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The Redefinition of the Official Monetary Aggregates

by Henry C. Wallich* and Warren T. Trepeta**

I. INTRODUCTION

THE FULL EMPLOYMENT and Balanced Growth Act of 1978 requires the Board of Governors of the Federal Reserve System to state to the Congress twice annually: (1) its "objectives with respect to ranges of growth of the monetary and credit aggregates . . . taking account of past and prospective developments in employment, unemployment, production, investment, real income, productivity, international trade and payments, and prices"; and (2) the relationship of those objectives to the short-term goals of the President and Congress. The Act is silent on the definition of the monetary and credit aggregates. The Federal Reserve System is free, therefore, to select definitions that it considers most appropriate.

The Federal Reserve System announced new definitions of the monetary aggregates on February 7, 1980. The next section of this article reviews the financial developments that motivated this redefinition. Section III sets forth the principles and goals that guided the design of the new aggregates. Section IV evaluates the new monetary measures in terms of the criteria described in Section III. Section V contains concluding remarks.

II. FINANCIAL DEVELOPMENTS IN THE 1970'S AND THE NEED FOR REDEFINITION

Much of the monetary literature holds that the volume of money and the levels of aggregate income and prices are interdependent because money serves in unique ways to facilitate economic transactions. This

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2 Id.
literature suggests several functional distinctions between money and other goods. According to one view, money consists of "media of exchange" or "transactions balances"—that is, assets, such as currency and demand deposits, that are immediately available and commonly presented as payment for goods and services. Alternatively, money has been defined more broadly to include all "temporary abodes of purchasing power"—that is, both media of exchange and other assets that by virtue of relatively easy, inexpensive convertibility into a medium of exchange are held between receipt and disbursement of income. There exists a hierarchy of such assets, distinguished by maturity, cost of liquidation, and risk of change in value between purchase and resale.

Until the last decade, the official definitions of money appeared to correspond rather closely to the theoretical concepts of money. The former aggregates included all principal media of exchange and most temporary abodes of purchasing power, arranged in an acceptable hierarchy. Moreover, there existed a rather close and stable relationship between growth in the official measures of money and growth of GNP and related variables of ultimate interest to the Federal Reserve.

In mid-1974, however, the public's demand for money as officially measured—especially transactions balances—began to fall short of the demand that would have been consistent with the historical relation of money demand to GNP and interest rates. Viewed alternatively, the income velocity of money (i.e., the ratio of GNP to the official money stock) grew at a rate faster than that implied by the historical relation between velocity and interest rates. The downward shift in money demand was most pronounced at nonfinancial corporations and resulted largely, it appears, from technological change. Specifically, many corporations reduced their need for transactions balances by using computers, advanced statistical methods, and other devices to stabilize cash flow, to monitor it more closely, and to forecast it more reliably. Improvements in cash management practices would have argued only for adjustment of the System's target ranges for growth of the monetary aggregates, and would not have made redefinition of the aggregates desirable, if firms had diverted funds from transactions balances to less liquid assets included in the broader official aggregates. However, firms increased their reliance on other assets as temporary abodes of purchasing power. Consumers also began to substitute new financial assets, such as money market mutual funds, for those included in the official measures of money. These developments, together with a variety of changes in the functional characteristics of assets included in the official aggregates, motivated redefinition.

The acceleration of inflation during the 1970's tended to invoke change in financial markets. An obvious and natural change was a rise in most interest rates as lenders demanded compensation for prospective declines in the purchasing power of their funds and borrowers perceived
their ability to pay higher interest rates to be enhanced by the prospect of continued rapid inflation. Legislation and regulation governing depository institutions tended to inhibit some forms of adaptation to accelerated inflation, such as increases in interest rates paid on deposits. Governmental restrictions at that time encouraged, instead, the appearance and rapid growth of new financial instruments and change in the services provided by existing assets.³

For example, in the absence of legal restraint, banks probably would have offered a greater interest return on demand deposits as other interest rates increased. A federal statute, however, prohibits the payment of interest on demand deposits.⁴ This limitation on the benefits of holding demand deposits encourages the public to shift funds from demand accounts to interest-bearing assets when interest rates increase. During the 1970's, the prospect of continued rapid inflation and concomitant high interest rates prompted unusual efforts by the public to economize on holdings of demand deposits. This prospect also caused financial institutions to offer new cash management services and interest-bearing accounts readily usable to finance transactions. For instance, as mentioned earlier, firms adopted new cash management techniques in order to trim cash holdings. With the aid of piecemeal relaxation of some regulatory constraints, consumers acquired the ability to preauthorize bill payments out of interest-bearing savings accounts; to transfer savings balances by draft and telephone; and, most recently, to have savings balances transferred automatically to checking accounts as checks clear. In addition, investment companies introduced money market mutual funds bearing both market rates of interest and check-writing features.

Regulatory ceilings on interest rates on savings and small time depos-

³ Competition among financial institutions for funds might have produced some change in the characteristics of assets and new financial services, even in the absence of more rapid inflation, higher interest rates, and governmental restraints. The latter factors, however, greatly enhanced incentives for financial innovation.

⁴ The Banking Act of 1933 added paragraphs 9 and 10 to section 19 of the Federal Reserve Act. Paragraph 9 provides that no bank belonging to the Federal Reserve System shall “directly or indirectly, by any device whatsoever, pay any interest on any deposit which is payable on demand.” Paragraph 10 directed the Federal Reserve to limit from time to time the rates of interest payable on time and savings deposits at banks belonging to the System. The Banking Act of 1935 extended these provisions to other banks insured by the Federal Deposit Insurance Corporation (FDIC). For a review of the arguments advanced by the original proponents of these restrictions, see Linke, The Evaluation of Interest Rate Regulation on Commercial Bank Deposits in the United States, Nat'L Banking Rev. (June 1966).

The prohibition of interest on demand deposits has been only partially effective. Banks do pay some implicit interest in the form of charges below costs for services provided to owners of demand accounts. See Axilrod et al., The Impact of the Payment of Interest on Demand Deposits 19-25 (Board of Governors of the Federal Reserve System, Jan. 1977, unpublished.)
its at commercial banks and thrift institutions prevented a rise in such rates commensurate with the increase in unregulated rates. Consequently, banks and thrifts endeavored to increase the return on savings accounts by providing to savers gifts and additional services, such as the new means of transferring savings balances discussed above. Regulatory ceilings provided an incentive to savers to purchase shares in money market mutual funds and other assets bearing interest rates determined in the credit markets.

Growth of monetary assets not contained in the former official aggregates was stimulated further by the absence of interest payments on cash balances held by member banks to satisfy reserve requirements. When a member bank issues another dollar's worth of a liability, reserve requirements in effect impose a tax on that dollar equal to the interest foregone on the additional reserve balances that the member must hold against the new liability. The size of this tax increased as market interest rates rose during the 1970's. As a result, member banks faced a growing incentive to

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* Pub. L. No. 89-597 authorized the Federal Home Loan Bank Board and the FDIC to set maximum interest rates payable on small time and savings deposits at federally insured savings and loan associations and mutual savings banks. The law also directed these agencies and the Federal Reserve to consult with each other when setting ceilings on interest rates. This provision was intended to offset thrift institutions' inability to pay competitive interest rates on deposits in periods of cyclically high interest rates—a disadvantage imposed on thrifts by other legislation, which restricted the assets that they could hold mainly to long-term, fixed-rate mortgages. Pursuant to Pub. L. No. 89-597 and subsequent renewals, the regulatory agencies have maintained a coordinated structure of deposit interest rate ceilings based on the maximum rates that thrift institutions could afford to pay, given their portfolio returns. Although these ceilings have helped thrifts to maintain their share of small time and savings deposits relative to commercial banks, they have encouraged savers to divert funds from all depository institutions—from banks as well as thrifts—to financial instruments bearing market-determined interest rates, during periods of cyclically high market rates. For further discussion, see Teeters, Removal of Deposit Interest Rate Ceilings Would Stabilize Deposit Flows, AM. BANKER (Aug. 13, 1979).

Recognizing this disadvantage of deposit interest rate ceilings, Congress provided for their phase-out in Title II of the Depository Institutions Deregulation and Monetary Control Act of 1980 (Pub. L. No. 96-221). Specifically, Congress transferred authority to set ceiling rates to the Depository Institutions Deregulation Committee, consisting of the Secretary of the Treasury, the chairman of the governing boards of the Federal Reserve, the Federal Home Loan Bank System, the FDIC, and the National Credit Union Administration—all voting members of the Committee—and the Comptroller of the Currency—a non-voting member. Congress directed the Committee to increase ceiling rates to market interest rate levels as soon as possible, giving due regard to the financial viability of depository institutions. The Act provides for complete elimination of the ceilings six years after enactment. In addition, Title IV of the Act liberalizes the asset powers of thrift institutions to enable them after an adjustment period to pay competitive interest rates on deposits.

* The term "member banks" refers to commercial banks that belong to the Federal Reserve System. Member banks are required to hold stipulated fractions of certain liabilities as either cash in their vaults or deposits at Federal Reserve Banks. Reserve requirements vary by type of liability and by the size of the bank issuing the liability. The Federal Reserve sets reserve requirements within limits specified by statute.
reduce required reserves by issuing liabilities that were either free of re-
serve requirements or subject to relatively low requirements. Some of
those liabilities were not included in the former aggregates. In addition,
the increase in the cost that reserve requirements imposed on member
banks depressed the interest rates that members could afford to pay on
their reservable liabilities relative to rates paid by financial institutions
abroad—including members’ foreign branches—which are not subject to
similar reserve requirements. In this way, reserve requirements enhanced
demand for Eurodollar deposits, which may be held for expenditure in
the United States, but were excluded from the former measures of the
U.S. money supply. ⁷

III. CRITERIA UNDERLYING THE NEW DEFINITIONS

A. Theoretical Considerations.

The functional distinctions between media of exchange, temporary
abodes of purchasing power, and other assets have guided the construc-
tion of new measures of the money supply. The new monetary definitions
specify a hierarchy of aggregates, starting with transactions balances and
gradually adding less liquid assets to produce several broader measures.

Functional guidelines can be difficult to apply because in some cases
an asset’s principal function is not obvious. For example, an account with
a money market mutual fund may serve as a transactions balance, a
short-term store of value, or a long-term investment designed to conserve
wealth and to earn interest income for expenditure in the distant future.
In some cases, the extent to which an asset is used to facilitate transac-
tions in the near term can be inferred from its turnover rate, defined as
the ratio of (1) total debits made against a type of account in a given
period to (2) the volume of funds held in that type of account on average
over the same period. High turnover indicates that new funds deposited
to the account in question are quickly used in transactions.

While economists emphasize different functional distinctions be-
tween money and other goods, they generally agree on several principles
of aggregation. First, aggregates should group all assets that the public
views as similar in function, regardless of the type of institution that is-
sued them. A related second principle holds that aggregates that are used
to influence domestic economic activity should include assets held to
finance domestic expenditure, whether held in domestic or foreign insti-
tutions. Third, an aggregate should exclude assets that are held to back or
to service other assets included in the aggregate. Otherwise, the aggregate
will overstate the volume of funds held for the purchase of goods and
services. For example, an aggregate that includes the public’s demand de-

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⁷ Eurodollar deposits are dollar-denominated deposits at commercial bank offices
outside the United States.
posits should exclude demand deposits held by banks at other banks to service demand deposit liabilities to the nonbank public.

In addition to the foregoing principles of aggregation, some economists advocate the measurement of monetary subtotals held by individual sectors of the economy (e.g., households, government, business), as well as the combined holdings of these sectors. Advocates of such “disaggregation” suggest that sectoral subtotals of money would yield additional information about the economy, because it appears that individuals and different types of institution respond to different needs and opportunities in acquiring and disposing of monetary assets.

B. Policy Considerations.

1. Demand Properties and Income Velocity.

If the Federal Reserve is to exert a predictable influence on GNP by controlling the supply of an aggregate, then the public’s demand for that aggregate should ideally have two important properties. First, demand should be rather insensitive to factors—other than GNP—that are difficult to predict. Second, the relationship between demand for an official aggregate and its determinants should be stable over time. If demand for an aggregate lacks these properties, then it will be difficult to predict the income velocity of the aggregate or, in other terms, the level of GNP that will be associated with a given supply of the aggregate. Consequently, growth of the aggregate within given target ranges will often be accompanied by growth of GNP different from that desired.

Econometric techniques can be applied to historical data to yield estimates of the relation between demand for an aggregate and its determinants and of the correlation between changes in GNP and current and past changes in the aggregate. The properties of estimated relationships may indicate the prospective usefulness of aggregates for policy. After a period of considerable financial innovation such as the 1970’s, however, econometric estimates based on historical experience may give little indication of the future properties of aggregates and should, therefore, be used with caution. It seems probable that an aggregate carefully selected on the basis of current and prospective functional similarities among its components will exhibit better empirical properties in the future than an aggregate that has shown better empirical properties in the past, but is now faulty on functional grounds.

The relationship between the monetary aggregates and income generally reflects a two-way causation, with each influencing the other. By analytical and econometric means, it is possible, within rather wide limits, to establish which of the two causal influences dominates in the relationship between a particular monetary aggregate and income. If “reverse causation” is strong—that is, if the influence of income on the aggregate is the dominant factor in the relationship between the two—the aggregate is less useful as a target for monetary policy.
2. Controllability.

If an aggregate is to play a central role in the conduct of monetary policy, its size and rate of growth should depend predictably on tools under the Federal Reserve System’s direct control. The System’s tools include reserve requirements imposed on member banks and other institutions, open market operations, and the terms of “discount window” loans made by the System.\(^8\)

In many cases, it is difficult to discriminate among aggregates on the basis of prospective controllability. However, it is clear that Eurodollars, which are issued by institutions regulated by foreign governments, and very broad aggregates containing a large volume of nonreservable components, such as total debt, will continue to be relatively difficult to control.

3. Availability of Data.

The cost and quality of data needed to measure alternative aggregates have influenced the selection of new official totals somewhat. The monetary authorities, as well as private decision-makers, require measures of the official aggregates that are both accurate and fairly up to date, in order to make correct and timely decisions. In addition, it is desirable to have historical data on most of the components of an aggregate; such data are needed both for the estimation of statistical relationships for use in forecasting, and for the identification of regular, seasonal movements in the aggregate, as opposed to cyclical changes and secular trends.

IV. THE NEW AGGREGATES

Tables 1 and 2 display the new and old definitions of the official monetary aggregates, respectively, and the magnitudes of their compo-
ments as of November 1979. The new aggregates M-1A and M-1B are variants of the narrow medium of exchange, or transactions balance, concept of money, formerly represented by M-1. The new aggregates M-2, M-3, and L, which replace the old M-3 through M-7, incorporate both transactions balances and successively broader totals of liquid assets that may serve as temporary abodes of purchasing power. This section discusses arguments for and against the treatment accorded individual assets under the new definitions.

Table 1

The New Monetary Aggregates

<table>
<thead>
<tr>
<th>Aggregate</th>
<th>Component</th>
<th>Amount in billions of dollars (not seasonally adjusted) November 1979</th>
</tr>
</thead>
<tbody>
<tr>
<td>M-1A</td>
<td>Currency</td>
<td>372.2</td>
</tr>
<tr>
<td>M-1B</td>
<td>M-1A</td>
<td>387.8</td>
</tr>
<tr>
<td>M-2</td>
<td>M-1B</td>
<td>1509.9</td>
</tr>
<tr>
<td></td>
<td>Overnight and continuing contract RPs issued by commercial banks</td>
<td>20.3</td>
</tr>
<tr>
<td></td>
<td>Overnight Eurodollar deposits held by U.S. nonbank residents at Caribbean branches of member banks</td>
<td>3.2</td>
</tr>
<tr>
<td></td>
<td>Money market mutual fund shares</td>
<td>40.4</td>
</tr>
</tbody>
</table>

* Only the old M-1 through M-5 were published.

10 This table is an updated version of a table which appeared in *The Redefined Monetary Aggregates*, Fed. Res. Bull. 97-114 (Feb. 1980). Components of M-2, M-3 and L generally exclude amounts held by domestic depository institutions, foreign commercial banks and official institutions, the United States Government (including the Federal Reserve), and money market mutual funds. Exceptions are bankers acceptances and commercial paper, for which data sources permit the removal only of amounts held by money market mutual funds and, in the case of bankers acceptances, amounts held by accepting banks, the Federal Reserve, and the Federal Home Loan Bank System.

11 Net of demand deposits due to foreign commercial banks and official institutions.

12 Includes NOW, ATS and credit union share draft balances and demand deposits at thrift institutions.
REDEFINITION OF MONETARY AGGREGATES

Ordinary savings deposits at all depository institutions 420.0
Small time deposits at all depository institutions 640.8
M-2 consolidation components -2.6

M-3 1759.1
M-2 1509.9
Large time deposits at all depository institutions 219.5
Term RPs issued by commercial banks 21.5
RPs issued by savings and loan associations 8.2

L 2122.7
M-3 1759.1
Other Eurodollars held by U.S. nonbank residents 34.0
Bankers acceptances 27.6
Commercial paper 97.1
Savings bonds 80.3
Liquid Treasury obligations 124.7

Table 2
The Old Monetary Aggregates

<table>
<thead>
<tr>
<th>Aggregate</th>
<th>Component</th>
</tr>
</thead>
<tbody>
<tr>
<td>M-1</td>
<td>382.6</td>
</tr>
<tr>
<td>Currency</td>
<td>106.6</td>
</tr>
<tr>
<td>Demand deposits 13</td>
<td>276.0</td>
</tr>
<tr>
<td>M-2</td>
<td>945.3</td>
</tr>
<tr>
<td>M-1</td>
<td>382.6</td>
</tr>
<tr>
<td>Savings deposits at commercial banks 17</td>
<td>207.3</td>
</tr>
<tr>
<td>Small time deposits at commercial banks</td>
<td>239.3</td>
</tr>
<tr>
<td>Large time deposits at commercial banks other than negotiable CDs at large banks</td>
<td>116.1</td>
</tr>
<tr>
<td>M-3</td>
<td>1609.5</td>
</tr>
<tr>
<td>M-2</td>
<td>945.3</td>
</tr>
<tr>
<td>Savings balances at thrift institutions 17, 18</td>
<td>227.1</td>
</tr>
<tr>
<td>Small time deposits at thrift institutions</td>
<td>407.6</td>
</tr>
<tr>
<td>Large time deposits at thrift institutions</td>
<td>29.5</td>
</tr>
</tbody>
</table>

13 Time deposits issued in denominations of less than $100,000.
14 In order to avoid double counting of some deposits in M-2, those demand deposits owned by thrift institutions (a component of M-1B) that are estimated to be used for servicing their savings and small time deposit liabilities in M-2 are removed.
15 Time deposits issued in denominations of $100,000 or more.
16 Includes demand deposits due to foreign commercial banks and official institutions. Does not include $1 billion of demand deposits at mutual savings banks, which were not contained in any of the old aggregates.
17 Includes NOW and ATS balances at these institutions.
18 Includes credit union sharedraft balances.
A. Sectoral Holdings.

The new monetary aggregates exclude deposits held in the United States by foreign commercial banks and official institutions, as recommended by the Advisory Committee on Monetary Statistics (the Bach Committee). These deposits, which were part of the old aggregates, appear to be held primarily to finance operations in foreign exchange markets and to clear other international financial transactions, rather than to finance the purchase of goods, services, and assets in the United States.

The published components of both the new and the old aggregates generally combine the monetary assets of households, firms, and state and local governments. Some evidence suggests that demands for money by different sectors of the economy depend on different factors, and that calculating separate measures of the money holdings of sectors—in addition to aggregates—would yield further information about the economy and better forecasts of total money demand. Data limitations and costs continue to preclude the publication of such disaggregated estimates of money holdings. For example, it is impractical to directly measure holdings of currency and marketable assets by sector. In addition, frequent collection of timely data on sectoral holdings of other monetary assets would entail considerable cost to private financial institutions for record-keeping and reporting.

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19 Improving the Monetary Aggregates: Report of the Advisory Committee on Monetary Statistics (Board of Governors of the Federal Reserve System, June 1976) [hereinafter cited as the Bach Committee Report]. The Committee also endorsed the exclusion of most deposits held by the federal government, on the grounds that (1) the United States Treasury is part of the monetary authority and (2) the behavior of the federal government's demand for money differs from that of the public's demand. The new aggregates exclude such deposits, as the old did.


21 The Federal Reserve Bull. Table 1.32, does report quarterly estimates of sectoral holdings of demand deposits. These estimates are based on data from a sample of banks.

B. Currency.

The volume of currency outstanding—over $500 per capita—is surprisingly large, in light of casual observation of the typical currency needs of firms and households. It would appear that a sizable portion of currency is either hoarded, lost, held by collectors, or held abroad for foreign transactions and, thus, should in principle be excluded from the aggregates because it is not used in payment for goods and services in the United States. Measurement difficulties prevent such an exclusion, but this will pose a problem only if measured currency grows at a rate substantially different from the rate of expansion of currency that is truly in circulation in the U.S.

Finally, both the new and old aggregates combine currency and demand deposits because both serve as media of exchange and because ease of converting currency into demand deposits, and vice versa, makes these assets potentially good substitutes. However, demands for the two assets have different properties; therefore, many large econometric models employ separate equations to predict these demands. This procedure can continue because the Federal Reserve will, as in the past, publish separate measures of currency and demand deposits, in addition to the aggregates.

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23 Robert D. Laurent has estimated that currency lost, destroyed, or held by collectors ranged from 2.5 to 4.5 percent of currency held outside the United States Treasury and Federal Reserve Banks, during the period 1861-1971. See Laurent, *Currency in Circulation and the Real Value of Notes*, J. of Money, Credit, and Banking 213-226 (May 1974).


25 Nevertheless, recent econometric estimates suggest that the public does not view currency and demand deposits as good substitutes. See E. K. Offenbacher, *The Substitutability of Monetary Assets* (Ph.D. dissertation, University of Chicago, Dec. 1978.)


27 A minor issue concerning the treatment of currency in measures of money involves notes of large denomination ($500 and over). It has been argued that such notes are so ill suited to most payments that they must serve primarily as a store of value and, therefore, belong only in the broader aggregates. However, there is no hard evidence indicating that the public uses this currency primarily as a store of value. Moreover, such notes constitute a very small fraction of total currency and are declining in volume because they are no longer issued. Therefore, it seems acceptable to continue to include them in the narrow aggregates.
C. Demand Deposits.

Both the new and the old aggregates include all demand deposits at commercial banks in the United States, with a few exceptions noted earlier and in the discussion of consolidation below. Some economists have argued for the exclusion of compensating balances—that is, funds that firms and individuals must hold in demand accounts in return for lines of credit and other bank services—on the grounds that these balances do not satisfy transactions needs, but, rather, lie idle. However, compensating balance requirements for corporations, the principal holders of such funds, are usually specified not as minima, but rather as daily averages over periods as long as a month or a quarter. The balances of corporations, thus, can and do vary considerably around required averages. It appears, then, that compensating balances do serve transactions needs and, therefore, belong in the narrow aggregates.

D. Travelers Checks.

These assets are accepted as payment for goods and services. Therefore, the medium-of-exchange criterion calls for a measure of transactions balances that includes all travelers checks held for domestic spending. A second-best approach is to include in the narrow aggregates all dollar-denominated travelers checks issued in the U.S. The old aggregates included travelers check liabilities of banks, but because of past data limitations, they excluded nonbank travelers checks—those issued by holding company affiliates of banks or by nonbank firms, such as American Express. The new money measures will include nonbank travelers checks after all major nonbank issuers begin to submit data to the Federal Reserve on a regular basis.

The old aggregates excluded demand deposits at mutual savings banks (about $1 billion in November 1979). These demand deposits are now included in M-1B and broader aggregates.

These balances compensate banks for services by providing banks with funds—at no cost in terms of interest—which banks can then lend at interest.


Theory supports this view. Given reserve requirements, a member bank can earn interest on only part of a compensating balance. The owner of a compensating balance, however, could lend the full amount at interest, keep some of the earnings, and use the rest to pay his bank even more for services than the bank would earn on the balance. Thus, both banks and customers would be better off to substitute explicit fees for the excess of compensating balance requirements over customers' desired average transactions balances. Competition should guarantee that such substitution occurs in the long run.

Travelers checks issued by banks appear in bank records as officers' checks, a component of the demand deposit figures published by the Federal Reserve. Rough estimates suggest that $2.5 billion of nonbank travelers checks were outstanding in late 1978.
E. NOW,\textsuperscript{33} ATS,\textsuperscript{34} and Credit Union Share Draft Balances.

At first glance, it would appear proper to include NOW, ATS, and credit union share draft balances in the narrowest monetary aggregate because drafts against these funds are generally accepted media of exchange.\textsuperscript{35} However, recent Federal Reserve estimates of turnover rates, shown in Table 3, indicate that while NOW and ATS balances are much more closely related to transactions needs than ordinary savings accounts, they are much less so than consumer demand deposits. Partly in recognition of the hybrid nature of "checkable" savings accounts, the Federal Reserve has included them in a second, broader transactions aggregate, M-1B, rather than in M-1A.

Data considerations and judgments concerning possible properties of demand for these accounts also argued for this approach. The accounts in question were authorized so recently that historical data are insufficient to permit seasonal adjustment of incoming data on them. In addition, when the monetary aggregates were redefined, it appeared quite possible that Congress would extend to depository institutions nationwide the authority to issue NOW accounts; indeed, Congress later did so under Title III of the Depository Institutions Deregulation and Monetary Control Act of 1980. If NOW accounts were to attract funds from ordinary savings accounts and other liquid assets, which are less versatile, then M-1B would expand during a transition period at a rate well above the underlying rate of growth of transactions balances.\textsuperscript{36} Thus, if M-1B were the only published transactions balance measure, its growth rate might suggest to the public that Federal Reserve policy is more expansionary than it truly is. In sum, M-1A was designed to aid interpretation of seasonal and transitional variation in M-1B. It might be appropriate to eliminate M-1A once the transition to nationwide NOW accounts is complete and historical data on the new savings accounts are sufficient for seasonal adjustment.

\textsuperscript{33} NOW (negotiable order of withdrawal) savings accounts were authorized in stages at depository institutions in New England, New York and New Jersey over the period from June 1972 to December 1979. NOW accounts will become available nationwide on December 31, 1980.

\textsuperscript{34} ATS (automatic transfer service) savings accounts, from which funds are moved automatically into checking accounts as checks clear, were authorized in November 1978 at all commercial banks and at thrift institutions already offering accounts transferable by draft.

\textsuperscript{35} Initial proposals by the Board staff to redefine the aggregates suggested this approach. See Board staff, \textit{A Proposal for Redefining the Monetary Aggregates}, \textit{Fed. Reserve Bull.} 13-42 (Jan. 1979).

\textsuperscript{36} M-1A, too, might exhibit transition effects. Its growth rate would understate the rate of expansion of transactions balances if households shifted funds from demand deposits to NOW accounts.
Table 37
Estimated Annual Rates of Turnover for Selected Components of the Monetary Aggregates

<table>
<thead>
<tr>
<th>Estimated Annual Turnover Rate</th>
<th>Demand deposits outside New York City</th>
<th>Consumer demand deposits</th>
<th>NOW accounts</th>
<th>Commercial banks</th>
<th>Thrift institutions</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>118.2</td>
<td>35.0</td>
<td>10.6</td>
<td>10.1</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>5.6</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Money market mutual fund shares</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
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<tr>
<td></td>
<td>2.8</td>
<td></td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>Ordinary savings</td>
<td></td>
<td></td>
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<td></td>
<td></td>
</tr>
<tr>
<td>Commercial banks</td>
<td>3.0</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Mutual savings banks³⁹</td>
<td>1.7</td>
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F. Money Market Mutual Funds.

The public's ability to write drafts on accounts at most money market mutual funds is often cited to support the inclusion of these funds in the narrowest aggregate. However, the typical requirement that individual drafts exceed a rather large minimum amount limits the usefulness of these funds as a medium of exchange. Moreover, the estimates of turnover rates shown in Table 3 indicate that money market funds turn over only about as quickly as ordinary savings accounts and much less rapidly than any of the components of M-1B. Additional considerations, including probable demand properties and data availability, argue for the placement of these funds in a broader aggregate. First, movements of a narrow aggregate that included these funds might be dominated by changes in their attractiveness as investments when their yield changed relative to yields on other assets. If so, the growth rate of such an aggregate would at those times be a misleading indicator of the rate of expansion of funds held for imminent transactions. Second, cyclical behavior and the pub-

³⁷ Data for September 1979, except for mutual savings bank savings accounts (October 1979), ATS accounts (June 1979), commercial bank NOW accounts (August 1979), and money market mutual funds (November 1979).
³⁸ Thrift institutions in New England.
³⁹ Based on a sample of 25 mutual savings banks in New York State.
⁴⁰ Most funds specify a minimum of $500 per draft. A few stipulate lower or higher minima or do not offer check-writing privileges.
⁴¹ Econometric evidence—which, admittedly, may not foreshadow future developments—indicates that an aggregate consisting of M-1B and money market funds is not
lic’s gradual adjustment to the availability of money market funds have thus far obscured the effects of seasonal variations in economic activity on growth of these funds. For a time, therefore, the Federal Reserve will be unable to adjust incoming data on money market funds for seasonal influences. Without such adjustment, these funds would introduce more seasonal variation, in percentage terms, to a narrow aggregate than to a broad aggregate, like the new M-2, containing a greater volume of seasonally adjusted components.42

G. Ordinary Savings Accounts and Small Time Deposits.43

Consumers must convert ordinary savings balances and small time deposits into media of exchange before they may use these funds for payment. According to the medium-of-exchange criterion, therefore, the narrow transactions aggregates should continue to exclude such deposits.

While savings deposits clearly are sufficiently liquid to be included in M-2 along with money market mutual funds, the inclusion of small time deposits in M-2 is questionable. Substantial interest penalties for early withdrawal of small time deposits, together with their long average maturity, tend to make them less liquid than the other components of M-2. This relative illiquidity suggests that small time deposits are less closely related to the public's spending plans than other elements of M-2 and, thus, should be excluded from that aggregate.44 The Federal Reserve nevertheless opted to include small time deposits in M-2 because econometric evidence indicates that demand for M-2, with small time deposits included, is considerably more predictable than demand for an aggregate consisting of all components of M-2 but small time deposits. In addition, the latter aggregate has been somewhat less closely related to GNP than the new M-2.

Under the old definitions, savings and small time deposits at banks appeared in M-2, while those at thrift institutions appeared only in M-3 and broader aggregates. The new M-2 includes savings and small time deposits markedly superior to M-1B, on balance, with respect to demand properties and ability to explain and to forecast growth of GNP.

42 This effect may partly account for the failure of M-1B plus money market funds to exhibit notably better empirical properties than M-1B alone. See preceding footnote.

43 Small time deposits are defined as those having denominations of less than $100,000. The interest rates borne by these deposits, unlike those on larger time deposits, are subject to regulatory ceilings.

44 Indeed, for this reason, the Board staff initially recommended an M-2 measure including savings deposits, but not small time accounts. See Board staff, supra note 35, at 13, 22.
deposits at both banks and thrifts. This change in the definition of M-2 takes into account the fact that in recent years savings instruments at thrifts have become better substitutes for those at commercial banks. The new procedure also reflects the fact that, as in the case of savings instruments at banks, consumers tend to shift funds between savings instruments at thrifts and money market mutual funds in response to changes in relative interest rates.

H. Security Repurchase Agreements.

The new aggregates, unlike the old, include security repurchase agreements (RPs) issued to the nonbank public by commercial banks and savings and loan associations. The new M-2 includes overnight and continuing contract RPs at banks. Term RPs at banks appear at the M-3 level because they are less liquid. M-3 also includes all RPs issued by savings and loan associations. RPs issued by nonbank security dealers to the nonbank public are not included in any aggregate. In principle, RPs issued by savings and loan associations and nonbank security dealers should be grouped with RPs of similar maturity at banks, but current data limitations necessitate deviations from this approach.

Several reasons have been suggested for including RPs, especially overnight RPs, in a narrow aggregate designed to measure transactions balances. First, the existence of fixed balance demand deposit accounts, which afford automatic investment of excess funds in RPs at the end of the business day, suggest that some funds available for spending during

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45 Econometric evidence suggests that passbook savings accounts at mutual savings banks and at savings and loans have in recent years become rather good substitutes for those at commercial banks. Historical data does not indicate a similar improvement in the overall substitutability of small time deposits at thrifts and banks. See W. Barnett, *Economic Monetary Aggregates: An Application of Index Number and Aggregation Theory*, J. of Econometrics, (Sept. 1980, forthcoming). However, the econometric evidence on small time deposits does not reflect the introduction in June 1978, of 6-month money market certificates, which constitute a growing proportion of small time deposits. Relative rates of growth of the volumes of such certificates outstanding at banks and thrifts have been quite sensitive to changes in the difference between interest rates paid on the certificates at the two types of institution. This observation suggests that money market certificates at thrifts are good substitutes for those at banks.

46 RPs are lending arrangements in which the borrower simultaneously sells securities to the lender and agrees to repurchase the securities at some future date at a specified, higher price, which provides to the lender an interest return. The new aggregates include RP agreements in which banks or savings and loans are borrowers. “Overnight” RPs are those involving repurchase of securities on the next business day after sale. “Term” RPs are those involving repurchase of securities on a fixed date more than one business day after sale. “Continuing contract” RPs involve repurchase on any business day that either party chooses.

47 The volume of overnight and continuing contract RPs issued by savings and loans is believed to be small.
the day appear as RPs in bank records. Second, some econometric studies conclude that the rapid growth of RPs after mid-1974 explains much of the shortfall of the public's demand for demand deposits below predicted levels since that time.48

Exclusion of RPs from the narrowest aggregate appears justified by a careful evaluation of the above arguments, as well as by data limitations and possible demand properties. First, use of fixed balance accounts is reported to be quite limited. Rather, firms usually arrange RPs early in the day, so that most RPs represent funds that are not immediately available to finance transactions. Second, the econometric results mentioned above do not imply that RPs are transactions balances.49 Indeed, numerous interviews with corporate cash managers suggest that they view RPs not as interest-bearing demand deposits, available for disbursement at any time, but rather as one of several low-risk, short-term investments that complement demand deposits in cash management strategies.50 This common view suggests that movements of a narrow aggregate containing RPs might at times be dominated by changes in their attractiveness as investments; the growth rate of such an aggregate would at those times be a misleading indicator of the rate of growth of transactions balances. Finally, historical data are insufficient for reliable seasonal adjustment of incoming data on overnight and continuing contract RPs; this problem would complicate interpretation of growth of the aggregates to a lesser extent if such RPs were included only in M-2 and broader aggregates.

I. Eurodollars.

In principle, the portion of Eurodollar deposits that is held by non-banks for expenditure in the United States should be grouped with domestic assets of similar term in the broader aggregates.51 Given its inability to ascertain the intended use of Eurodollars, the Federal Reserve has elected for now to include in the new aggregates only those Eurodollars

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49 Rather, RPs, whose growth accounts for only part of the recent shortfall in demand for demand deposits, may be only one of several short-term investments to which corporations diverted funds as improvements in cash management practices reduced their need for transactions balances. Board staff, supra note 35, at 17, and Porter, Mauskoff, and Simpson, Financial Innovation and the Monetary Aggregates, 1 Brookings Papers on Economic Activity 213-229 (1979).

50 Davis, supra note 30.

51 Total Eurodollar deposits held by nonbanks are estimated by Board staff to have equaled $161 billion as of June 1979.
known to be held by nonbank residents of the United States.\textsuperscript{52} Overnight Eurodollars issued by Caribbean branches of member banks are properly grouped in M-2 with overnight RPs.\textsuperscript{53} It is conceptually appropriate to include term Eurodollars in M-3, along with similar instruments, such as term RPs. Term Eurodollars nevertheless appear as part of L, because the data used to estimate their volume are available only with a relatively long delay. This delay would have a greater impact on the timeliness of M-3 than on that of L, because data on several other components of L are available only with a long lag.

K. Large Time Deposits.\textsuperscript{54}

Large certificates of deposit appear in the new M-3 because they do not seem to be good substitutes for the components of M-2. Their large denominations—$100,000 or more—make them inaccessible to most owners of savings and small time accounts. Moreover, in terms of liquidity and their function in corporate portfolios, large time deposits seem more similar to term RPs (which are included in the new M-3, but not in M-2) than to such very liquid assets as overnight RPs and overnight Eurodollars, contained in the new M-2.

The old M-2 included large time deposits at commercial banks, other than negotiable CDs at large banks. Some have argued for the continued inclusion of large time deposits in M-2, on the grounds that the income velocity of the old M-2 was relatively predictable. However, this desirable quality may not have reflected properties of demand for the aggregate, but rather a past tendency for banks as a group to rely on changes in the issuance of large time deposits as an offset to changes in demand for

\begin{footnotesize}
\textsuperscript{52} An alternative approach would be to include, in addition, Eurodollars held by nonbanks residing outside the United States, weighted by some index of the probability that these funds would be spent in the United States, rather than abroad. One possible index is the share of the United States in the world economy. See Wallich, Euro-markets and U.S. Monetary Growth, J. of Commerce, (May 1 and 8, 1979).

As better data become available, the Federal Reserve may give further consideration to including Eurodollars held by foreign residents other than commercial banks and official institutions.

\textsuperscript{53} Some overnight Eurodollars that are issued to U.S. nonbank residents by bank offices other than Caribbean branches of member banks are included only in L because current data sources do not separate these overnight Eurodollars from term Eurodollars. These overnight Eurodollars may eventually be included in M-2 if data flows improve.

In 1979, the volume of overnight Eurodollars nearly doubled from $2 billion to $3.9 billion at Caribbean branches of member banks that participated in a special survey by the Federal Reserve.

\textsuperscript{54} Negotiable large time deposits, which are commonly called certificates of deposit (CDs), can be resold after purchase from a bank or thrift. Nonnegotiable large time deposits, like small time certificates, cannot be resold, but banks generally permit customers who hold considerable amounts of nonnegotiable large certificates to convert them to negotiable CDs at will.
\end{footnotesize}
their other deposit liabilities. If banks alter their strategy, as they have recently, shifting between large time deposits and other "managed" liabilities as sources of funds, then the inclusion of large time deposits in M-2 will fail to make its velocity stable and predictable.\footnote{For example, the income velocity of the old M-2 rose unexpectedly during the first quarter of 1979, when banks responded to declines in demand and savings deposits by increasing their issuance of nondeposit liabilities—mainly net liabilities to their branches overseas—while reducing the rate of growth of large time deposits.}

\textbf{J. Other Liquid Assets.}

The broadest new aggregate, L, adds to M-3 other fairly liquid assets held in substantial quantities by the nonbank public, namely term Eurodollars, bankers acceptances, commercial paper, short-term Treasury securities, and savings bonds. These assets are not subject to reserve requirements. Therefore, while L is a more comprehensive measure of liquid assets than the other aggregates, it is less controllable. Moreover, the correlation between L and GNP likely results in large part from relatively strong reverse causality—that is, from a strong influence of GNP on L. Thus, the Federal Reserve System will emphasize the other, narrower aggregates as targets for monetary policy.

\textbf{K. Consolidation.}

The old monetary definitions specified rather crude adjustments designed to eliminate from the aggregates those assets held to service items included in the official measures. As a result of these rough adjustments, most of the old aggregates either understated or overstated conceptually ideal monetary totals. Under the new definitions, consolidation procedures have been refined to the extent that available data permit.\footnote{See \textit{Bach Committee Report}, supra note 19, at 12-14 for a detailed discussion of the former consolidation procedures. See \textit{The Redefined Monetary Aggregates}, Fed. Reserve Bull. 97-114 (Feb. 1980), for a description of the new consolidation procedures.}

\textbf{V. Conclusion}

The new official monetary aggregates appear to be considerably more suitable than the old as foci for the future conduct of monetary policy.

\footnote{It is noted that such a finding is more likely to be made in the case of recent measures than of measures in effect for some considerable time.}
The new money measures, unlike the old, include money market mutual funds and RPs—liquid assets whose volume has grown rapidly in recent years. Another important improvement is the inclusion of Eurodollars. By appearing in the official aggregates, Eurodollars will now enter formally into the determination of U.S. monetary policy. The new definitions, unlike the old, take into account the differences between ordinary savings deposits and NOW, ATS, and credit union share draft balances, as well as the growing substitutability of deposits at commercial banks and thrift institutions. Additional improvements include the prospective inclusion of nonbank travelers checks, the removal of large time deposits from M-2, and the refinement of consolidation procedures.

Nevertheless, the new official aggregates may not be satisfactory for all purposes; researchers and private decision-makers, for instance, may wish to construct alternative totals. Moreover, an examination of data on the individual components of the aggregates and other financial assets, such as deposits held by the U.S. Treasury, may aid interpretation and forecasting of economic developments. The Federal Reserve will therefore publish not only the aggregates, but also their main components and several excluded items.

The new aggregates have been selected on the basis of judgments concerning their prospective behavioral properties—judgments which may prove incorrect. Furthermore, while the Depository Institutions Deregulation and Monetary Control Act of 1980 provides for gradual relaxation and eventual elimination of limits on interest rates on consumer deposits, removal of the other governmental restrictions discussed in Section II is not in prospect. As long as these restrictions remain in force, they will enhance the likelihood of additional financial innovations that might impair the usefulness of the new measures of money. Thus, while the recent redefinition of the aggregates appears to be a valuable step, further redefinition may eventually prove desirable.