of which can at times create formidable operational problems.

The variability and unpredictability of Federal Reserve float has long been a problem and has been at least one of the factors considered in the efforts initiated over the years to reduce the level of float. One such effort was undertaken in 1972, when Regulation J was amended to speed payment to the Federal Reserve for checks drawn on banks outside Federal Reserve cities. This amendment had the effect of largely eliminating the time schedule component of float. Total float fell from its 1972 peak of \$3.3 billion to about \$2.3 billion in 1974. In addition, an expanded air charter service to speed check delivery to most Federal Reserve offices was implemented in 1973 by the Interdistrict Transportation System, helping to reduce the average volume of transportation float.

Despite these reductions in the average level, daily and weekly Federal Reserve float fluctuations have remained large. Indeed, the weekly variability of float appears to be no lower now than before Regulation J was changed and the new air charter service was introduced. Similarly, seasonal and intramonthly movements in Federal Reserve float, which are related to corresponding patterns in the volume of payments in the economy, have remained roughly stable in recent years despite these changes.

Intraweekly movements in float, however, changed sig-

nificantly with the virtual elimination of time schedule float in November 1972. Time schedule float accounted for a significant portion of total float, and more important it moved in a highly predictable manner. Most other float components were then and have remained much more random in their movements, arising as they do from events such as computer breakdowns, severe weather, labor strikes, concentrated episodes of staff illness, and the like. Such events have the potential of causing float unexpectedly to rise or fall by \$1 billion or more from one day to the next.

Such considerations bear heavily on the problem of forecasting float, which is necessary in planning open market operations. The elimination of time schedule float removed much of the predictable element in intraweekly movements, leaving the forecaster the problem of dealing primarily with the results of random events. Some basis for attacking this seemingly impossible problem does exist, however, since the deferred availability feature of check collection means that the float impact of many events will be delayed a day or two. Hence, timely notification of events known to disrupt the clearing process can aid the forecaster in making quick adjustments to near-term float projections.

CONCLUDING COMMENTS

This article has described the present status of the Federal Reserve collection and transfer mechanisms as they bear on Federal Reserve float and has explained relevant aspects of changes in those mechanisms over time. To date, the volume of collections and transfers processed has grown steadily from about \$17 trillion in 1970 to about \$38 trillion in 1974, with correspondingly rapid growth in capacity. Expansion of capacity has brought computerization, establishment of Regional Check Processing Centers, specialized transportation facilities, automated communications facilities, and changes to the regulations under which collections and transfers are effected. Although the details are uncertain, the future probably will bring continued growth in volume, significant adjustments to processing facilities, and more Regional Check Processing Centers.

The check has been around for a long time, and its form and use have developed in an evolutionary rather than revolutionary way. No doubt it will continue to evolve. However, the future of automated funds and securities transfers seems less predictable and potentially much more volatile. While the transfer of funds and securities by wire has been an operational reality for over fifty years, both domestic and international use of this technique has

grown with the emergence of the computer and more sophisticated communications equipment. Today, tens if not hundreds of billions of dollars change hands daily through the various public and private automated communications networks, with the vast majority of transfers having no impact on Federal Reserve (or other) float except when breakdowns occur. These networks are used almost exclusively by large corporations, governments, banks, and similar sizable institutions transferring very large sums in each transaction. On the horizon, however, are similarly automated payments mechanisms oriented toward the small commercial transaction at present largely handled by cash, credit card, or check. The appearance and acceptance of such systems should significantly reduce the use of checks.

As a larger proportion of all transfers become automated so that credit is extended immediately and simultaneously as payment is collected, seasonal and intramonthly variations in Federal Reserve float most likely will become less pronounced. With a growing portion of transfers receiving immediate credit and a smaller portion receiving deferred credit, the number of float-producing events whose effects can be incorporated into the forecasts with

early notification will diminish. Hence, float movements can be expected to become even more random in character, and the forecaster's problem will therefore become much more difficult. In effect, to forecast float it will become increasingly necessary to anticipate such random events as computer breakdowns and other problems which cause interferences in automated transfer systems.

THE CULPEPER SWITCH

The Culpeper Switch, a new nontechnical twenty-page booklet, explores six decades of communications development and expansion, culminating in the establishment of the Federal Reserve System's communications network.

Single copies of the publication are available without charge from the Public Information Department, Federal Reserve Bank of New York, 33 Liberty Street, New York, N.Y. 10045.

Per Jacobsson Foundation Lecture

The Per Jacobsson Foundation in Washington, D.C., has made available to the Federal Reserve Bank of New York a limited number of copies of the 1974 lecture on international monetary affairs. The Foundation sponsors annual lectures on this topic by recognized authorities in honor of the former Managing Director of the International Monetary Fund, who died in 1963.

The eleventh lecture in this series was held in Tokyo on October 11, 1974 in the headquarters building of the Federation of Bankers Associations of Japan. Two papers were presented on the subject "Steps to International Monetary Order", one by Conrad J. Oort and the other by Puey Ungphakorn. Dr. Oort is Treasurer-General at the Department of Finance of the Netherlands Government and was for over ten years Professor of Economics at the University of Utrecht. Dr. Puey, Professor of Economics at Thammasat University in Bangkok, is Chairman of the Council of Economic Advisers to the Prime Minister of Thailand and was former Governor of the Bank of Thailand. Commentaries were offered by Saburo Okita of Japan, who is President of the Overseas Economic Cooperation Fund, and William McChesney Martin, former Chairman of the Board of Governors of the Federal Reserve System.

This Bank will mail copies of the lecture without charge to readers of the *Monthly Review* who have an interest in international monetary affairs.

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