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# The Float in Flow-of-Funds Accounts

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## *Introduction*

THE problem of float has not been treated systematically in the literature on national social accounts, although occasionally references to float may be found in discussions of statistical discrepancies.<sup>1</sup> Indeed, there does not even seem to exist a generally accepted definition of "float" as contrasted with all other types of timing differences in social accounts. The only categories of float to which some explicit attention is given in the literature are the so-called bank float and mail float, which are of considerable importance in estimating several important sector and transaction accounts. Other types of float are usually dealt with only tangentially.

Since the entire theoretical structure of the flow-of-funds analysis is based on a conceptual balance of accounts, the problem of float arises only at the empirical level. As used in the construction of the flow-of-funds accounts, double entry accounting is actually quadruple entry accounting, since every change in assets will be recorded in two different sector accounts, and will simultaneously give rise to a corresponding change in the liabilities of the same two sectors. Thus, a sale of a real asset has its counterpart and corresponding change in

NOTE: The author wishes to acknowledge the substantial assistance of Miss K. McKinstry in preparing this paper. I have also greatly benefited from discussions with Mr. Helmut Wendel of the flow-of-funds staff of the Board of Governors, who has also provided work sheets and technical details, and whose criticism has helped to sharpen several issues.

<sup>1</sup> There is no general discussion of float in Morris A. Copeland's *A Study of Money-flows in the United States* (National Bureau of Economic Research, 1952), and the only index entry is for "mail float," under "book credit." J. P. Powelson's *Economic Accounting* (New York, 1955) mentions only Federal Reserve float. There is no entry for float in *A Critique of the United States Income and Product Accounts*, Studies in Income and Wealth, Volume 22 (Princeton for NBER, 1958). Timing problems are, of course, mentioned in several places in the Department of Commerce's *U.S. Income and Output*, and under the heading "Direction of Future Research," the need for investigating float is mentioned (page 64). *Flow of Funds in the United States, 1939-1953* (1955), the comprehensive monograph published by the Board of Governors, discusses only bank float (in the chapter "Currency and Deposits"; see, however, the section on "Timing of the Accounts," in Chapter I: and in Appendix A, "Discrepancies in the Flow-of-Funds Accounts").

the ownership of cash, or other financial assets, by the two transacting parties (sectors). It may involve additional transactions in the debt accounts if the sale is financed in part through credit.

All sorts of estimating problems arise when a logically consistent framework of analysis, based on exhaustive interlocking and balancing accounts, is translated into a set of statistical estimates. Since all social accounts are derived from a variety of sources, and estimates are made on the basis of certain assumptions and accounting conventions, numerous problems of measurement, consistency, and reconciliation arise. Many types of transactions are estimated at the same point of time, but the records of the two parties do not agree; in every case, when one set of records has not yet registered the transaction, float will result. This may occur when the same transaction is not recorded on the two sides of the account simultaneously, usually because two transactors become aware at a different time of the fact that a given transaction has taken place, or because a different source of information is used to construct these accounts. When the identical source of information is used to estimate both sides of a transaction (as in the case of consumer credit, for instance), no timing differences need arise.

In a transaction account, the asset side (as measured by holders) will normally be smaller than the liability side (as measured by debtors) when transactions leading to decreases in holdings are initiated by the holders; examples are the writing of checks by holders of demand deposits and the cashing in of United States savings bonds. The asset side (as measured by holders) will be larger than the liability side (as measured by debtors) when transactions leading to increases in holdings are initiated by the creditors; examples are accounts receivable entries when goods are shipped; and an entry for new loans by a lending agency when a loan has been approved and processed, but the check for the loan has not yet been received and the loan not yet put on his books by the borrower. The asset side (as measured by holders) is also larger than the liability side (as measured by debtors) when transactions leading to the repayments of debts are initiated by the debtors; examples are amortization repayments of mortgages, consumer credit repayments put in the mail by the borrowers, and repayments of accounts payable put in the mail.

Not all practical problems of estimation, however, result from the difficulty of obtaining synchronized estimates of all stocks and/or flows. Differences may also arise from the use of different bases of valuation, from accrual accounting, from differences in coverage, in allocation, and for other reasons. Timing differences other than

float result from imperfections in basic data and from various statistical problems arising from the multiplicity of sources and estimating procedures used in the construction of social accounts. Without an exhaustive study of the magnitude and structure of the various sources of errors and the discrepancies in social accounts, it is not possible to state positively that float is, in the aggregate, more important than other timing differences or other categories of discrepancies.<sup>2</sup>

In essence, then, float arises from the spatial element in the economic process. With few exceptions, all accounting entries are made on the basis of documents (invoices, checks, securities, etc.) received through the mails. In the complex economy of the United States, a relatively large proportion of transactions involves independent economic units in different locations, and the time consumed in mailing documents or checks between transactors results in delays in the recording of transactions by the second party.<sup>3</sup>

Looked at from this broad point of view, the problem of float no longer appears as an isolated technical problem encountered when constructing a consistent system of cash-flow accounts on a holder basis by combining data of several sectors, some of which are on a bank-record basis. All flow data relating to transactions in real as well as in financial assets may involve an element of float because of the time consumed in shipping goods and in mailing checks, securities, and related accounting documents (including delays in processing checks and documents). In some cases, independent third-party records are available, which permit estimation of the amount of float as the difference between the total level of stocks or assets in existence and the sum of corresponding quantities shown in the individual sector accounts.

When individual *transactions accounts* are constructed on a holder-record basis from a variety of records, it may happen that certain assets may be reported either twice, if the account losing the asset is not debited at the same time as the account acquiring the asset is credited; or not at all, if the asset has been already removed from one account, but is not yet shown in the second account. I propose to call the first category "duplicating float" and the second "vanishing float." An example of the first category is the so-called bank

<sup>2</sup> The guess can be hazarded, however, that in flow-of-funds accounts the relative importance of timing differences is inversely correlated with the length of the period. Thus, timing differences are likely to affect quarterly data more than annual totals.

<sup>3</sup> Thus, float may arise because of accounting practices (when a bookkeeping entry is delayed until written confirmation is received) or because of actual lack of knowledge (for instance, when the creditor does not know as yet that a debtor has put a check in the mail).

float; and of the second, some categories of physical inventories in transit.

If each *sector's* transactions were consistently based on its own books, float would not affect the total level of the sector's assets but merely their composition. To the extent that some account is over- or understated because of float, some other account or accounts of the same sector will be affected, but in the opposite direction. Thus, any reduction in the intercorporate inventory float, as a result, for instance, of greater speed in transportation, would increase the inventory account; offsetting changes would occur in the accounts payable and in the cash accounts. For the economy as a whole, the vanishing float of goods and securities finds its counterpart in corresponding increases in aggregate net accounts receivable.

To sum up, aggregate holdings of real assets as well as of some types of financial assets derived from owner records tend to be understated by the amounts "floating," or in transit, between transacting units. Generally, the amount of financial assets, such as accounts receivable, derived from creditors' records, exceeds corresponding debtors' totals (such as accounts payable) by the amount of checks and invoices in the mails. To the extent that sector estimates are obtained from individual rather than consolidated statements, part of such float is intersector, while the remainder is intrasector.

The money supply (measured in the flow-of-funds framework in the cash and currency account) is affected by a duplicating as well as by a vanishing float. The clearing mechanism requires that the instrument used by the payer to discharge his debt at a distant point has to make the return journey to the debtor's bank; it gives rise to bank float, which is a duplicating float. At the same time, when deposits are transferred from one holder to another through the mailing of a check, a vanishing float in the form of the "mail float" is created. These two floats both result in higher cash and currency derived from bank-record totals than those shown in owner records.

Several problems of economic analysis arise from the existence of float. In many cases, float is a repetitive phenomenon; its occurrence, size, and duration can be estimated on the basis of past experience; and economic units may be in a position to, and in many cases do, take float into account. Obvious examples would include, in addition to retailers who anticipate receipts of merchandise on the basis of past ordering experience, individuals who take advantage of the fact that federal income tax checks take time to clear. What is, then, the effect on the decision-making process of real and financial assets in transit? An increase in merchandise float, for instance, may evidence the merchants' recent action to increase their stocks; any further

actions of merchants will take into account the fact that their inventories are soon to be increased by the amount of the purchases now in "float." And, indeed, Federal Reserve float is a source of member bank reserves and, therefore, is an important element in projecting reserve positions and in analyzing the current banking situation.

Furthermore, from the point of view of the economic units, what is the proper definition of money supply? The rationale for the adjustment of checking balances for mail float is that consumer as well as business units rely on checkbook stubs rather than on bank records. This assumption may not be generally valid. Some business firms, including many large corporations with nationwide activities, operate on the basis of bank records. They rely on statements received (usually daily, in the case of large firms) from their bank depositories, rather than on the totals shown on their treasurer's books. Some transactors take advantage of mail and bank float on checks and drafts which they send out. In all such cases, the recording of transactions on a bank-record basis would seem more appropriate. The decision to build flow-of-funds accounts on the basis of holder records (with the exception of the consumer sector in the new Federal Reserve Board estimates) was made, however, not only because it was thought that holder records are, on balance, preferable for an analysis of spending, but also to assure within each sector consistency with other transactions.

One significance of float for general economic analysis is that it tends to understate the total amounts of certain quantities (in the records of prime transactors and of intermediaries) and to distort the distribution of stock and the measurement of the flow of goods and securities in the economic system. To assess the impact of goods on individual transactions and on sector accounts, it would be necessary to identify all types of transactions that usually give rise to float; to quantify each type of float; and to trace, for each type of float, its counterpart in other transactions and sector accounts. If this were possible, a complete float matrix could be constructed for each flow-of-funds statement. Over a period of time, such a matrix would presumably show a decline in float in relation to the aggregate volume of transactions, reflecting improvement in the speed of transportation, the efficiency in processing checks and other accounting documents, as well as definite policies by business and government units to reduce inventory ratios by improving delivery dates, accounts receivable, and bank balances. Part of the interest in improving the statistical apparatus dealing with float derives from the fact that over time no specific category of float can be assumed to have remained

a fixed proportion of the related flow. The design of the flow-of-funds accounts, the decisions made between alternative sources of data, and the choice of estimating techniques determines to a large extent where and how float will arise. More importantly, such decisions reflect, implicitly at least, more fundamental views as to which records are more significant in the decision-making process that shapes the course of economic events.

### *Types of Float*

At the present stage of knowledge, it is not possible to give even an approximate quantitative estimate of float in the flow-of-funds accounts of the United States, or even to relate float to the existing estimates of discrepancies in these accounts. It is not even feasible within the framework of this paper to present a fairly complete catalogue of all the relevant types of float, and to show its incidence on the individual transactions and sector accounts. Instead, we shall first discuss in broad terms the principal sources of float in the flow-of-funds accounts, and then concentrate on mail and bank float.

In the rest-of-the-world account, the float problem has been submerg-ed in the discussion on the sources of "errors and omissions."<sup>4</sup> The statistical difficulties are compounded by the fact that "other party records" are normally abroad and not accessible. A considerable amount of relevant data is derived not from the records of parties to the transaction, but from reports of a third party, such as the customs authorities. The recording of the various elements of the current account may involve lags (and, at times, leads) between merchandise and service transactions, on the one hand, and payments, on the other; and similar timing differences may be involved in the capital accounts as well. A first step in sizing up the significance of float in this area would be to construct a clear conceptual framework to distinguish between float and other timing differences in the rest-of-the-world sector.

In the federal government sector, one aspect of the float problem is reflected by the simultaneous reporting of expenditures on a check-issued and on a check-cashed basis. (Obviously, the same problem exists in the state and local government sector.) Since no breakdown of the United States government check float by types of expenditures is available, it is not possible to attribute this float to specific sector accounts, such as the income receipts, transfer receipts, and taxes

<sup>4</sup> See, for instance, J. H. Adler, "Clandestine Capital Movements in Balance-of-Payments Estimates," *Quarterly Journal of Economics*, August 1950, pp. 477 ff; discussion by Florence Jaffy and rejoinder, *QJE*, February 1951.

(less tax refund) subaccounts of the consumer and nonprofit organizations sectors.<sup>5</sup> There are other areas in the two government sectors in which float arises, including Treasury tax and loan balances at depository banks. In such banks, some credits precede the corresponding entries on the books of the Reserve bank by the length of time required for mailing of the advice by the commercial bank and its processing.

Float may be presumed to be of considerable importance in the inventory account, since inventories in transit tend to disappear from national economic accounts.<sup>6</sup> Goods shipped become accounts receivable on the books of the seller. The buyer may—and typically will—keep the bill in a suspense account pending receipt of the goods. The accounts payable will be increased only after the shipment has been received and verified; and, in the meantime, goods in transit will not be shown in any inventory account. The proper treatment of inventory float may well turn out to be one of the most intractable statistical problems in the business-sector accounts.

One is not only confronted with a complete lack of usable data on inventories in transit, but accounting practices show a perplexing variety of treatments of inventories received or produced, which, on balance, tend to understate the amount of physical inventories in the economic system. Thus, the inventory account may be reduced by advances on merchandise and deposits on unfilled orders and contracts, which are entered in business accounts as an offset to inventories. Because of the great variety in accounting practices and policies, any attempt to obtain a quantitative estimate of unrecorded inventories in transit or netted out against deposits or prepayments is likely to require considerable field research. Perhaps some exploratory work could be undertaken, at least for some specific industry (such as the automobile industry) or industries, in order to assess the extent and exact nature of the conceptual and statistical problems which need to be solved.

As already indicated above, the float in the inventory account is in part reflected in the trade debt account. Buyers may postpone entering a liability on their books until the shipment is received, while the seller will have recorded the transaction in his inventory account and in accounts receivable. Another familiar float problem in the trade debt account is debtors' payments to creditors, which are in the

<sup>5</sup> See *The National Economic Accounts of the United States: Review, Appraisal, and Recommendations*, National Accounts Review Committee of the National Bureau of Economic Research, Washington, 1958, pp. 195–196.

<sup>6</sup> See *Statistics of Business Inventories*, Report of Consultant Committee on Inventory Statistics, Board of Governors of the Federal Reserve System, November 1955, p. 52; and *National Economic Accounts*, p. 194.



mails and which tend to create a difference between reported accounts receivable and accounts payable.

Float is also of some importance in the securities account. Thus, some holders (including holders of large investment portfolios, such as insurance companies and mutual funds) apparently carry securities on a committed basis, while others keep their books on a delivery basis. Government securities dealers, in particular, keep their records on a committed (positions) basis; so at any given point, their inventories of securities will differ from their positions. If one of the parties to a transaction keeps its books on the commitment and the other on the delivered basis, the same security will be shown in both accounts. The spread of the repurchase agreements technique for United States government (but also for other) securities adds an additional complication, since one of the two contracting parties may carry the transaction on its books as a sale, and the other, as a loan.

Considerable further research is required to identify all items in the various transactions accounts and subsectors in which float is likely to represent a significant estimating problem, and to evaluate in each case the relative importance and the variability of the duplicating and of the vanishing float.

### *The Check Float*

To the extent possible, the Federal Reserve Board's flow-of-funds accounts are constructed on the basis of holder records. Each sector includes a cash account, in which holdings of currency and of demand deposits are combined. For one important sector, the consumer sector, source data for a direct estimate of currency and demand deposits are available only on a bank-record basis. In the original flow-of-funds estimates, a reconstruction of consumer cash records was attempted. In order to obtain consumer deposits by means of the holder record, the applicable bank and mail floats had to be estimated. In the new quarterly estimates, the consumer-sector transactions in cash are derived from records of nonconsumers ("other party records").

Total holder records of demand deposits, net of cash items in collection channels, differ from bank records by the amount of checks mailed by the payers but not yet received by the payees.<sup>7</sup> This

<sup>7</sup> Indeed, when a check is mailed, there is, first, a period during which the payment does not appear on the holder records of either the drawer or the drawee. Subsequently, after the check is received and deposited, there is a period during which the amount of the check appears in the bank accounts of the drawer as well as of the drawee; so there is an

amount is known as the "mail float." In a system of accounts based on holder records, the mail float can be appropriately designated as a vanishing float in terms of the terminology suggested in the Introduction, above. Furthermore, deposit totals obtained through an aggregation of totals shown on the records of individual banks involve a duplication to the extent that checks deposited in the payee's account will not be deducted from the payer's account until they reach his bank (or the branch at which his account is kept). The resulting duplicating (including intrabank) float is known as "bank float."<sup>8</sup>

Statistical data are available on the bank float, and even these are not satisfactory, for the reasons given below; no direct empirical data whatever exist on the size or components of mail float at any point of time. These two types of float combined are subsequently referred to as "check float."<sup>9</sup>

The amount by which, at any given point of time, total deposit balances as per holder records differ from gross bank ledger balances is sizable. At the end of 1957, for instance, check float was estimated as equivalent to \$3 out of every \$10 of demand deposits as per holder records (excluding United States Treasury and foreign-owned balances). Check float is of considerable importance in estimating several sector and transaction accounts. The absolute amount of check float and its ratio to holder balances is, moreover, subject to seasonal and cyclical fluctuations. The ratio of check float to the level of aggregate deposits as per holder records is subject to longer-run changes as well. Therefore, flow-of-funds estimates, especially those on a quarterly basis, when based on holder records, will depend to a significant extent on the quality of check float estimates. Clearly, from the point of view of the construction of annual or quarterly flow accounts, changes in float are more relevant than estimates of its absolute level.

Among transactions accounts, the currency and deposit account is affected most importantly and directly by estimates of check float; other accounts (in particular, the trade credit and trade debit account)

overstatement of aggregate deposit balances as they appear in bank records. The shorter the interval between the instant a check is deducted from the balance of the drawer and the time it is added to the balance of the drawee, the shorter the period during which the amount of the payment does not appear in any checkbook balances. Conversely, the speedier the collection process, the shorter the period during which the amount of the check drawn appears simultaneously on the records of the bank at which it has been deposited and the bank on which it is drawn.

<sup>8</sup> The holder record for a given sector can exceed the corresponding bank record because of checks received by payees and considered as cash, but not yet deposited.

<sup>9</sup> Compare Raymond W. Goldsmith, *A Study of Saving in the United States*, Princeton, 1955, Vol. II, pp. 6-8.

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are affected indirectly, but substantially. The check float is of particular importance in estimating consumer savings in the form of cash.

### SEC ESTIMATE

The technique originally used by the staff of the Board for estimating check float in the consumer sector differed in detail from the procedure originally developed by the Securities and Exchange Commission in order to estimate individuals' saving in the form of deposits. Because of the use made of certain categories of SEC data in the flow-of-funds analysis, and because the Board's estimates of consumer saving from demand deposit data may be compared with similar estimates currently prepared by the SEC, we shall refer briefly to the SEC technique, which has been described by Friend.<sup>10</sup>

Friend estimated the mail float deduction in the consumer sector on the basis of assumptions as to the composition of checks issued during a given year, the average number of days during which a check remains in transit between the payer and the payee, and the total volume of items in the process of collection. Estimates in accordance with this procedure were made for several years, but the derivation of applicable mail float is shown in the source for only the single year, 1947. Obviously, practically all the magnitudes entering such computations involve a good deal of judgment and guesswork.

The basic SEC procedure starts with an estimate of total check payment applicable to the individual sector, reduces it to the average volume in the mails during an average day, and expresses this volume as a percentage of total mail float. Federal Reserve float is assumed to amount in each year uniformly to 3 per cent of the reported figures for cash items in the process of collection, and no allowance is made for the fact that mail float attributable to one sector may, at least on a quarterly basis, show fluctuations different from those of the total "items in process of collection." The actual calculation for 1947 yields a ratio of 0.38, which Friend raised to 0.50 to allow for possible underestimating. This ratio is applied consistently throughout the entire period covered by the Friend monograph (1933 through 1952), thus making fluctuations in mail float dependent on the fluctuations in cash items in process of collection. This ratio is used in current SEC estimates.<sup>11</sup>

<sup>10</sup> Irwin Friend, with the assistance of Vito Natrella, *Individuals' Saving*, New York, 1954, pp. 161 ff.

<sup>11</sup> A further mail float adjustment applicable to corporate receivables is made in the computation of net payables of unincorporated business (the same 0.50 ratio is used)—see Friend, p. 40.

## THE FLOAT IN FLOW-OF-FUNDS ACCOUNTS

### FEDERAL RESERVE BOARD ESTIMATES

The Board's staff changed its procedure for estimating mail float since the publication of the 1955 monograph *Flow of Funds in the United States, 1939-1953*. The new approach is embodied in quarterly estimates, the publication of which was inaugurated in the August 1959 *Federal Reserve Bulletin*. Since the procedure originally used by the Board's staff (and subsequently referred to as the "original," in contrast to the current "new," technique) is available in very general terms only,<sup>12</sup> we shall summarize briefly its essential features, and add some details which are essential for evaluating the character of the estimates. (A more detailed discussion may be found in Appendix A.) We shall subsequently describe and discuss the technique which superseded the one used originally.

The original estimate of the consumer-sector holdings of demand deposits was derived essentially as a residual from bank records of total deposits. The procedure involved estimating the combined bank and mail float applicable to the consumer sector. The new procedure does not require any such estimates, since it is assumed that the bank-record estimate of deposit assets of the consumer sector represents an acceptable approximation of this sector's deposit holdings.<sup>13</sup>

In the original as well as in the new procedure, demand deposits are combined with cash and no separate estimates of demand deposit holdings on a holder basis are provided in the sector accounts.<sup>14</sup> However, as part of the derivation procedure, it is necessary to make separate working estimates of currency and of demand deposit holdings.

In the currency and demand deposit transactions account, however, the discrepancy shown reflects essentially mail float. By combining this discrepancy with the sum of cash items in process of collection and Federal Reserve float in the commercial banking and monetary sector account, an estimate of total check float in the flow-of-funds account can be derived.

#### THE BOARD'S ORIGINAL PROCEDURE FOR ESTIMATING CHECK FLOAT

The Board's original estimating procedure showed considerable refinement in detail, but had in common with the SEC technique the

<sup>12</sup> *Flow of Funds*, pp. 303-315.

<sup>13</sup> In the original as well as in the new procedure, the consumer sector's currency holdings, also estimated as a residual, are added to obtain an estimate of the sector's total cash assets.

<sup>14</sup> No mail float adjustment is required in the commercial banking and monetary authorities sector account.

same basic approach, that is, the linkage of the volume of mail float rigidly to that of bank float.

The objective of the "original" technique was to provide a *total* check float adjustment for several sector and subsector accounts; no sectoring of mail float and bank float separately was undertaken.

Determination of consumer-sector deposits on a holder basis involved, in the "original" procedure, estimating total check float. This was done by estimating total mail float and by adding it to bank float derived from banking statistics. Since, for many sectors, data on cash holdings are available, or can be approximated on a holder-record basis, no exhaustive allocation of check float was undertaken. For some sectors, data on cash holdings could be compared with bank-record data from the demand deposit ownership survey. As a result, estimates of check float for an enlarged corporate sector could be derived. In this way, check float attributable to the consumer sector was derived by deducting the check float of other sectors from the estimated grand total of check float.

In contrast to the Board's money supply series,<sup>15</sup> which disregards Federal Reserve float and Treasury cash items in process of collection by Federal Reserve banks, the flow-of-funds estimates add them to "cash items in process of collection" (IPC) in order to obtain an estimate of total bank float. In the original procedure, certain deductions were made from total bank float (as explained in Appendix A) in order to obtain the portion applicable to the private demand deposits. The estimate of applicable bank float served as a basis for estimating the corresponding mail float. However, in a refinement introduced after publication of the 1955 monograph, it was assumed that fluctuations in mail float precede those in bank float by a constant time lead of calendar days. Hence, the size of mail float was estimated on the basis of a bank float estimate lagged by three days. That is, December 31 mail float was based on an estimate of January 3 bank float.

Consumer-sector check float was obtained in the "original" procedure by deducting from total check float the part attributable to the corporate sector (estimated as the difference between bank- and holder-record estimates; see Appendix A for details and for the definition of what may be called the enlarged corporate sector). By deducting from total IPC holder records all corporate and non-corporate holder-record estimates, consumer-holder records could

<sup>15</sup> See the table "Consolidated Condition Statement for Banks and the Monetary System" in the *Federal Reserve Bulletin*. Since this paper was delivered, this table has been changed to exclude Federal Reserve float; see *Federal Reserve Bulletin*, October 1960, p. 1105.

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be obtained as a residual. This residual was in turn compared to consumer bank-record holdings reported in the demand deposit ownership survey. The comparison yielded an estimate of check float applicable to consumer accounts.

Before commenting on the original check float estimates, it is useful to focus on several aspects of these estimates for the years 1949 through 1959.

1. Total check float rose between 1949 and 1957 about as rapidly as total debits.

2. With the exception of 1954 (and 1955, for which no ownership survey data are available), corporate-sector check float was a surprisingly stable proportion (around 30 per cent) of corresponding bank-record deposits.

3. From 1949 to 1957, corporate float as a proportion of total check float declined from 78 to 58 per cent.

4. Consumer-sector check float rose after 1954 to about 10 per cent of this sector's bank-record deposits, and reached 18 per cent in 1957. Similarly, the share of the consumer sector in total check float rose from zero in 1949 to almost one-fourth in 1957.

### THE BOARD'S NEW PROCEDURE

The new procedure does not attempt to estimate consumer check float directly. Instead, it makes the assumption that the various elements of float which should be added to, or subtracted from, the bank-record total of consumer demand deposits in order to arrive at the equivalent "other party" record cancel out. In other words, the bank record is assumed to be the best available approximation of the consumers' "other party" record total.<sup>16</sup> It is thus assumed that the amount of checks in the mail from nonconsumers to consumers (or received, but not yet deposited by the latter) is equal to the sum of the following three items:

1. Consumer checks to nonconsumers, received but as yet undeposited<sup>17</sup>
2. Checks of consumers to nonconsumers in the process of collection
3. Checks from consumers to other consumers in the process of collection

<sup>16</sup> The corollary of this assumption is that check float applicable to the nonconsumer sectors is equal to nonconsumer checks in the mail to nonconsumers plus *total* bank float.

<sup>17</sup> Nonconsumers are assumed to be considerably more efficient in getting checks to their banks (i.e., in reducing holdings of undeposited checks) than consumers.

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In making this assumption, the Board's staff does not actually claim that these three items are really equal in the aggregate to checks from nonconsumers not yet received or deposited by consumers; it merely takes the position that there is no way of actually estimating the direction and size of this difference. The various elements of float taken into consideration in the new treatment of the consumer-sector float are summarized in Table 1, prepared by Stephen P.

TABLE 1  
NEW FLOW-OF-FUNDS PROCEDURE FOR DEMAND DEPOSIT FLOAT CALCULATION

Business Sectors	Consumers	Total
Bank record	Bank record	Bank record
- Checks in mail to consumers and those undeposited by consumers	+ Checks in mail or undeposited <sup>a</sup> from nonconsumers	0
- Checks in mail to nonconsumers		- Nonconsumer checks in mail to nonconsumers
- Checks in process of bank collection to consumers <sup>b</sup>	- Checks in process of bank collection to nonconsumers <sup>b</sup>	- { All checks in process of bank collection
- Checks in process of bank collection to nonconsumers <sup>c</sup>	- Checks in process of bank collection to consumers <sup>c</sup>	
+ Undeposited checks from consumers	- Checks to nonconsumers as yet undeposited	0
Equals: holder record and flow-of-funds record	Equals: other-party record and flow-of-funds record	Equals: flow-of-funds asset record

<sup>a</sup> For consistency with other transaction accounts. The checks in mail included here are not part of consumer-holder records.

<sup>b</sup> Not yet deducted by payer's bank. Counted twice in bank record, but in accounts of different sectors.

<sup>c</sup> Not yet deducted in payer's bank. Counted twice for same sector in bank records.

Taylor of the Board of Governors of the Federal Reserve System. The new consumer-sector cash record is consistent with the timing of other consumer transactions, all of which are derived from reports of the other parties to the transactions.

The new procedure involves three further assumptions:

1. Since the ownership distribution of demand deposits is available for the end of January only, the question arises of which sector, or sectors, accounts for the sizable variability of the difference in IPC deposits between the end of the year and the end of January. The best solution was judged to be to allocate the entire difference to business deposits.

2. The ratio of check float to deposits was assumed to be the same for noncorporate as for corporate business (the original assumption was that it was only half as large).

3. For farm and nonprofit organizations this ratio was assumed to be 15 per cent, or roughly one-half of that obtainable for corporate business.

### *Comments on Check Float Estimates*

Our comments on the estimation of the check float in the flow-of-funds will be grouped under three headings: (1) estimation of bank float; (2) the logic underlying the "original" procedure; and (3) the new procedure developed by the Board's staff.

#### 1. ESTIMATION OF BANK FLOAT

Aside from making allowance for Treasury deposits in process of collection at Reserve Banks and for Federal Reserve float, the flow-of-funds accounts, following the current procedure in estimating the money supply, use "cash in process of collection" as a measure of bank float. This does not seem adequate. This call-report item is too narrow, since a large, but unknown, proportion of checks in collection channels is shown in banking statistics under a different heading; at the same time, it is too broad, since it includes items not chargeable to private demand deposit accounts. These two limitations, although operating in opposite directions, cannot be assumed to be roughly of equal importance and to offset each other (as more fully explained in Appendix B).

#### 2. SHORTCOMINGS OF THE "ORIGINAL" PROCEDURE

The Board's original estimate involved the following two assumptions with respect to the relation between mail and bank float: (a) that the size of mail float is equal to the size of bank float, and (b) that fluctuations in mail float precede those of bank float by a constant time-lead of three calendar days.

By implication, it was also assumed that (a) any influences that may have changed the volume of bank float in relation to holder



balances have similarly affected mail float, thus leaving the mathematical relationship (i.e. one-to-one correspondence) between the two floats undisturbed; and (b) seasonal and cyclical fluctuations of both floats are identical.

Undoubtedly, many of the same basic factors affect the relationship between the volume of checks mailed to distant points (and, hence, mail as well as bank float) and the total volume of check payments. Among these, the geographic patterns of production and distribution are reflected in the average distance checks have to travel from payer to payee and from the latter's bank to the former's. Speed of the mails, which has improved over time, is clearly a crucial element for the efficiency of the payments mechanism.

The basic rhythm of the movement of payments into and through the clearing mechanism thus reflects existing payments patterns. The schedule of payments which depositors have to meet determines the distribution of the issuance of checks (and, thus, fluctuations in holder records) over time. In general, payers, whether individuals or business firms, will take no special steps to get their checks to their creditors as fast as possible and will normally use ordinary mails. However, mail float can be reduced by action of payees—the lock-box system of speeding up receipt of customer checks being an outstanding example.

Basically, the volume of bank float reflects fluctuations in the amount of checks issued. In addition, it is influenced by the fact that normally banks do not operate over the week end and that bottlenecks arise from the inability of staffs to handle peak loads. Because of the large volume of checks received by banks on Mondays, Federal Reserve float (the only component of bank float on which detailed studies are available) is subject to fairly wide intraweekly fluctuations. On Thursdays, this float usually reaches 110 per cent of the average weekly level, as compared with a low point of 90 per cent on Monday;<sup>18</sup> there is no reason to believe that the distribution of mail float has a similar intraweekly pattern.

Finally, bank float may increase, owing to delays in processing and collection, independently of any changes in mail float. We have no data on the average volume of checks held over to the next day by commercial banks because of overloaded conditions. A study made of the Federal Reserve float in 1955 shows that 38 per cent of such float was so-called "holdover float." The holdover part of the total bank float is not matched in the mail float, since checks that are

<sup>18</sup> Federal Reserve float has, furthermore, a mid-month peak of about 135 per cent of the monthly average; this peak is likely to be matched by a similar peak in total bank float. It is possible that mail float may have a similar intramonth pattern.

received too late to be deposited are, in the flow-of-funds account, entered in the owners' accounts as cash when received.

Banks are under legal obligation to proceed expeditiously in collecting checks deposited with them. Moreover, competition and the desire to build up their deposits drive them to speed up collections. They use air mail and air freight, transport checks to airports and railroad stations to meet specific planes or trains, frequently pick up their incoming checks at post offices, and provide their large customers with facilities to speed up check collection, such as by the lock-box system. In order to speed up remittances, they maintain interbank balances and make use of Federal Reserve or bank wire facilities. Key elements in the country's check collection system, such as Federal Reserve offices and many large correspondent banks, maintain night forces, employ extra help at peak periods, and otherwise develop and systematically apply policies with the general objective of speeding up check collection.

The various efforts to increase the speed of collection, including the transfer of collected funds, have tended to reduce in the long run the average time a check is in collection channels and is statistically reported as such. Moreover, the process of concentration, which has been an outstanding feature of banking since the end of the Second World War, must have tended to reduce the proportion of total check float, which is shown in banking statistics as "cash items in process of collection."<sup>19</sup>

To sum up, it is unlikely on several *a priori* grounds that mail float should be a constant proportion of bank float. There are also several reasons for questioning the assumption, no longer made in the new procedure, of a fixed three-day lag between the volume of mail and bank float, which does not seem to have been based on any empirical knowledge. It is far from plausible, since it does matter whether the intervening three days include a Saturday, a Sunday, a holiday, or any combination of the three days on which banks do not operate; but at least some depositors may issue checks and add to their checkbook stubs checks received in the previous days.

Perhaps the weakest part of the original Board procedure was the

<sup>19</sup> Between the end of 1939 and the end of 1957, the number of branch offices of commercial banks has increased from 3,491 to nearly 8,000; in many cases, central book-keeping has accompanied bank mergers. Since local clearing houses do not accept checks of a bank on its own branches, nor would a Federal Reserve Bank handle checks drawn on a branch of a bank using its collection facilities, the growth of branch banking has increased the volume of checks cleared within branch-banking systems. Even though branch clearing accounts are supposed to be included in "cash items in process of collection," it is likely that internal collection arrangements have tended to reduce the volume of bank float recorded statistically in relation to the volume of checks actually in collection channels.

estimation of the consumer-sector float as a residual.<sup>20</sup> This procedure resulted in the rise of the consumer check float from a small negative figure (—\$43 million) at the end of 1949 to \$1,760 million in 1950, and a sharp but irregular rise to nearly \$6 billion at the end of 1957. One important magnitude in deriving the residual was an estimate of corporate cash. Business cash-holdings records, which were used to estimate bank mail float, related to the end of the year and to the other three end-of-quarter dates. Corporations are usually anxious to show a strong cash position in their balance sheets; to this end, they convert, around reporting dates, part of the liquid reserves held in money market instruments into cash, and otherwise tend to arrange their cash flows in such a way as to show a strong cash position. The use of quarterly and, in particular, end-of-year dates of corporate cash for estimating consumer cash was a particularly weak point in the now superseded procedure.

### 3. THE NEW TECHNIQUE

The original Board procedure for estimating consumer-sector float was given up because the divergence of movements between sector and total float appeared to be too large to be capable of plausible explanation. However, the possibility that part of this divergence may also result from statistical shortcomings in the estimate of the corporate-sector float (arising from discrepancies between *Statistics of Income* (Internal Revenue Service) and SEC working capital estimates, on the one hand, and demand deposit ownership surveys adjusted for the timing difference, on the other) was also considered.

The new procedure affects in a substantial manner only the consumer-sector float. It no longer requires estimation of total mail float, which was based on several questionable assumptions. The argument put forward in support of the new procedure is that (a) it shifts consumer deposits to an "other party record" basis, which improves the internal consistency of the consumer-sector account, and (b) it is derived from reported statistics (bank records, in the case of consumers) with the least possible amount of dubious adjustments. The new procedure yields a constantly declining ratio of the derived nonconsumer mail float (no estimate of total nonconsumer float is available from the new procedure) to total check float. This behavior seems consistent with *a priori* expectations derived from collateral knowledge on recent developments in the management

<sup>20</sup> The residual nature of the consumer-sector float has been criticised by Earl Hicks ("Monetary Analyses," *Staff Papers*, International Monetary Fund, February 1957) and Graeme S. Dorrance and Gerard R. Aubanel ("Survey of Monetary Analyses," *Staff Papers*, February 1957).

of corporate cash balances, payments flows, and collection techniques.<sup>21</sup> However, in the new set of estimates, this decline in non-consumer mail float relative to nonconsumers does not automatically result in an offsetting increase in consumer float, which was a conspicuous shortcoming of the original procedure.

The assumptions made to justify the use of bank-record holdings of consumers as an adequate approximation of their "other party record" demand deposits assets are hardly more than a convenient and fairly plausible hypothesis. Alternative assumptions for the estimation of consumer cash assets would not affect the estimates for the other sectors. Since the new procedure does not yield any direct estimate of total consumer-sector float, or of the portion of bank float imputable to the consumer (or any other) sector, nothing can be said about the empirical basis of the new procedure for the consumer sector.

It is perhaps best to consider the new technique as a temporary solution of an exceedingly difficult estimating problem, representing the choice of the least objectionable among several possible alternative solutions. The outstanding fact is that there does not now appear to exist any feasible way of estimating currently, or even for benchmark dates, the total volume and (even rough) structure of mail float. Certain improvements are possible—and are likely to be made—in the estimation of bank float.

### *Concluding Observations*

This paper focused primarily on some statistical aspects of check float, mainly in connection with constructing the consumer-sector cash account. There is, as mentioned above, the broader analytical problem of the effect of check float, and of all other types of float, on the decision-making process. Whenever in economic analysis situations are encountered where expectations are important, the existence of float and its possible implications for the state of expectations must be considered.

The design of the flow-of-funds accounts, the decisions made between alternative sources of data, and the choice of estimating techniques determine to a large extent where and how float will arise. More importantly, such decisions reflect, implicitly at least, more fundamental views as to what records are more significant in the decision-making process which shapes the course of economic events.

<sup>21</sup> See my *Deposit Velocity and Its Significance*, Federal Reserve Bank of New York, 1959.

*Appendix A*

The derivation of consumer-sector float by the procedure now superseded involved four basic steps:<sup>22</sup> (1) estimating bank float applicable to deposits of domestic individuals, partnerships, and corporations; (2) estimating total mail float to be added to total bank float; (3) estimating float for the corporate sector and some other related sectors; and (4) obtaining the consumer sector float as a residual of total float and float estimated in step (3). An alternative way to view this procedure is that after the first two steps, total IPC holder records of demand deposits can be calculated. By deducting estimates of nonconsumer demand deposit holder records from this total, a figure for consumer holder records can be obtained.

1. In order to remove from bank float that portion which is not imputable to deposits of individuals, partnerships, and corporations domiciled in the United States, demand deposits were recast into four ownership categories: the United States Treasury; state and local governments; foreigners (including foreign banks); and individuals, partnerships and corporations resident in the United States (subsequently referred to as domestic private deposits). The first two categories are readily available from banking statistics. Deposits of foreigners other than foreign banks were derived from Treasury sources.

Total domestic private demand deposits were obtained by adding to deposits of domestic individuals, partnerships, and corporations 75 per cent of the item "certified and officers' checks"; it was assumed that the remaining 25 per cent of this item is represented by Federal Reserve drafts. About 85 per cent of all demand deposits (including United States Treasury deposits at the Federal Reserve banks) is accounted for by domestic private deposits.

On the basis of this computation, total bank float was allocated among domestic private demand deposits, deposits of foreigners, state and local governments, and United States Treasury deposits at Federal Reserve and commercial banks. The allocation was made on the assumption that bank float was a stable proportion of demand deposits owned by the various sectors as shown in bank records. Consequently, total bank float was expressed as a percentage of total demand deposits, and in each year this percentage (which ranged from 8.4 to 12.4 during the nine-year period 1949-57) was applied to

<sup>22</sup> The following description is limited to annual data, and disregards the special adjustments made for 1954 in order to smooth over a jump in float estimates traceable to an apparent discrepancy between cash data in *Statistics of Income* and the demand deposit ownership survey.

deposits of foreigners and of state and local governments. On the theory that checks issued by the Treasury are collected more promptly than other checks, only half of this percentage was applied to United States government deposits. In the nine-year period considered, bank float allocated to domestic private deposits averaged about 90 per cent of the total.

2. In the refinement introduced after the publication of the 1955 monograph, mail float on the last day of each quarter was assumed to be equal to bank float on the third day of the following month. The third day was originally chosen when preparing annual flow-of-funds estimates. Since January 1 is a holiday, the transit time actually assumed was two business days.<sup>23</sup>

In order to estimate from weekly member bank statistics, bank (and thus mail) float on the third day of the first month of the following quarter, items in process of collection on Wednesdays around the first of the month were expressed as a ratio of the Wednesday averages of all Wednesdays falling in the months preceding and following the quarterly dates. The set of rough daily indexes derived from these ratios showed that items in process of collection on the third day of each quarter were considerably lower than on the last day of the preceding quarter. As a result, the aggregate amount of mail float worked out to between 79 and 91 per cent of bank float on quarterly dates, except at the year end in 1954, when it exceeded 99 per cent. It was added to bank float to obtain an estimate of total check float.

3. For what might be called the enlarged corporate sector,<sup>24</sup> check float was derived as the difference between corporate demand deposits estimated from deposit ownership surveys<sup>25</sup> and holder-record balances derived from SEC and other sources. An important adjustment to cash holdings reported by business was the deduction of currency and time deposit holdings. Time deposit estimates were based on 1957 and 1958 special banking surveys, but the currency estimate was not based on any direct evidence.

The estimate of total check float applicable to this enlarged corporate

<sup>23</sup> No allowance was made for Saturdays or Sundays between the quarterly date and the third following day.

<sup>24</sup> Holder-record deposits for the following groups, estimated from various sources, were added to SEC working capital estimates for nonfinancial corporations: (a) savings and loan associations and credit unions; (b) the insurance sector, except for self-administered pension funds; and (c) agencies of foreign banks. When applicable, adjustments were made for unincorporated firms and for holdings of currency and certified officers' checks.

<sup>25</sup> Estimated by applying to domestic private deposits at year ends the percentage distribution of demand deposits as shown in the surveys of deposit ownership taken annually at the end of January.

## TECHNICAL PROBLEMS

sector was basic for the derivation of consumer sector and non-corporate business sector check floats, as well as of the float allocated to all other sectors. This corporate check float declined from 78 per cent of total float imputable to domestic private deposits in 1949 (it was even higher in earlier years, especially in the war period) to 58 per cent in 1957. As a result, the residual float to be allocated among all sectors other than the corporate business sector rose rapidly, more than tripling between 1949 and 1957. Since the unincorporated business float was assumed to move in close unison with corporate check float, check float credited to the other sectors, in particular to the consumer sector, rose even more rapidly. Indeed, from 1949 to 1957, nonbusiness float increased from less than half a billion to nearly \$7 billion, or from 1.4 to 15.7 per cent of applicable deposits.

4. To obtain float for the consumer sector it was necessary to deduct from this residual, check float imputable to the farm sector and to the nonprofit organization subsector. It was assumed that in these two sectors the ratio of float to demand deposits was only 40 per cent of the similar ratio for all domestic private deposits, to allow for the lower velocity of these deposits. Application of fairly stable ratios to rising deposits of noncorporate business, farmers, and nonprofit institutions resulted in a residual estimate for the consumer sector that increased even more rapidly than the more inclusive first residual obtained after deducting corporate float from total deposit float.

### *Appendix B*

In the now superseded procedure, the Board's staff did not make any allowance for the fact that "cash items in process of collection" do not adequately measure total bank float. This item does not include all items in collection channels, and part of this item is not applicable to private demand deposits. And, indeed, it cannot be presumed that the relationship of these two differences has remained unchanged over time.

#### OMISSION OF TRANSIT ITEMS REPORTED IN "DUE FROM BANKS"

Cash items deposited with a bank, but payable at another institution, may be shown in call reports as "cash items in process of collection, including exchanges for clearing house" or they may be included with "demand balances with banks in the United States" (Schedule D, items 1 and 2, respectively). The official instructions with respect to the second item state that "cash items in process of collection, if any, as appear on the reporting bank's books as due from banks rather than as items in transit" should be included.

## THE FLOAT IN FLOW-OF-FUNDS ACCOUNTS

Indeed, many banks send their collection items to correspondent banks, rather than to the regional Federal Reserve banks, because they are given immediate credit for such items. One important advantage to the sending bank is that it does not need (as when using Federal Reserve System collection facilities) to sort collection items by date of availability. The fact that country banks maintain compensating balances, which constitute a collection fund, to reimburse city banks for this and other services does not detract from the fact that the sending bank is in a position to show collection items as "due from banks." It appears that the practice of showing transit items in "due from banks" is quite prevalent, if not predominant, in many Federal Reserve districts; from at least one district it is reported that even items sent to the Federal Reserve Bank are (improperly) carried by some banks as "due from banks."

However, some items pass through several banks before reaching the institution against which they are drawn; so some of the items shown in "due from banks" by one bank are also carried as "items in process of collection" by its correspondent bank, in particular, if the latter makes use of Federal Reserve collection facilities. On the other hand, some items may pass through more than one bank each of which would report them under "cash items in process of collection," and to that extent there would be a duplication in this item. From what is known about the pattern of check flows,<sup>26</sup> any such duplication involves an almost negligible proportion of all items cleared, since the bulk of items received from correspondents is either cleared through local exchanges (and thus does not appear under either of the two headings under which collection items are reported, since normally payment is received the same day) or through the Federal Reserve System.

### FAILURE TO ADJUST "ITEMS IN PROCESS OF COLLECTION" FOR NONAPPLICABLE ITEMS

Subtraction of "items in process of collection" from gross demand deposits can be justified only on the theory that all collection items reported under this heading are chargeable against demand deposit accounts, except interbank and United States government accounts. Such an assumption is not tenable, since this classification includes several categories of items that are not chargeable to demand deposit accounts and thus do not give rise to double counting.

Cash items in the process of collection, as shown in records of

<sup>26</sup> From the Report, *Study of Check Collection System*, by the Joint Committee on Check Collection System, 1954, and surveys of member bank check-sending patterns conducted periodically by the Federal Reserve System.



## TECHNICAL PROBLEMS

commercial banks, include the following items, all of which may also be included in "demand balances with banks in the United States":

1. Checks chargeable to demand deposit accounts, other than interbank and United States government
2. United States Treasury checks
3. Postal money orders
4. Redeemed United States savings bonds
5. Certified officers' checks and express and similar money orders
6. Interbank drafts, including remittance drafts and Federal Reserve drafts

Only the first category should properly be deducted from gross demand deposits in order to adjust them for double counting.

The remainder is not chargeable against gross demand deposits. Thus, United States Treasury checks (with the exception of a relatively small number drawn against disbursing officers' accounts maintained at commercial banks), postal money orders, and redeemed United States savings bonds are chargeable to Treasury balances at Federal Reserve offices.<sup>27</sup> Certain items, such as (1) certified checks (which are debited against depositor accounts *before* they enter collection channels and are not reported in debits in order to avoid double counting); (2) officers' checks; (3) travelers' checks and bank money orders, are chargeable to the bank itself rather than to its depositors. The same applies to bank drafts in collection channels, a large volume of which arises from interbank transfers of funds for various purposes, including collection of checks. Some drafts on interbank accounts represent payment for collection items. No information is available on the size of this "remittance float," which is a duplicating item in bank float and should not be deducted from gross deposits.

To sum up, bank float used in the flow-of-funds estimates is underestimated by the amount of applicable collection items reported under "due from banks." On the other hand, it includes items which are chargeable to the monetary system and to the United States Treasury rather than to deposits of the private nonbanking sector. Even though, at the present stage of empirical knowledge, we are unable even to suggest what the direction of the bias might be, it is unlikely that the under- or overestimation of float has remained relatively stable over time.

<sup>27</sup> This fact seems to have been overlooked by L. B. Currie, whose book, *The Supply and Control of Money in the United States* (Harvard Economic Studies, Volume 47, Cambridge, Mass., 1934) had a crucial importance for originating the current statistics on money supply and the definition of demand deposits adjusted now in use.

Furthermore, estimates of demand deposits adjusted rely on Reserve bank records for data on the amount of United States government deposits in tax and loan accounts. Many credits to tax and loan balances at the depository bank precede the corresponding entries on the books of the Reserve bank by the amount of time required for mailing and for Reserve bank processing. Therefore, Federal Reserve records understate tax and loan balances at depository banks with a consequent overstatement of the privately held money supply.

C O M M E N T

EARL HICKS, International Monetary Fund

Mr. Garvy's review of the problem of float is interesting and valuable. His description of the present and former methods of estimating float in the flow-of-funds accounts and his criticisms of the former method are especially useful. I understand that it was his criticisms of the former method that were largely responsible for their abandonment. I question, however, whether his current paper gets at the heart of the matter.

The problem of mail float involves primarily the measurement of the money supply. Statistics of holder records give rise to an alternative measurement of the money supply and to the large discrepancy between the two, known as mail float. The heart of the matter is to know how we should interpret the alternative measurements and the discrepancy between them. How should we account for the fact that some money seems not to be owned by anyone? Mr. Garvy neither asks nor answers the questions: What is the significance to a sector of its holder-record holdings of money? What is the significance of the sum of holder records? What is money: the liabilities of the money-creating institutions or the sum of holders' holdings?

I think these questions are important because I think that figures on money are important. I should not like to see the figures on money in a set of financial statistics or in a set of integrated income and financial statistics continue to be those that have by far the largest discrepancy of any item in the accounts, unless we are quite sure that the concept producing the discrepancy from bank records is useful. Mail float by its very nature contradicts one of the premises of monetary theory: the premise that since all money is held by someone we may say either that changes in the quantity of money must be absorbed via the balance-of-payments leak or by changes in people's willingness to hold money at any level of income and prices or that they must work themselves out in changes in income and

prices. If it is useful to think of money owned by no one, we must either include the accidents of the mails among the elements that determine the quantity of money, thus adding an unmanageable element to the tasks of the monetary authorities, or change the premise in question and add an unmanageable element to the factors through which the effects of changes in the quantity of money are analyzed. Either course reduces the estimate of the probable usefulness of monetary policy.

The cost of either amendment to monetary theory is high. We should not pay it unless we are sure of the theoretical grounds on which the concept of mail float stands. But if the concept is sound and we must pay the cost, I should like also to be sure that mail float can be measured reasonably accurately. I think there is room for question on both counts. The present method of estimating mail float seems to me to be as vulnerable to criticism as was the old one, and the concept itself seems to me to be a mistake.

I think that the development of sector statistics on financial transactions and on financial assets and liabilities, based on sector records and market prices and their integration into a complete system of national accounts, will provide a very useful piece of the economist's apparatus. Therefore, it may seem inconsistent to question the usefulness and meaning of holder-record figures of money. I should like, if you will permit me, to try to make the case. I should like to show that the reasons that make mail float a big discrepancy are at the same time the reasons why holder records of money and the concept of mail float are of little use. After that, I should like to consider the present method used for its measurement. Perhaps between the two you may conclude that the mail float should be sunk.

Mr. Garvy says that float is a problem of timing, arising from differences in the time a transaction is recognized by the two parties to the transaction. If, he says, the data come from only one source no problem need arise. This, I think, will not do as a statement of the problem. The problem of float ought not be confused with the statistical problems of timing that necessarily lie everywhere in the raw materials of economic statistics. It is not a problem that would resolve itself with better data nor, as Garvy seems to suggest, with the suppression of data from one side of the transaction. Indeed, in most of the places where the problem arises it involves the reconciliation of the data of three parties, rather than those of two. Float is a special kind of timing problem, arising mostly in statistics of finance.

It arises in financial statistics because owner-record figures have meaning in those statistics. In the income accounts, income and product are conceived as fundamental concepts, not as ones dependent

on what people think about them. A single timing criterion can be imposed on all parts of the accounts, so that timing problems become only statistical problems of the source materials. But statistics of financial assets and liabilities are intended to show the asset and liability choices of holders and obligors. Their magnitudes do depend on what people think they are. That transactions take time produces conceptual problems in financial accounts. These problems, rather than the statistical problems of sources, are those that give rise to float.

The discrepancies in financial accounts can also be large because financial accounts measure, not flows, but assets and liabilities at a moment in time or net changes in financial assets and liabilities from one moment in time to another, and because there are no physical limitations to financial transactions to assure some smooth movement through time. The income-account flows for wages, consumption, and most other items are prevented by physical limitations from being very much different in one short period from the next. There is no physical limitation on financial transactions. The measurement of their amounts from the net change between one instant in time and another can depend to a significant extent on just what instants of time were chosen for the beginning and ending dates of the period. Insofar as there are problems in any of these accounts arising from the fact that transactions take a few days to be completed and to be recognized by both parties, the size of any discrepancy relative to the two entries involved is likely to be greater in financial statistics than in income and product statistics or in the "tops" to sources and uses of funds statistics. Hence, in financial statistics, where the problem is conceptual rather than only statistical, it can also be large.

The discrepancies in financial statistics are also more likely to be seen because financial transactions consist mostly of transactions between two parties in the liabilities of a third party. In financial statistics, unlike income and product statistics, there are not two accounts to be reconciled, but three. The specific problem of float derives its urgency from the fact that for many financial assets one has a good measure of the total from the records of institutional obligors; but, owing to the fact that transactions in financial assets take time, this measure cannot be expected to agree with the sum of holder records, however good holder-record statistics might be. There is no third source of data for the entries in the income and product accounts, nor for the nonfinancial entries in sources and uses of funds statistics. It is the availability of third-party records that raises the problem of float with insistence: third-party records tell us that there are assets that no one seems to own.

It is in the figures for money that the discrepancies turn out to be large. Since money is the medium of payment for almost all other transactions, the volume of transactions in money exceeds by far the volume in any other classification of the income and product or financial accounts; and for the same reason, transactions in money are almost necessarily larger by far relative to the holdings of the asset involved or to the net change during the period in the holdings of the asset involved than those of any other classification of the financial accounts. If there are discrepancies in the times at which the parties to transactions recognize the transactions to have occurred, the possibility of their being large must be greatest for transactions in money. Moreover, the discrepancies in the figures for money are less likely to be randomly distributed than are those for other classifications. Practices in accounting for purchases and sales differ, and the discrepancies between the accounts of the two parties, arising from the time necessary to complete purchase and sale transactions, must partly offset each other. For payment transactions in money, however, most transactors probably consider themselves to have reduced their holdings of money when they have written a check, and to have received money when they receive a check. The discrepancies in the figures for money are therefore likely to be all in one direction rather than partly offsetting. For all of these reasons the problem of float refers mostly to the entries for money. Indeed, in the several versions of the flow-of-funds accounts, the only large discrepancy item has always been that for money.

It seems to me that to account for the reasons why the problem of float applies mostly to the figures for money is to account also for the reasons why it is not important. Mail float is highly variable from day to day because individual holdings of money are highly variable from day to day. Statistics of the sorts of which we are talking can only report for the several sectors data on either holdings of money at instants in time or changes between two quite separated instants in time. Doesn't it necessarily follow that the effects of changes in the quantity of money on individuals is not to be found by noting the change in their holdings of money and that the effects of changes in the quantity of money on sectors and on the economy is not to be found from the sum of sector holdings or total holdings in the owner-record sense?

Individuals take money into account in their decisions by looking in their pockets and at the same time looking ahead at their expected receipts and expenditures and by looking also at their near-money assets and their current obligations. What the individual sees when he takes this look is very definitely influenced by the actions of the

monetary authorities in increasing or decreasing the quantity of money. For if the authorities are being cautious, some of those who look in their pockets will be those who recently found their banks unenthusiastic about a new loan; others will be those who are finding that customers who normally paid promptly are paying more slowly; others will be those who are finding that creditors who formerly were patient have become more insistent; and some will be those who have found that the money prices of their second-line reserves have slipped a bit. Many, therefore, will be less inclined than otherwise to buy either real goods or financial assets, and will pass their impressions on to others by not buying, by queuing up for bank loans and reducing the borrowing prospects of others, by delaying payments, and by reminding creditors that they would like to be paid.

Holder records of money, then, are not especially important, while the total of the economy's money supply is of the greatest importance. Why raise problems about the latter in order to pursue the former? The money which, according to holder records, nobody owns, is part of that which is very clearly fulfilling the function of money: it is in the process of serving as a medium of exchange. It is "money on the wing."

Mail float can only exist as the counterpart to a discrepancy in the goods receivable or bills payable accounts. These, too, are ephemeral accounts, subject to wide variation from day to day. As with money, they cannot tell us anything about the decisions of individuals and sectors, however accurately we measure them, since all we can know is their more or less accidental amount at an instant in time. For this reason and also because they are parts of the complex of factors that individuals consider when they ask whether their holdings of money are adequate, I would propose that mail float and bills payable discrepancies be offset against each other. I see no reason not to offset such problems of mail float as owner-record statistics produce against the bills payable discrepancies that those records must also produce, and I see no great difficulty in doing so.

So much for the meaning of holder records and mail float. Let us next ask what the estimates are in the present calculation.

The original *Flow of Funds* estimated total mail float as equal to bank float. Holder records for the nonconsumer sectors then produced a residual estimate of mail float for consumers. It rose continuously to a degree that could in no way be said to be reasonable. Largely for this reason the method was abandoned.

The present method gives up the attempt to measure total mail float, but retains, so to speak, one-fourth of it, not one-fourth by magnitude but one-fourth by concept. It retains mail float on nonconsumer

checks sent to nonconsumers, and gives up the attempt to estimate mail float on nonconsumer checks sent to consumers and on consumer checks sent to either consumers or nonconsumers.

But how is the part that is retained measured? Table 1 of Garvy's paper lists the components of the differences between gross (i.e. not corrected for bank float) bank records of the deposits of nonconsumers and nonconsumer holder records. It also lists its counterparts, which for consumers could be said to make the difference between the gross bank record of consumers' deposits and what is called the "other party record" for consumers. It also lists the totals of the two columns. The total of the total column adds to the net bank record (i.e. net of bank float). Mr. Garvy tells us in the text, but not in the table, that the table adds in both directions, instead of just one, by the introduction of a special assumption: that the algebraic sum of the adjustment items in the consumer columns is zero, i.e. that gross bank record for consumers can be entered as the measure of the other-party record for consumers.

Let us ask, first, is the assumption reasonable? The authors of *Flow of Funds* make no claim that it is correct, but they say "it appears reasonable that they are not too different in size." Well, is it reasonable? The assumption is that checks in the mail to consumers, less all consumer checks held by businesses, are equal to the volume of all consumer checks in clearing. It would seem to me that the volume of all consumer checks in clearing at any moment in time is likely to be larger than the volume of business checks in the mail to consumers, even if we do not make the latter still smaller by subtracting consumer checks held by businesses.

Is it worthwhile to produce a figure for money as "the flow-of-funds asset record" that differs from the usual figure for money by one item, mail float on business checks sent to businesses, when this discrepancy item is neither a measure of mail float—i.e. it is a measure of only one-quarter of mail float—nor calculable by a method that makes it likely that it will be the right number?

The problem can also be put another way. Owner-record data for money in the business sector might be thought to be justifiable for consistency with the other asset and liability records of business. But do we get consistency this way? For the three sectors involved we have three different concepts. For consumers, money holdings are said to represent the "other party record," for consistency with the rest of the account. Perhaps this is reasonable. But for the banks, we do not have holder records, but holder records of the consolidated banking sector, i.e. the gross bank record less bank float. If we were to compile the business sector record on the same basis, the mail

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float element left in the data would disappear. Since we know that every mail float item has its counterpart in bills payable (or goods receivable) and since there has been left in the data only mail float on nonconsumer checks to nonconsumers, we just about know where the bills payable discrepancy lies. Offsetting this mail float against the bills payable asset entry in the nonconsumer account would be consistent with the way in which the banking sector data are given. This, of course, oversimplifies the problem, since we do not have a single nonconsumer sector and, if the present calculation were given up, it would be necessary to distribute between the appropriate sectors not only this piece of mail float but the whole of bank float.

Is it too much to ask that with all of the Federal Reserve effort that has gone into the flow of funds, an effort be made to get banks to survey the ownership of checks in process of clearing. It would seem to me that with a very little information on this point the banking system could produce figures on the ownership of net, instead of gross, bank deposits, and that these would provide sector data on holdings of money that would add to a useful total for money supply. Differences between these figures and such holder records as are available could then be offset in the bills payable entries for those sectors.



