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An Historical Perspective on the Federal Reserves Monetary Aggregates: A Timeline.

A HISTORICAL PERSPECTIVE ON THE FEDERAL RESERVE'S MONETARY AGGREGATES

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THE EVOLUTION OF THE FEDERAL RESERVE'S MONETARY AGGREGATES: A TIMELINE

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A Historical Perspective on the Federal Reserve's Monetary Aggregates:
Definition, Construction, and Targeting

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"...the Federal Reserve should use as an intermediate target that monetary total (aggregate), or those totals, through which it can most reliably affect the behavior of its ultimate objectives -- the price level, employment, output, and the like. Which total or totals best satisfy that requirement depends in turn on (1) how accurately the total can be measured; and (2) how precisely, and at what costs including unwanted side effects, the Fed can control the total; and (3) how closely and reliably changes in the total are related to the ultimate policy objectives.

"In general, though by no means uniformly, the broader the concept, the greater the problems of measurement and control."

> *Improving the Monetary Aggregates* (Report of the Advisory
> Committee on Monetary Statistics), 1976, p. 7.

Data on the monetary aggregates are the fundamental raw material of research in many facets of economics and finance. Money demand modelling, measurement of money stock announcement effects, tests of the rationality of preliminary money stock forecasts and financial market efficiency, and comparison of alternative seasonal adjustment procedures are just a few such areas. Monetary aggregates also are used by Federal Reserve System staff in formulating policy alternatives for the Federal Open Market Committee (FOMC). Perhaps no government data are more important or more widely used in economic and financial research than the monetary aggregates. Often unappreciated by researchers, however, is the extent to which the appropriate use of monetary aggregates data is

aggregates has been based on the relative ability of alternate aggregates to predict economic activity. Prior to 1980, commercial banks furnished most transactions deposits and their nontransactions deposits seemed to be the closest substitutes for money. In turn, the Federal Reserve's monetary aggregates emphasized both the distinctions between types of deposits and between commercial banks and thrift institutions. The narrower M1 and M2 aggregates first published in 1971, for example, included only deposits at banks, while thrifts were included in M3. These distinctions were preserved in 1975 when M3 was revised and M4 and M5 were introduced.

Perceived breakdowns in the historical relationship between a monetary aggregate and economic activity, reflected, say, in a putative permanent shift in its velocity, may lead to calls for redefinition of the aggregate. Such pressures on M1 and M2 (as initially defined in 1971) were apparent throughout the 1970s. Reinforced by accelerations in inflation and a shift by some macroeconomists toward increased emphasis on the monetary aggregates, these pressures led in early 1974 to the appointment of the Advisory Committee on Monetary Statistics, chaired by professor George Bach of Stanford. By 1980, the Monetary Control Act permitted a redefined set of monetary aggregates to be constructed from a greatly expanded, much richer and much more costly flow of data than had ever previously been available. The new aggregates also seemed to have more stable relationships to economic activity. Published analyses at the time of the 1980 redefinition cited with approval the lack of trend in the velocity of the new M2 relative to the old measure, although they stopped short of proposing a less variable long-run velocity as a choice criterion.[2] Although such pragmatic redefinition seems clearly to be in the spirit of Friedman and Schwartz[3], it may account for at least some part of the ex post stationarity of the GNP velocity of M2 (as currently defined) identified by Hallman, Porter and Small (1991).

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[2]Simpson (1979, 1980).

[3]See especially chapter 4.

The ideal monetary aggregate would be composed of assets that are capital-certain (or nearly so), highly liquid and closely related to economic activity. Narrow monetary aggregates composed primarily of medium of exchange seem to satisfy at least the first two criteria acceptably well, while broader aggregates do so somewhat less well. Broader aggregates often include assets that are capital-uncertain or, in other words, assets whose market values vary with market interest rates, the pace of economic activity, or expectations of such variables. Broad monetary aggregates are uniformly defined to include the nominal (face) value of capital-uncertain assets rather than the market value, however. Small time deposits included in the non-M1 component of M2, for example, may be taken to be capital-uncertain when there are penalties for withdrawal before maturity.[4] Money market mutual fund (MMMF) shares, also included in the non-M1 component of M2, appear capital-certain to their holders even though the market value of the funds' assets varies inversely with market interest rates. So long as the MMMFs satisfy a variety of Securities and Exchange Commission rules (including restrictions on the maturity of the funds' assets) and short-term market interest rates don't move too rapidly, the funds need not pass through changes in the market value of their assets to shareholders. The market values of money market instruments included in very broad aggregates such as M3 and (the seldom used) L vary considerably more, however. Such instruments include negotiable large time deposits included in the non-M2 component of M3, and most items included in the non-M3 component of L. Monetary aggregates defined to include the nominal rather than market value of these assets necessarily omit some actual portfolio constraints faced by firms and households, who must necessarily substitute among financial assets at market rather than nominal values. Including

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[4]Under Regulation Q, depositories were required to impose early withdrawal penalties. Many institutions have chosen to continue such penalties even in the absence of Regulation Q. On the demise of Regulation Q, see Gilbert (1986). The liquidity of time deposits has varied through time. Prior to Reg Q, some time deposits were indistinguishable from modern savings and transaction deposits; see Friedman and Schwartz (1970), p. 76-77.

these assets in monetary aggregates at market values, however, would cause the *measured* size of the aggregate to vary with market rates. This might reduce the usefulness of the aggregate as an indicator of the impact of policy actions. A policy action that reduced reserve availability could reduce not only the quantity of money demanded as market interest rates increased but also the apparent quantity "supplied" as prices of the included money market instruments fell. The indicator properties of movements in such capital uncertain monetary aggregates for economic activity have not been established.[5]

The statistical issues in building monetary aggregates also are formidable. If cost were no object, an ideal monetary aggregate would be built from daily observations on all its components at all financial intermediaries. In fact, cost/benefit tradeoffs figure prominently in both data collection and the definition of the aggregates. The Congress has mandated that a cost/benefit analysis be part of each application for renewal of major deposit reports, typically required every three years. Reporting burden is generally to be kept as low as possible while obtaining adequate data for the conduct of monetary policy. This position has led to deposit reporting strategies based on survey sampling wherein deposit coverage and reporting frequency vary by size of institution.

Most of these issues have largely been omitted from the literature on money demand. As fine a work as Laidler's classic text on money demand fails to discuss the definition, construction or revision of monetary aggregates, except to acknowledge Friedman and Schwartz's research. Nowhere is the reader warned of the potential pitfalls in monetary aggregates data awaiting the unwary. This problem arises largely from the difficulty and high cost to researchers of locating relevant institutional details. This paper attempts to reduce that cost.

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[5]The difficulties of interpreting monetary aggregates that include capital-uncertain instruments are prominent in proposals to include bond and equity mutual funds in a redefined M2. See, for example, Collins and Edwards (1994) and Orphanides, Reid and Small (1994).

SOURCES OF MONETARY AGGREGATES DATA

Throughout U.S. history, every definition of money has been composed primarily of the liabilities of private financial institutions, both notes and deposits. During most periods, these financial institutions have been subject to government regulation. In turn, the primary sources of current and historical monetary aggregates data are government reports filed by these financial institutions.

The Federal Reserve's first published monetary aggregate appeared in 1943 in Table 9 of *Banking and Monetary Statistics*. The table showed currency, demand deposits and time deposits for June call dates from 1892 to 1922 and for June and December call dates from 1923-41. The sum of currency and demand deposits was defined as "...the supply of money..." or "...means of payment..." although it was noted that time deposits often were used for current payments "...during the 1920s." Subsequent data were published in the *Federal Reserve Bulletin*.[6] Later, Copeland and Brill (1948) presented a series based on the last-day-of-the-month consolidated condition statement of the banking system. In 1949, the Board began monthly publication of this series.

The first modern monetary aggregate based on averages of daily data, labelled M1, was constructed by William Abbott and Marie Wahlig of the Federal Reserve Bank of St. Louis and appeared in the *Federal Reserve Bulletin* in 1960; a revision was published in 1962. Building monetary aggregates from daily data is important because seasonal patterns within a month may cause data for individual days to be unrepresentative of both the month's average level and the aggregate's trend growth rate. Abbott and Wahlig's data, which began in 1947, reflected available deposit reports and were shown at half-monthly and monthly frequencies. Member banks had begun reporting in 1944 averages of daily data at the middle and end of each month. Data for nonmember banks and

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[6]For details, see the introductory notes to section 1 in *Banking and Monetary Statistics* and the notes to chapters 1-4 in *Banking and Monetary Statistics 1941-1970*.

mutual savings banks were estimated from FDIC call reports, although the precise interpolation method is not stated.

Monetary aggregates data subsequently were published on the Board's statistical release, known as the J.3 and entitled *Demand Deposits, Currency, and Related Items*, twice a month from November 1960 through July 1965. The release included averages of daily data at half-monthly and monthly frequencies, seasonally adjusted, and at weekly, half-monthly, and monthly frequencies, not seasonally adjusted.[7] The most recent data included on the release predated the publication date by two weeks.

The J.3 was succeeded by the current release, known as the H.6 and entitled *Money Stock, Liquid Assets, and Debt Measures*, on July 30, 1965. It shows averages of daily figures at weekly and monthly frequencies. A revised monetary aggregates series based on weekly averages of daily data beginning in 1959 was later presented by Fry, Beck and Weaver (1970).[8] The current definitions of the monetary aggregates were largely established in 1980; see Kavajecz (1994) and Simpson (1979, 1980). At the time of the redefinition, monetary aggregates based on the new definitions were constructed back to 1959. Details of their construction are discussed in the appendix.

For researchers, monetary data extracted from individual issues of the J.3 and H.6 releases provide contemporaneous estimates of the monetary aggregates based on a well-defined information set: the data available to Board staff as of the publication date. These statistical releases allow a researcher interested in announcement effects or the policy formation process of the FOMC to observe Federal Reserve Board staff estimates of the level of the money stock at each point in time, or permit a researcher interested in market efficiency or the "rationality" of initial money stock estimates to study

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[7]Member banks began reporting daily data each week in December 1959. For years after 1959, the weekly data were prorated to obtain monthly and half-monthly frequencies.

[8]Some independent researchers have attempted to build monetary aggregates data for earlier periods using current definitions. For a careful discussion of the issues, see Rasche (1987, 1990).

the timing and extent of revisions to initially published data. The statistical releases are not very useful for longer-run studies, however, because the information set underlying the release changes each week as Board staff receives both new data and revisions to previously reported data. Further, the definitions of the monetary aggregates have changed through time.

While the Federal Reserve Board has published a number of historical volumes, each with unique features making it a valuable source of data, use of these data also is complicated by varying definitions and observational frequencies. Ideal historical data would be computed at similar frequencies under consistent definitions. The two most comprehensive volumes, *Banking and Monetary Statistics* and *Banking and Monetary Statistics 1941-1970*, were published by the Federal Reserve in November 1943 and September 1976, respectively.[9] Observational frequency differs across data series, with various data at monthly, weekly or daily frequencies. There are also important conceptual distinctions through time in the data, such as the difference between member and nonmember banks and the difference between thrifts and commercial banks. When using data from other sources in conjunction with the *Banking and Monetary Statistics* volumes, researchers should appreciate that data published subsequently are not strictly comparable, since more recent publications incorporate further revisions to the data.

A closely related publication, and the yearly counterpart to the *Banking and Monetary Statistics* volumes, is the *Annual Statistical Digest*. The *Digest* is released at the end of each year and contains data for the previous year. The Board's *Annual Report* also contains information about the monetary aggregates, but the information tends to be more descriptive than numerical. These publications provide a long-run, consistent perspective of the monetary aggregates over their respective published date ranges, since within each issue of each publication the observations are based on a single,

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[9]The 1943 edition of *Banking and Monetary Statistics* was reprinted in August 1976. See also the Board's corrected 1959 reprint of *All-Bank Statistics*.

consistent information set. They perhaps are less appropriate, however, for lines of research where the hypotheses depend on the information set used in constructing the money stock estimate, since the date the estimate was formulated is not explicitly given.

Similar concerns suggest that datasets constructed from various issues of the *Federal Reserve Bulletin* may not be suitable for a variety of research. Board staff have published components of the monetary aggregates, such as demand deposits and currency, in the *Bulletin* since its inception in May 1915. In February 1944, the staff first showed demand deposits and currency in the same table, foreshadowing the later M1 monetary aggregate. While the *Bulletin*'s current table 1.10 (first published in its present form in January 1977) descends from the 1944 table, the data published in this table through the years are not a consistent time series due to definition changes, reporting changes, annual benchmark revisions, and reestimation of seasonal adjustment factors. At the same time, the *Bulletin* is an excellent resource for tracking the various changes that have occurred in the definitions and construction of the monetary aggregates through time. Due to its somewhat longer time span, data extracted from various issues of the *Bulletin* illustrate how the monetary aggregates have evolved; occasional articles have presented detailed information on changes in the monetary aggregates. Unfortunately, like many other Federal Reserve historical publications, the *Bulletin* does not specify the date at which the estimates were made, that is, the time-indexed information set on which they were based. In general, data in the *Bulletin* precede by two months the *Bulletin*'s publication date, but at times it has been longer. Since monetary aggregates data appear with differing lags in various System publications (for example, 10 ten days on the H.6), data from different sources may be based on quite different information sets even when the dates that they first appear in print are close together. This suggests that, in general, a database built from one Federal Reserve source or publication should not be updated from another.

Finally, a publication that presents comprehensive, consistent time series is *Money Stock Revisions.*[10] This publication is offered to the public early in each year as a supplement to the issue of the H.6 release that incorporates the Board staff's annual benchmark revisions, including reestimated seasonal adjustment factors. The publication presents a comprehensive set of monetary aggregates data, beginning in 1959 for monthly data and in about 1975 for weekly data.[11] Unlike other Board staff publications, the information set and definitions used in constructing the data are well-defined, making the data ideal for longer-run studies. Note, however, that since each year's publication uses that year's current definitions -- and the definitions of the monetary aggregates and their components have changed through time -- the data may differ significantly from previously published data.

DATA COLLECTION

The data collection process is the foundation of the construction of monetary aggregates data. The collection of data useful for the monetary aggregates has changed (and improved) dramatically during the last eight decades. We present here a brief outline of the principal data inflows to the Federal Reserve during a small number of distinct periods over which data collection and publication practices differed significantly.

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[10]The title of this publication has changed somewhat through time. It currently is produced by the Money and Reserves Projections Section of the Division of Monetary Affairs. Prior to 1988, it was produced by the Banking Section of the Division of Research and Statistics. Prior to 1993, the printed publication was offered to the public as a supplement to the issue of the H.6 release that contained the newly benchmarked monetary aggregates data; data in machine readable form were sold by the National Technical Information Service of Springfield, Virginia. In 1993, the publication and associated data were first offered for sale by Publications Services at the Board of Governors.

[11]Subject to the availability of the particular series. See Table 1 below for the availability of specific series.

1915 - 1943

The data collected during this period have been extensively documented by Friedman and Schwartz (1970), chapters 12-15. Beginning in 1923, data for all member banks are available. From April 1923-December 1928, the Federal Reserve collected and published deposits as of a single day each month; from January 1929-March 1944, monthly averages of daily data; after March 1944, averages of daily data were collected twice a month. Data also continued to be reported each week on Wednesday by a sample of several hundred weekly reporting banks that held a majority of bank deposits. Data for nonmember banks and for mutual savings banks were available on call reports.

1944 - 1980

Averages of daily member bank deposit data were collected twice a month through December 1, 1959, when weekly averages began to be collected. Regular publication beginning November 1960 of monthly money stock figures on the J.3 release necessitated estimates of the monetary liabilities of nonmember banks. Nonmember bank data continued to be collected on call reports, typically two per year until 1960, when thereafter four per year were required.

1980 - Present

Perhaps the least appreciated aspect of the Depository Institution Deregulation and Monetary Control Act of 1980 (DIDMCA) was a significant improvement in the quantity and quality of data flowing to the Federal Reserve. A watershed in data collection, the act empowered the Federal Reserve System to impose reporting requirements on all depository institutions with reservable liabilities above a prescribed minimal amount. The act significantly eased estimation of the money stock, as deposit reporting by financial institutions become nearly universal and was no longer a

function of membership status or charter type.[12] Two years later, in the Garn-St. Germain Act,

Congress mandated that the Federal Reserve establish guidelines to ease reporting burden borne by

financial institutions while maintaining adequate coverage of the outstanding monetary liabilities of the

banking system. In response, a system of reporting categories was established wherein the reporting

burden -- measured by frequency of reporting and number of items reported -- depends upon both total

deposits and reservable liabilities.

Under this system, the Federal Reserve Board staff each year establishes a cutoff level of total

deposits and an exemption level of reservable liabilities. Increases in both levels are indexed to the

year-over-year increase in aggregate deposits at all depository institutions as calculated from second

quarter (June 30th) call reports.[13] The following table summarizes the System's reporting categories

and the type/frequency of report submitted by financial institutions in each category for 1992, 1993,

and 1994.[14] The deposit cutoff and reserve exemption levels were established at $25.0 and $2.4

million, respectively, beginning January 1985. These have subsequently been indexed each year,

based on 80 percent of the growth in aggregate deposits, except in 1988. In that year, Board staff

research suggested that little accuracy would be sacrificed, and a significant reporting burden reduced

for smaller institutions, by increasing the deposit cutoff more rapidly. The deposit cutoff, which had

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[12]In particular, thrift institutions and nonmember banks began reporting deposits weekly to the Federal Reserve.

[13]A zero reserve requirement ratio applies to the reserve exemption amount of deposits. The reserve exemption amount is not to be confused with the low reserve tranche. The tranche allows a lower 3 percent reserve requirement ratio to be applied to some portion of deposits, while a higher ratio (currently 10 percent) applies to the balance. Both the reserve exemption amount and the low reserve tranche are indexed. For 1993, the reserve exemption and low reserve tranche amounts are $3.8 and $46.8 million, respectively. For 1994, the amounts are $4.0 and $51.9 million, respectively.

[14]Values for each year are typically published in the respective January issues of *Federal Reserve Bulletin*. Values for 1992, 1993 and 1994, for example, appear on pp. 36-37, 18 and 23-24 of the January 1992, 1993 and 1994 issues, respectively.

automatically increased in January to $30 million from the previous year's $28.6 million, was raised in September to $40.0 million. Several thousand smaller banks were exempted from weekly reporting by this change.

Table 1
Depository Institution Reporting Categories 1992-1994
by Deposit Cutoff and Reserve Exemption Amount

Amounts effective as of January 1992 (1993) [1994] (all figures are millions of dollars)	Deposit Cutoff total deposits	Reserve Exemption Amount reservable liabilities	
		if more than $3.6 ($3.8) [$4.0]	if less than $3.6 ($3.8) [$4.0]
	if more than $44.8 ($44.8) [$44.8]	the institution must file the FR2900 report weekly	the institution must file the FR2910Q report quarterly
	if less than $44.8 ($44.8) [$44.8]	the institution must file the FR2900 report quarterly	the institution might be exempt from reporting

Institutions that file the FR2900 at a weekly frequency (the upper left-hand box) report daily levels for about a dozen deposit and nondeposit liabilities. Institutions falling in the other boxes have a sharply reduced reporting burden. Institutions that file the FR2900 at a quarterly frequency (the lower left-hand box) report the same items but only for a single week each quarter (the week that contains the third Thursday in the last month of the quarter). Institutions that file the FR2910Q (upper right-hand box) report weekly average data on fewer items for one week each quarter. Institutions falling in the lower right-hand box are exempt from filing reports with the Federal Reserve if and only if Federal Reserve staff are able to accurately obtain required data from other sources, such as call

reports.[15] For institutions other than weekly reporters (all categories except those in the upper left-hand box), Federal Reserve Board staff must estimate their deposits during the periods between reports. In 1992, daily data were received each week from approximately 9,100 financial institutions, about 30 percent of all depositories. These data comprised about 90 percent of the aggregate deposits included in the monetary aggregates (the balance being estimated), or, including nondeposit liabilities, about 80 percent of the aggregate liabilities of financial institutions included in the monetary aggregates.

Construction of weekly values of broad monetary aggregates such as M2 and M3 also relies on a variety of weekly reports of data for nondeposit liabilities such as repurchase agreements, Eurodollar deposits, and reports from nonbank financial institutions such as money market mutual funds (MMMF). The numerous sources and reports used by Board staff in the construction of the monetary aggregates are shown in Table 2. In general, broader aggregates such as M2 and M3 are less precisely measured than M1 because a larger proportion of the data included in the aggregate is either not reported directly to the Federal Reserve, and/or is reported less frequently than the data included in M1. In addition, a larger number of various nonmoney stock items are netted out of the broader aggregates.

In the non-M1 components of M2 and M3, MMMF shares have been among the more complex items. A dynamic industry characterized by rapid growth, new funds have frequently appeared and old ones vanished. In addition, funds may merge, change names or change investment objective by, say, lengthening the maturity of their assets to become a short-term bond fund. All these events complicate accurate measurement of the aggregate amount of MMMF shares held by the nonbank public. Retirement accounts (IRA/Keogh) at banks, thrifts and MMMF also have sometimes been nettlesome. These deposits, netted from the monetary aggregates, are not collected in the same

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[15]If not, the institution is required to file an annual report.

manner as other deposit data included in the aggregates. As shown in Table 2, retirement balances at banks are collected on the FR2042 report. This report surveys fewer banks less frequently than the FR2900 report that provides most deposit data. Retirement balances at MMMFs are collected by the Investment Company Institute from member mutual funds and, like data for commercial banks and thrifts, lags somewhat behind the reporting of deposits and other liabilities included in the aggregates.

Measurement problems also arise regarding Eurodollars and RPs. High-quality timely data are available on the overnight Eurodollar component of M2 because these deposits are largely held at Caribbean branches of U.S. banks.[16] Term Eurodollars held in foreign branches of U.S. banks are reported on approximately the same basis. Term Eurodollars, however, also are held extensively at non-U.S. banks in England and Canada, not subject to Federal Reserve reporting. The Bank of England and the Bank of Canada collect quarterly data for U.S.-dollar denominated deposits due to U.S. nonbank addresses. Although aggregate totals are given to Federal Reserve staff, data for individual banks are confidential and, hence, can neither be checked nor edited by Federal Reserve staff.[17]

For RPs, the problem is more a conceptual issue than a matter of data reporting. Overnight RPs are included in the non-M1 component of M2 because, at least in part, they are an attractive alternative to holding transaction balances. RPs with maturity of more than one day also, of course, may serve the same purpose. RPs with a maturity longer than one day, however, are reported as term RPs and included in the non-M2 component of M3. An investor who accepts a two-day RP contract rather than a sequence of two one-day contracts may reduce the size of M2 without any economic

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[16]In fact, these deposits are recorded in New York while being legally booked through "nameplate" branches in the Caribbean (so called because the office largely consists of a brass nameplate).

[17]In addition, few statistics are available for coverage ratios, error rates, and so on.

significance. It seems likely that much of the predictable part of such switches, say due to holiday weekends, is captured in the seasonal adjustment factors. The balance remains as statistical noise.

Overall, weekly first-published values of M2 and M3 shown on the current H.6 release are based about 80 percent on data that are reported weekly, with the balance estimated from lesser frequency reports.[18]

MAJOR OPERATIONS BY BOARD STAFF THAT AFFECT THE MONETARY AGGREGATES

In addition to the principal sources of data, well-informed researchers should be aware of the more important revision practices and schedules used by Federal Reserve Board staff that affect the continuity of the data. Benchmarks, seasonal factor reestimation and definition changes may have significant impacts on the monetary aggregates and, correspondingly, on research employing that data.

Benchmark Revisions

All monetary aggregates data are subject to a "benchmark" revision annually. In its most general form, a benchmark of the monetary aggregates by Board staff would be (ideally) a measurement of the universe of money stock issuers and their holdings of monetary liabilities. A benchmark serves three main purposes. First, it allows Board staff to incorporate deposit data on institutions that are exempt from reporting directly to the Federal Reserve. These data are obtained either from bank and thrift call reports or from other annual reports filed by the institutions. Second, it allows the incorporation of corrected/revised data submitted by depository institutions throughout the year. Third, it allows staff to update estimates of some non-deposit components of the aggregates.

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[18]Detailed estimates of such coverage ratios are prepared about every three years and furnished to the Office of Management and Budget as part of the reauthorization process for the report. See Walton and others (1991).

Depository institutions generally submit revised deposit data throughout the year. Such data from weekly reporting institutions are incorporated into the monetary aggregates published on the H.6 release only during the first three weeks following the week in which the report was due, that is, the four most recent weeks shown on the H.6 release. Deposit data submitted after that time are held in abeyance and incorporated at the annual benchmark, along with data received from institutions that report only once per year. (Deposit data received from quarterly reporting institutions is incorporated when received during the year, as are nondeposit data received from many sources. See Table 2.) This three-step process begins with aggregation of all deposit data reported by financial institutions during the past six or seven years. Next, data are matched to call reports for all depository financial institutions to identify missing institutions (if any) and obtain deposit levels at the call dates for those institutions exempt from filing deposit reports with the Federal Reserve. Finally, miscellaneous data collected during the year regarding items not covered by deposit reports are incorporated.

Benchmarks constitute a clear break-in-series for monetary aggregates data, changing significantly not only past data but altering the base upon which new estimates will be published during the coming year. Since 1964, a benchmark of the monetary aggregates has been done at least annually. In recent years, Board staff have published the benchmark data prior to the February Humphrey-Hawkins testimony of the Federal Reserve Chairman before Congress. From 1974 through 1980, however, benchmark revisions of the monetary aggregates were conducted approximately every quarter. The increased frequency of benchmarks addressed a concern, raised by the Bach Commission, that the methods used at the time to estimate nonmember bank deposits could introduce a bias into the monetary aggregates. It was felt that more timely benchmarks would serve to keep the Federal Reserve's estimates more closely aligned with the true, unobserved figures. This was not a new concern, however, and in fact all benchmarks prior to the Monetary Control Act had focused heavily on nonmember bank deposits, since these institutions were not required to report to the Federal

Reserve.[19] The power to enforce near-universal reporting that was endowed on the Federal Reserve by the Monetary Control Act obviated the need for frequent benchmarks after 1980. Today, benchmarks focus on special items not covered on deposit reports.

The effects of these revisions on quarterly growth rates of the monetary aggregates are shown in the first page of Table 3. The columns of the table correspond to the annual benchmarks published in early 1986-1993. Each entry in the table is the change in the annualized growth rate of the corresponding monetary aggregate during that quarter due to revisions of the underlying source data. The largest revisions due to any benchmark occur in the most recently completed year, shown as the shaded areas in the table. Revisions for prior years, not shaded, are smaller. While not following a consistent pattern, the data suggest that any particular quarter may be revised significantly, especially for the broader aggregates. In part, the latter are related to the higher percentage of nondeposit components in those aggregates.

Seasonal Adjustment

Seasonal adjustment of the monetary aggregates has long been an important area of research. The FOMC formulates its monetary policy in terms of seasonally adjusted data, and both the public and policymakers often take recent movements in adjusted data as indicating the underlying trend growth rate of the monetary aggregates.

Seasonal adjustment methods attempt to separate recurring calendar-related patterns in data (due to, say, calendar dating, payroll schedules, tax filing deadlines, etc.) from random shocks and the underlying trend. In general terms, the data generating process for the monetary aggregates is

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[19]The quarterly deposit data reported on the call by nonmember banks also were not without problems. The definitions of "deposits" differ somewhat between the Fed's Regulation D and the call report instructions, making the data not fully comparable.

assumed to be well represented as the product of three components: a time-varying trend, a time-varying seasonal and an irregular.

Each year, Board staff publish revised seasonal factors for most historical periods and projected seasonal factors for the upcoming year. With few exceptions, these seasonal factors are based on, and published simultaneously with, the annual benchmark data.[20] Monthly seasonal factors are estimated by a variant of the Statistics Canada X11-ARIMA method.[21] In the first step of this method, the observed data are extended by the addition of one or two years of forecasts. The forecasts are obtained via an ARIMA model that includes exogenous intervention variables for each month and, in some cases, a small number of special events.[22] In recent years, intervention variables have been included for events such as the impact of the 1986 Tax Reform Act on the levels of liquid deposits in early 1987 and the dramatic surge in M1 that occurred during hurricane Gloria's sweep up the east coast of the United States in September 1985. Seasonal factors are then obtained by applying standard X11 algorithms to the lengthened series.

Weekly seasonal factors are estimated via a two-step process. In the first, initial estimates of weekly seasonal factors are obtained from an unobserved-components time-series model.[23] In the second, these initial estimates are modified via a quadratic programming model such that averages of a particular path of seasonally adjusted weekly data equal the previously estimated monthly seasonal

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[20]The very few exceptions where the seasonal review was completed and published after the benchmark are noted in Kavajecz (1994).

[21]See Farley and O'Brien (1987).

[22]See Box and Tiao (1975).

[23]The statistical model has been developed over a number of years; see Cleveland and Grupe (1983), Pierce, Grupe and Cleveland (1984), and Cleveland (1986). The model allows for a noninteger number of weeks during the year and other effects. Statistically, it seeks to estimate trend, seasonal and irregular components of a time series that is sampled at a frequency which differs from the fundamental frequencies of the data generating processes for its components.

pattern.[24] Projected weekly seasonal factors are obtained in a similar manner, subject to judgmental

adjustment by Board staff for events such as unusual calendar dating and holiday effects that are not

captured by the statistical models.

Like other aspects of the monetary aggregates, the methods used for seasonal adjustment have

evolved over time. From 1955 -- when the first seasonally adjusted numbers were published --

through 1981, seasonal adjustment was done using the classic Census X11 procedure.[25] In 1982, the

X11-ARIMA procedure proposed by Dagum was adopted to reduce well-known potential problems

due to the use of truncated moving-average filters near the ends of the sample.[26] Other features that

have been added to improve the estimation include trading day effects, payment schedules and holiday

dating.

Following recommendations of the Advisory Committee on Monetary Statistics, the Federal

Reserve publishes both seasonally adjusted and unadjusted data. The weekly H.6 release, for example,

currently includes adjusted data for 4 monetary aggregates and 25 components, and unadjusted data for

the 4 aggregates, 26 components and 11 related miscellaneous series. Most of the adjusted

components are furnished for ease of analysis, however, and are not used in construction of the

monetary aggregates. Seasonally adjusted M1 is constructed as the sum of four separately adjusted

components: currency, travelers checks, demand deposits and other checkable deposits. The non-M1

component of M2 and the non-M2 component of M3 are adjusted as a whole, with adjusted M2 equal

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[24]See the appendix to Farley and O'Brien (1987) for details of the algorithm.

[25]See Pierce and Cleveland (1981).

[26]While X11 uses two-sided moving average filters for most observations, the filters must be
truncated near the ends of the time series. This effect tends to increase the size of the revisions to the
most recent year's seasonal factors when they are reestimated the following year. Further, it also
tends to underestimate the degree of seasonality near the end of the sample. Extending the sample via
ARIMA model forecasts seems to attenuate both problems. See Dagum (1983).

to the sum of adjusted M1 and the non-M1 component of M2; M3 similarly is formed by summing M2 and the adjusted non-M2 component of M3.

Early each year, Board staff forecast seasonal adjustment factors for the monetary aggregates during the coming year. These projected factors are published on the H.6 release at the same time as the benchmark data, and are not revised during the year on the basis of incoming data.[27] Hence, published monetary growth rates throughout the year are based on ex ante fixed seasonal factors that incorporate no information received during the current year. Thus, it perhaps is not surprising that revised seasonal factors for the most recently completed year may differ significantly from those that were forecast a year earlier. Revisions to the monetary aggregates due to revisions to seasonal factors, shown on the second page of Table 2, often have exceeded those due to either revisions to underlying source data (shown on the first page of the table) or to changes in definitions (shown in the third page of the table).

Although the concept of seasonal movements in data may be fairly straightforward, there is no generally accepted statistical definition of seasonality. "True" seasonal factors are never observed nor measured, even with error. Thus, seasonally adjusted monetary aggregates necessarily retain a significant subjective component, even in the long run. Lindsey and others (1981) notes that the adjusted monetary aggregates have tended to become somewhat smoother through time as their seasonal adjustment factors have been subjected to successive annual revisions. Although he attributes this to increases in our knowledge about and precision in estimation of the seasonal adjustment factors, an alternative hypothesis is that the seasonal component is absorbing more of the irregular component, leaving an adjusted time series that more closely resembles its trend component.

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[27]Experimental estimates of concurrent seasonal factors, updated using incoming data, were published as an appendix to the H.6 for several years but never incorporated into any official monetary aggregate. The Board's committee of experts on seasonal adjustment had recommended exploration of concurrent factors; see Pierce and Cleveland (1981). A similar recent review at the Bank of England (1992) suggested that concurrent adjustment might reduce the size of subsequent revisions.

Changes In Definitions

Although financial innovation has been an important factor, the evolution of the Federal Reserve

Board staff's definitions of monetary aggregates primarily has been governed by economists' changing

empirical perceptions of the appropriate concept of money.[28] In the 1960s, economists' focus on the

medium of exchange function of money made M1 the principal aggregate. As empirical relationships

for M1 appeared to break down in the 1970s and attention turned once again to the role of liquid near-

moneys, some suggested that multiple monetary aggregates might collectively reveal more information

about the stance of monetary policy with respect to economic activity. The Federal Reserve responded

by creating the monetary aggregates M2 and M3 in 1971, and M4 and M5 in 1975.

Despite the increasing attention focused on near-moneys, the multiple definitions of the monetary

aggregates during the 1970s continued to reflect legislative distinctions between the asset and liability

powers of banks and thrifts. These distinctions faded after passage of the Monetary Control and Garn-

St. Germain Acts, permitting a new set of nested definitions such that M1 became a subset of M2, and

M2 a subset of M3.[29] By internalizing within M2 opportunity-cost-induced shifts of funds between

medium-of-exchange and liquid near-moneys for all intermediaries, this design enhanced the usefulness

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[28]Our view is that many of the theoretical arguments for the inclusion and/or exclusion of specific assets are ex post rationalizations of workable empirical definitions. The same argument is, of course, made by Friedman and Schwartz (1970).

[29]There are a few qualifications to this characterization. From 1980-1987, a portion of the vault cash and demand deposits held by thrifts had been included in M1 (but not in M2 and M3), while the balance was excluded (none of the vault cash and interbank deposits held by commercial banks were included in the aggregates). In 1988, the treatment of these items for thrifts was changed to be comparable to that for banks. Similarly, in constructing M3, a variety of netting items are deducted, such as large time deposits at commercial banks held by M2-type money market funds. In general, in moving from narrower to broader aggregates, any asset held by a money stock issuer (say, a money market fund) that was issued by another money stock issuer (say, a commercial bank) is netted out of the broader consolidated monetary aggregate.

of M2 as an intermediate policy target through better estimates of a (nominally) stable demand curve for M2.[30]

Since monetary aggregates data first appeared on the J.3 statistical release in 1960, the broad monetary aggregates (roughly corresponding to M1, M2, M3) have been redefined about a dozen times. Changes have ranged in magnitude from the massive redefinition in February 1980 to small additions and subtractions such as the inclusion of nonbank travelers checks in June 1981. Whenever a definition change is put in place, Board staff recompute all historical data for the monetary aggregates and components under the most recent definitions.[31] Available Federal Reserve publications, including *Money Stock Revisions*, show monetary aggregates data solely in terms of current definitions. For researchers studying Federal Reserve behavior, "knowing what money was" at a particular is complicated by changes in definitions as well as by the annual benchmark and seasonal review process.

Definitional changes perhaps are usefully summarized in three categories. First, there is the inclusion (or, less often, exclusion) of an existing money market instrument or depository liability.[32] A prominent example is the addition in 1980 of general purpose/broker dealer money market mutual funds (MMMFs) to the M2 aggregate.[33] While M2 was recomputed on a consistent basis for all prior

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[30]For discussion, see Simpson and Porter (1980).

[31]The 1980 redefinition, for example, required Board staff to "rebuild" M2 for years prior to 1980 with an expanded set of thrift deposit data. Some details are discussed in the appendix.

[32]The precise definition of M1 has changed several times due to changes in the treatment of demand deposits due to foreign commercial banks and official institutions. Included in M1 prior to 1980 (see Kavajecz, 1994), these deposits were excluded thereafter following recommendations of the Advisory Committee on Monetary Statistics. See Advisory Committee on Monetary Statistics (1976), p. 4, or Farr and others (1978). These changes also complicate building M1 based on current definitions for years prior to 1959; see Rasche (1987).

[33]Tax-exempt general purpose and broker/dealer MMMFs, excluded in 1980, were added in February 1983.

periods following the redefinition, conceptually this is a nontrivial change. During the 1970s, when

the first surge in money market fund growth occurred, the contemporaneous M2 aggregate excluded

money market funds; shifts by households into the funds were (in principal) embedded in the elasticity

of M2 with respect to its opportunity cost and reflected in shifts in the income velocity of M2.

Researchers using the redefined M2, however, see an aggregate that internalizes these shifts, has a

smaller interest elasticity and different velocity behavior. Of course, the importance of this change in

definition for analysis of Fed behavior is mitigated by the FOMC's emphasis on M1 during the period.

Other examples include the inclusion in M2 of retail RPs (which were basically uninsured small time

deposits exempt from Reg Q) in 1982, the exclusion of retirement accounts from the monetary

aggregates in 1983, and the addition of term Eurodollar deposits to M3 in 1984. While the last had

been discussed earlier, inclusion of the deposits had to await a reliable source of data.

The second type of definition change is the inclusion of a new money market instrument or

depository institution liability. In some cases, the new instrument or deposit may simply reflect the

removal of a prohibition against that type of deposit or of a ceiling on a deposit offering rate

(Regulation Q ceilings). To the extent that deregulation or the authorization of new instruments

permanently changes the behavior of depositories, its affect on the monetary aggregates is similar to a

change in definition. Examples include the authorization of NOW accounts nationwide in 1980, the

introduction of MMDA accounts in 1983, and the major discrete steps in the phaseout of Regulation Q

that occurred in 1982, 1983 and 1986.[34] In many cases, this *type* of deposit account was *already*

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[34]See Kavajecz (1994) for details. More obscure examples include certain assets sold by
depositories with recourse, BICs (bank investment contracts), and bank deposit notes (the latter
classified as a deposit under Federal Reserve Regulation D but not by the FDIC). Brokered deposits
provide another example. Although a bank or thrift might receive a deposit of a million dollars (or
more) from a broker, the amount of the deposit is included in M2 as small time deposits if the deposit
is placed entirely for the benefit of individuals. In this manner, the development of the brokered retail
CD market could potentially have affected the apparent interest elasticity of M2 by altering the
behavior of its small time deposit component.

included in the aggregates (both OCD and MMDA are types of savings deposits). The authorization of these new instruments, largely born of deposit interest rate controls, likely induced unusual transitory volatility in published data during the period when money may be shifting between components and may also have permanently changed the income and interest elasticities of the monetary aggregate.[35]

The third type of definition change is reclassification of the liabilities of different types of financial institutions. Prior to the 1980 redefinition, deposits at banks and thrift were included in separate monetary aggregates. Deposits at thrifts were included in M3 and M5 while comparable deposits at banks were included in M2 and M4. The 1980 redefinition restructured the monetary aggregates to combine similar types of deposits at commercial banks and thrifts. Although strongly motivated by the increasing similarity of the deposits offered by banks and thrifts during the 1970s, some economists counselled against the pooling of bank and thrift liabilities in the new aggregates. Their arguments were based largely on the joint product nature of depositories. To the extent that firms and households tend to purchase a bundle of services from a single institution rather than separate products from a number of institutions, there may be value to aggregation by institutional type rather than by product. In response, the Board adopted the recommendation that, to every extent feasible, data for banks and thrifts should be published separately so as to permit such analysis. This argument is similar to Friedman and Schwartz's position that financial assets may appropriately be aggregated if they are sufficiently close substitutes in *either* demand *or* supply.

Overall, annual revisions to the monetary aggregates due to revisions to source data, seasonal factors, and definitions render treacherous any attempt by a researcher to update or extend previous

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[35]There is no doubt this was the case in 1983, when the FOMC decided to rebase its target growth rate ranges for the year following the introduction of MMDAs. The implications of deregulation during the 1980s, including the demise of Reg Q, for money demand models are discussed by Moore, Porter, and Small (1990).

studies by mixing differing vintages of monetary aggregates data. One recent empirical study (Dewald, Thursby and Anderson) found in an extensive computer simulation experiment that empirical results may be highly sensitive to the mixing of different vintages of data, including data on the monetary aggregates. A complete chronology of revisions and redefinitions of the monetary aggregates is shown in Kavajecz (1994).

THE MONETARY AGGREGATES AS MONETARY TARGETS

We conclude our historical examination of the Federal Reserve's monetary aggregates with a summary of their use as monetary policy targets. The FOMC's target and monitoring ranges for the aggregates are shown in Table 4.[36]

Targeting of monetary aggregates began with House Concurrent Resolution 133 in 1975, later formalized in the Humphrey-Hawkins Act of 1978 as an amendment to the Federal Reserve Act. From 1975 through 1978, the committee rebased each quarter its annual four-quarter target range for the monetary aggregates. The resulting base drift in the committee's targets has been controversial.[37] Since 1978, the committee has set one fourth-quarter-to-fourth-quarter range each year except 1983. Authorization of MMDA accounts in late 1982 led to a surge in M2 growth as aggressive bidding by depositories against money market funds apparently drew nonmonetary balances into M2. (Recall that taxable general-purpose and broker-dealer MMMFs had been included in M2 in 1980 and that MMDA accounts, a type of savings deposit, were always included in M2. M2 was redefined slightly in

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[36]Target and monitoring ranges differ in terms of the strength of the implied policy reaction function. In general, deviation of an aggregate from a target range suggests a somewhat stronger policy response than deviation from a monitoring range, ceteris paribus.

[37]For contrasting views, see for example Axilrod (1982), Broaddus and Goodfriend (1984) and Walsh (1986).

February 1983 to include tax-exempt general purpose and broker dealer money market funds.) The committee subsequently reset its 1983 target ranges using a February-March base.

While relatively narrow through the early 1980s, target ranges widened during the 1980s as an accelerating pace of innovation in financial markets apparently complicated money demand forecasting and money stock control. The range for M1 was widened to 4 percentage points in 1983 and to 5 points in 1985. Citing uncertainty regarding the demand for M1 and its relationship to economic activity, the committee did not set a target range for M1 in 1987 or beyond.[38]

The target range for M2 similarly was widened over this interval, although it has remained at its current width of 4 percentage points since 1988. In part, the widening of the range in 1988 reflects the increased difficulty of forecasting the demand for M2 during an era of turmoil in financial markets, including the restructuring of the thrift industry, capital and earnings difficulties at commercial banks, and a restructuring (deleveraging) of household and firm balance sheets.

The monetary aggregates during most years have grown within their target ranges, as shown in Figures 1 and 2. Growth often has run well toward the upper or lower bounds of the cones, however, suggesting that the midpoint of the committee's target range may not always be the best forecast of the aggregate's growth.

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[38]"Monetary Policy Report to the Congress," *Federal Reserve Bulletin*, April 1987.

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Appendix

Building Historical Monetary Aggregates 1959-1980

The 1980 redefinition of the monetary aggregates confronted Board staff with the daunting task of building comparable historical data. In some cases, large amounts of additional data needed to be collected. In others, various estimates and approximations had to be made since required historical data had not been collected in the needed detail, at the desired frequency, or on the basis of consistent definitions. Although the data sources available as of 1977 have been described elsewhere, little has been written about the earlier data.[39] This appendix, based on published and unpublished material, summarizes available information about the data sources and methods used to construct monetary aggregates for years prior to 1980.

Monetary aggregates are built by consolidation of data, not addition. Consolidation requires not only data on the types and amounts of outstanding liabilities of financial intermediaries but also data on the ownership of such liabilities by other money-stock-issuing institutions, the latter being netted from the aggregate during consolidation. So far as possible, the discussion below reviews available data on both items.

DEPOSITS INCLUDED IN M1

Most commercial bank deposit items were available at least twice a year from call reports. Demand deposits had been reported by member banks since well before 1959. Call report data were

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[39]Beck (1978) describes data available in 1977 and refers to unpublished memoranda for earlier sources and methods. Our discussion here draws from unpublished Federal Reserve Board memoranda by Neva VanPeski and Darwin Beck and from Van Peski (1979). We thank them for helpful comments while absolving them of responsibility for remaining errors or omissions.

available quarterly from all banks beginning in 1961, when quarterly call reports became required by law.

Daily data on OCD accounts were available for member banks. End-of-month data beginning in September 1972 for other New England financial institutions were obtained from the Federal Reserve Bank of Boston.

Mutual savings banks (MSB) issued two types of demand deposits. One was used for regular third-party payments, that is, was checkable. The other consisted mainly of escrow balances, not used for regular payments. Only the first is included in the monetary aggregates. Separation of the two types of deposits prior to 1980 was based on month-end data collected by the FDIC during an 18-month survey conducted from July 1975 to December 1976. The survey data themselves were included in M1 for the 18 months they were available. Before and after this period, data on total demand deposits reported on semi-annual or quarterly call reports were multiplied by the average ratio of checkable to total demand deposits during the survey period. Monthly data were obtained by interpolation.

Share draft balances at federal credit unions were obtained from the National Credit Union Administration as of month-end for May-September 1976. Thereafter, only end-of-quarter data were available. No data were available on share drafts at state credit unions. For total credit union savings deposits, as of July 1977, federal credit unions held 55 percent of savings deposits; their share of share draft accounts is unknown.

Under the 1980 definition of the monetary aggregates, demand deposits at commercial banks due to thrifts, foreign banks and foreign official institutions are subtracted from total demand deposits in building M1 (see Table 2). Demand deposits at U.S. commercial banks due to foreign commercial banks and official institutions were available weekly (on Wednesday) for weekly reporting banks since

May 1961, and quarterly or twice a year from call reports for all banks since (at least) 1959.[40] M1-type deposits at foreign related institutions were available as of the last Wednesday of the month since November 1972 (beginning in 1977, Edge Acts reported only quarterly, but other institutions continue to report monthly). For earlier years, estimates were based on data taken from the Annual Report of the Superintendent of Banks in New York and for Edge Act corporations from call reports submitted twice a year to the Federal Reserve Bank of New York.

Deposits due to thrifts were handled in various ways. For mutual savings banks, demand deposits at weekly reporting (commercial) banks (FR2416 reporters) due to mutual savings banks were available for each Wednesday since May 1961. Quarterly or semi-annual data for all commercial banks also were available on call reports since before 1959. These deposits were netted out of M1. For credit unions, demand deposits at all commercial banks due to credit unions were estimated to equal 0.03 percent of total year-end credit union assets for each year through 1974. After 1974, they were taken to equal the "cash" item in the annual reports of the National Credit Union Administration. (No adjustment was made for credit union vault cash, also included in this item.) For savings and loan associations (S&L), demand deposits at commercial banks before 1973 were assumed to be a constant fraction of the item "Cash on hand and in banks" reported annually in condition statements issued by the Federal Home Loan Bank Board; we do not know the value of the fraction used. Beginning September 1973, semi-annual call reports are available in March and September from the Federal Home Loan Bank Board.

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[40]The report form filed by weekly reporting banks had been revised in 1961 and 1966 to improve coverage of these items; see the introduction to chapter 4 in *Banking and Monetary Statistics 1941-1970*. Ironically, these data were originally collected from weekly reporting banks so that they could be added back into the monetary aggregates after being removed during earlier adjustments. Following the 1980 redefinitions, these reported data were used to remove the same items from the new aggregates.

DEPOSITS INCLUDED IN THE NON-M1 COMPONENT OF M2

Savings Deposits

The savings deposit component of M2 includes deposits at commercial banks, mutual savings banks, savings and loan associations, and credit unions. As usual, construction of monetary aggregates requires both gross deposit amounts and, as a netting item, the amounts of deposits held by other money stock issuers. Monthly savings deposit data generally were available beginning in 1968. For prior years, savings deposits often were estimated as a constant share of total deposits, the share itself being estimated from data available circa 1968. The following paragraphs discuss estimates for each type of depositary.

For commercial banks from June 1961 through June 1966, total savings deposits were taken from semi-annual and quarterly call reports; monthly values were obtained by interpolation. For July 1966 through January 1968, savings deposits at member banks were estimated from monthly summary reports submitted by the Federal Reserve Banks (FR422). Beginning January 1968, member banks reported daily savings deposits each week. Monthly nonmember bank data were obtained by interpolation of quarterly call reports.[41] The number of data items required as netting items in consolidation is small since commercial banks were not permitted to offer savings accounts to profit-making businesses (including other depositories) prior to November 1975. Thereafter, data regarding savings deposits due to domestic and foreign banks and foreign official institutions were available on Wednesdays for weekly reporting banks and for all banks on quarterly call reports since March 1976. (Note that this corresponds to current practices shown in Table 2.)

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[41]The discussion in this appendix is somewhat more precise than what we have been able to document. From July 1966 through January 1968, for example, Board staff wrote that "nonmember bank data were estimated using ratios generated from call report data...," but they do not say precisely how this was done or which ratios were used. The staff memos do note that nonmember bank data continued to be taken from call reports after January 1968, and that monthly values were obtained by interpolation of quarterly call report data.

We have been unable to clarify precisely which data were used from 1959-1967 for mutual

savings banks. From 1959-1967, total deposits were available on a month-end basis from the National

Association of Mutual Savings Banks (NAMSB), but no separate savings deposit series was available.

For 1968-1971, savings deposits were estimated using total deposit data and a deposit breakdown

collected in a quarterly survey by the FDIC.[42] Beginning in December 1971, month-end savings

deposits were published by the NAMSB. Month-average data (to correspond to averages of daily data,

so far as possible) were constructed by averaging month-end data.

Two netting items were needed for MSBs: savings deposits at MSBs due to the U.S. Treasury,

and savings deposits held by MSBs at commercial banks. Both series were available on call reports

beginning in March 1976. Different approximations were used to generate data for prior dates. U.S.

Treasury deposits were in fact zero for all months prior to November 1974, the first month MSBs

were permitted to offer interest-bearing savings deposits to governments. Government deposits were

assumed to be $1 million in November 1974 and all intermediate months were obtained by linear

interpolation. Similarly, savings accounts held by MSBs at commercial banks were assumed to be $1

million in November 1975 and intermediate months through March 1976 were obtained by

interpolation.

For savings and loan associations, total deposits for all operating S&Ls from 1959-June 1968 were

obtained from the Federal Savings and Loan Insurance Corporation.[43] Beginning July 1968, month-

end savings deposits at all federally-insured S&Ls became available from the FSLIC. For the earlier

period (1959-June 1968), savings deposits were assumed to equal total deposits multiplied by the July

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[42]Unfortunately, we have been unable to locate a description of the estimation procedure.

[43]Conversations with former Federal Home Loan Bank Board staff during the course of this research suggest that these data never, in fact, covered all operating S&Ls. Some data for non-FSLIC institutions were apparently estimated rather than obtained directly. Other sources report that federally insured S&Ls likely held as much as 95 percent or more of total S&L deposits. Recall that state-insured thrifts in Massachusetts and New York were chartered as mutual savings banks.

1968 ratio of savings to total deposits. Month-average data were obtained by averaging month-end data.

Savings deposits held by savings and loans at other depositories, netted out in consolidating M2, were available semi-annually beginning September 1973 from the "March-September Reporting System" release published by the Federal Home Loan Bank Board (essentially a semi-annual call report). Values for prior months were obtained by linear interpolation between an assumed zero in December 1967 and the September 1973 value of $19 million.

Credit union shares were obtained on a month-end basis from NCUA.[44] Month-average data are constructed by averaging month-end data. Deposits of credit unions at other credit unions, netted out in consolidation, are available annually for federal credit unions from the year-end report of the NCUA beginning in December 1968; values for prior years are assumed to be zero.[45] Similar data for state credit unions were estimated by multiplying total assets at state-chartered credit unions by the ratio of such inter-credit-union shares to total assets at federal credit unions.

Small Time Deposits

The small time deposit component of M2 includes bank and thrift deposits under $100,000 with an original maturity of seven days or more. U.S. Treasury deposits and deposits of thrifts with commercial banks and other thrifts are netted out in consolidation.

For commercial banks, small time deposits were computed as a residual by subtracting two series, savings deposits and time deposits of more than $100,000, from reported data on total time and

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[44]It isn't clear whether these data covered all credit unions or only federally insured institutions. Our guess is the latter. If so, other credit union deposits would be excluded from the aggregates, perhaps one-half of total credit union deposits.

[45]Smaller credit unions often hold, as a significant part of their assets, shares in large "corporate central" credit unions. Although the latter have some retail business, they primarily act as an investor of excess funds deposited with them by other credit unions.

savings deposits. Total time and savings deposits at member banks had been reported weekly since 1959. Small time deposits at nonmember banks were estimated by multiplying small time deposits at small member banks by the ratio of small time deposits at nonmember banks to small time deposits at small member banks on call report dates.[46]

Time deposits due to the U.S. Treasury and due to mutual savings banks were netted from the non-M1 component of M2 in consolidation. For weekly reporting member banks, these data were available on Wednesday since 1959 and 1961, respectively (however, see *Banking and Monetary Statistics 1941-1970*, chapter 4, for a discussion of changes in items reported). For other banks, semi-annual and quarterly call report data were available since before 1959.

For mutual savings banks, month-end time deposits beginning in December 1971 were obtained from NAMSB. For prior periods, time deposits were estimated by Board staff from data on total deposits at MSBs (available at least from 1959) and from time deposit data collected on quarterly FDIC surveys (available at least since 1966). We have no description of what was done for 1959-65, but it is likely that the 1966 ratio of time deposits to total deposits was simply maintained over this period. (Precisely what was done may be of little importance, since time deposits at MSBs were only 1 percent of total deposits in 1966.)

Time deposits of savings and loans at banks are netted from M2 in consolidation. Beginning in September 1973, time deposits of S&Ls at commercial banks were taken from the semi-annual FHLBB "March-September Reporting system" publication. For all dates prior to September 1973, it was assumed that S&Ls kept the same proportion of their cash assets in bank time deposits as they had in September 1973. In other words, S&L time deposits at banks from 1959-1972 were assumed to be a constant fraction of the amount of "cash on hand and in banks" reported by S&Ls in annual

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[46]As in some other cases, this is a somewhat more specific statement of what we believe was done than we have, in fact, been able to locate.

condition statements to the FHLBB. The value of that fraction was the ratio of bank time deposits to cash assets shown in the first report in the March-September reporting system (September 1973).

Time deposits of credit unions at banks and S&Ls also are netted from M2. Deposits of credit unions at S&Ls (assumed to be time deposits) were reported at year-end by federal credit unions, and were available from the NCUA Annual Report since before 1959. The ratio of these assets to total assets was used to estimate these items for state chartered credit unions. Annual reports issued by the NCUA and its predecessor were available since before 1959. Time deposits of credit unions at commercial banks were estimated at year-end; until 1974 they were treated as a residual, the difference between "cash" reported in the annual reports and estimated demand deposits. After 1974, the cash item excluded time deposits, which were then estimated by applying the ratio of time deposits to total assets in 1974 to total assets in later years. Year-end cash figures were available since before 1959 for federal credit unions, and since December 1964 for state-chartered credit unions from the annual reports.

Large Time Deposits in M3

The large time deposit component of the monetary aggregate M3 consists of time deposits over $100,000 at all depositories less domestic interbank time deposits and time deposits due to other depositories, foreign commercial banks and foreign governments. The distinction between large and small time deposits essentially begins in 1961. Construction of large time deposit data beginning in 1961 is discussed by both Friedman and Schwartz (1970) and Beck (1978).

Table 2

Information About the Definition, Availability, and Source Data for the Monetary Aggregates

This table provides information on the construction of the monetary aggregates M1, M2, M3 and L as of October 1993. Readers are cautioned that some definitions and data sources may differ in earlier periods. Each aggregate reflects the amounts of the designated assets held by the nonbank public, which includes households, businesses and government entities other than the U.S Treasury. Assets issued in the U.S. are included whether held by foreign or domestic residents. Certain dollar-denominated assets issued abroad and held by U.S. residents also are included.The aggregates are constructed by consolidation rather than aggregation, such that the liabilities of one money stock issuer that are held by another issuer within the same aggregate cancel. For example, the amount of large time deposits held by money market mutual funds is subtracted from gross large time deposits in building M3, because these deposits are both a liability of one money stock issuer (banks) and an asset of another (money market mutual funds).

Monetary aggregates published by the staff of the Board of Governors as of October 1993 were:

M1 = currency + checkable deposits
M2 = M1 + certain nontransactions deposits and other liquid assets
M3 = M2 + certain assets that are either less liquid and/or issued in large denominations
L = M3 + certain money market instruments

Federal Reserve System reports are referred to below by the prefix FR and reports of the Interagency Federal Financial Institutions Examination Council by the prefix FFIEC. Call reports are administered by the FFIEC, a joint agency including the Federal Reserve, FDIC, the Treasury Department and the National Credit Union Administration. Complete report titles and reporting frequency are shown only the first time a report is cited; references thereafter are abbreviated.

Money Stock Component	Definition	NSA published data begin monthly	weekly	Source of Information
M1 =		1/59	1/6/75	Federal Reserve Board staff have judged that adequate data are not available before these dates to construct monetary aggregates based on current definitions.
(+) Money stock currency =	Currency held by the nonbank public (in other words, held outside the U.S. Treasury, Federal Reserve Banks and the vaults of depository institutions).	1/59	1/6/75	
(+) Currency in circulation	Currency held outside the U.S. Treasury and Federal Reserve Banks.			Federal Reserve Statement of Condition (internal Fed balance sheet) (FR34), daily; Treasury and Mint Reports on currency and coin in circulation.
(-) Vault cash	Cash held by depository institutions (including cash in automatic teller machines).			Report of Transaction Accounts, Other Deposits and Vault Cash (FR2900), from weekly and quarterly reporters; Quarterly Report of Selected Deposits, Vault Cash and Reservable Liabilities (FR2910Q); Annual Report of Total Deposits and Reservable Liabilities, (FR2910A; Consolidated Reports of Condition and Income (call reports) (FFIEC 031, 032, 033, 034), quarterly, last business day of the quarter. The FR2900 is the core report for the monetary aggregates. More than 9000 financial institutions file the FR2900 report weekly following their Monday close of business, each report containing daily deposit data for the preceeding week. Some smaller institutions file the FR2900 report only for one week each quarter. See the text for discussion.

Item	Description			Source
(+) Travelers checks	Outstanding amount of U.S. dollar-denominated travelers checks issued by nonbanks (checks issued by banks are included in demand deposits).	1/59	1/6/75	Monthly Report of Travelers Checks Outstanding (FR2054), last business day of the month; weekly data are interpolated from seasonally adjusted monthly data.
(+) Demand deposits adjusted =	Demand deposits at all depository institutions in the U.S. other than those due to other depositories (including money market mutual funds), the U.S. Government, and foreign banks and official institutions, less cash items in the process of collection (CIPC) and Federal Reserve float.	1/59	1/6/75	
(+) Gross demand deposits	Deposit liabilities of banks payable on demand; time deposits with original maturity of less than seven days; travelers checks and money orders that are the primary obligation of the issuing depository institution.			FR2900; FR2910Q/A; call reports.
(-) Demand deposits due to depository institutions, foreign banks and official institutions, and the U.S. Treasury				Weekly Report of Assets and Liabilities for Large Banks (FR2416), includes about 160 large banks, weekly, close of business Wednesday; call reports for other depositories, quarterly, last business day of quarter.
(+) Other money orders	Money orders and official checks issued by nonbank subsidiaries of bank holding companies.			Weekly Report of Money Orders and Similar Payments Instruments Issued by Nonbank Subsidiaries of Bank Holding Companies (FR2053), close of business Monday.
(-) Cash items in process of collection	Third-party payment instruments (checks) redeemable in immediately available funds if presented today.			same as gross demand deposits; all checks being collected are deducted from demand deposits regardless of the type of account wherein the deposit was made.
(-) Float on the Federal Reserve				FR34.
(+) Other checkable deposits	NOW and ATS accounts at commercial banks, U.S. branches and agencies of foreign banks, and Edge Act corporations; NOW and ATS accounts at thrifts; credit union share draft balances; and demand deposits at thrifts.	1/63	1/6/75	FR2900; FR2910Q/A; call reports, quarterly.

Table 2 (con't)

Money stock component	Definition	NSA published data begin monthly	weekly	Source of information
Non-M1 component of M2 =		1/59	1/5/81	Adequate weekly thrift data are not available before 1981; see appendix 1 for discussion of monthly thrift data for 1959-80.
(+) Savings deposits, net =	Passbook and statement savings deposits plus money market deposit accounts (MMDA) other than those due to general-purpose and broker/dealer money market funds, foreign banks and official institutions and the U.S. government. MMDAs are a special type of savings account that permits a small number of third-party payments per month.	1/59 12/82* (*MMDAs)	11/3/80 12/20/82*	MMDA accounts were first authorized in December 1982; separate savings and MMDA data were collected until Sept. 1991; thereafter, only a single combined series has been collected.
(+) savings and MMDA deposits at banks and thrifts	Deposit or account where the depositor is not currently, but may be at any time, required by the financial institution to give written notice of intent not less than seven days prior to withdrawal.			FR 2900; FR2910Q/A; call reports
(-) savings and MMDA deposits due to foreign banks, foreign official institutions, and the U.S. Treasury				FR2416; call reports
(+) Adjusted small time deposits =	Deposits, including retail repurchase agreements (RPs), issued in amounts of less than $100,000 with original maturities of seven days or more, less all IRA/Keogh retirement account balances at banks and thrifts.	1/59	11/3/80	
(+) gross small time deposits				FR2900; FR2910Q/A; call reports
(+) retail repurchase agreements at commercial banks and mutual savings banks (MSB)	Retail RPs are issued in small denominations most often to households and small business.			Monthly Survey of Selected Deposits (FR2042), last Wednesday of the month
(+) retail repurchase agreements at savings and loan associations				Office of Thrift Supervision, quarterly thrift balance sheet
(-) IRA/Keogh balances at commercial banks and MSB				FR2042
(-) IRA/Keogh balances at savings and loan associations				Office of Thrift Supervision, quarterly thrift balance sheet

Table 2 (con't)

Money stock component	Definition	NSA published data begin monthly	weekly	Source of information
Non-M1 component of M2 = (continued)				
(+) Share balances in general-purpose and broker/dealer money market mutual funds	Money market mutual funds are certain types of investment companies that agree to abide by the SEC's Rule 2a-7 and a variety of other regulations regarding the types and maturities of allowable assets. Shares in these funds may be held by households, business and various institutions	1/74	2/4/80	The Investment Company Institute (ICI) voluntarily collects information for the Federal Reserve. Weekly and monthly reports cover both the funds' liabilities (shares) and assets. The amounts of individual assets held by MMMFs are important because most assets -- including RPs, Eurodollars, large time deposits and Treasury bills -- are netted from the monetary aggregates during the consolidation of M2, M3 or L. Data are labelled by Federal Reserve staff as the Weekly [Monthly] Report of Assets of Money Market Mutual Funds (FR2051a [FR2051b]); Weekly Report of Assets for Selected Money Market Mutual Funds (FR2051c); or the Weekly Report of Overnight Eurodollars for Selected Money Market Mutual Funds (FR2051d). The ICI data are as of close of business on Wednesday. The Wednesday level is included in the aggregate for the week ending the following Monday. For example, M2 and M3 for the week of January 10, 1994, contained data on MMMF shares as of Wednesday, January 5.
(+) Overnight repurchase agreements (RPs), net =	One-day and continuing-contract RPs issued by all depository institutions to other than depository institutions, money market mutual funds, and foreign official institutions	11/69	1/6/75	
(+) gross overnight RPs	RPs as of close of business, one day each week			Report of Selected Borrowings (FR2415), for commercial banks, weekly, close-of-business Monday; Weekly Report of Repurchase Agreements on U.S. Government and Federal Agency Securities with Specififed Holders (FR2415t), for thrifts, close of business Monday
(-) overnight RPs held by MMMFs				FR2051a, c
(+) Overnight Eurodollars, net =	Eurodollar deposits with original maturity of one day issued by foreign branches of U.S. banks worldwide to U.S. nonbanks (U.S. addresses other than depository institutions and MMMFs)	2/77	12/31/79	
(+) gross overnight Eurodollars				Report of Selected Deposits in Foreign Branches held by U.S. Addresses (FR2050), weekly reporting of daily data, close of business Monday; Monthly [Quarterly] Report on Foreign Branch Assets and Liabilities [FR2502, (FR2502s)], last business day of the period
(-) overnight Eurodollars held by MMMFs				FR2051a, c

Table 2 (con't)

Money stock component	Definition	NSA published data begin monthly	NSA published data begin weekly	Source of information
Non-M2 component of M3 =		1/59	1/5/81	
(+) Large time deposits, net =	Deposits issued by banks and thrifts in amounts of $100,000 or more with initial maturities of seven days or more, other than those held by MMMFs, other depository institutions, and foreign banks and official institutions.	1/59	11/3/80	
(+) gross large time deposits				FR2900; FR2910Q/A; call reports
(-) large time deposits due to foreign banks and official institutions, and the U.S. Treasury				FR2416; call reports, quarterly
(-) large time deposits held by MMMFs				FR2051a, c
(-) mortgage-backed bonds at savings and loan associations	Mortgage-backed bonds are reported as a reservable liability on the FR2900. They are not deposits, however, and, hence, are subtracted from the monetary aggregates.			Office of Thrift Supervision, Statement of Condition (call report), quarterly
(+) Term repurchase agreements, net =		10/69	1/6/75	
(+) gross term RPs	RPs issued by all depositories with original maturities greater than one day, other than continuing contract and retail RPs and RPs issued to other depositories and foreign banks and official institutions.			FR2415
(-) term RPs held by MMMFs				FR2051a, c
(+) Term Eurodollars, net =		1/59	12/31/79	
(+) gross term Eurodollars	Eurodollar deposits due to U.S. nonbank addresses with maturity longer than one day at all foreign branches of U.S. banks and at offices of non-U.S. banks in the U.K. and Canada			FR2050; FR2502; data furnished by the Bank of England and Bank of Canada
(-) term Eurodollars held by MMMFs				FR2051a, c
(+) Shares in institution-only MMMF, net =		4/74	2/4/80	

(+) shares in I-O MMMFs, gross	MMMFs that under SEC guidelines require large minimum investments (typically $50,000+) and sell shares only to sophisticated investors and institutions, thereby gaining exemption from certain SEC accounting rules. These shares may be held by households, businesses or institutions.	FR2051a, c
(-) overnight RPs and Eurodollars held by I-O MMMFs	Note that term RPs and Eurodollars held by MMMF were netted above.	FR2415 for banks, FR2415t for thrifts

Table 3

Page 1: Revisions to previously published quarterly growth rates of the monetary aggregates (s.a.) due to benchmark data revisions

↓ ---- Year of annual benchmark (usually published in February; see Kavajecz (1994) — ↓

Quarters	1986 M1	M2	M3	1987 M1	M2	M3	1988 M1	M2	M3	1989 M1	M2	M3	1990 M1	M2	M3	1991 M1	M2	M3	1992 M1	M2	M3	1993 M1	M2	M3
1984 Q4	0.4	0.6	-0.2	0.4	0.5		-0.6	-1.2		0.1	-0.0		-0.1	0.2		0.0	-0.1		0.0	0.0		0.1	0.1	
1985 Q1	0.1	0.4	-1.0	-0.2	-0.3		-0.4	-0.1		0.0	0.0		0.0	0.0		0.0	-0.1		-0.0	-0.0		-0.0	0.0	
Q2	0.1	0.3	-0.3	0.2	0.0		-0.1	0.2		0.0	0.0		0.1	-0.1		-0.1	-0.2		0.0	-0.0		-0.0	0.1	
Q3	0.1	0.0	0.0	0.1	0.2		-0.0	0.2		0.1	0.1		-0.1	-0.1		0.0	-0.2		0.0	0.0		0.0	0.1	
Q4	0.6	-0.1	0.6	0.5	0.8	0.5	0.2	-0.1		-0.1	-0.1		0.0	0.0		-0.1	-0.1		0.0	0.0		0.0	0.0	
1986 Q1				0.1	0.0	0.0	0.1	0.7		0.0	-0.5		-0.0	-0.0		0.0	-0.1		-0.0	0.0		0.0	0.1	
Q2				-0.1	-0.7	-0.4	0.5	0.6		0.1	0.1		-0.0	0.0		0.0	-0.1		-0.0	-0.0		-0.0	0.0	
Q3				-0.1	-0.2	-0.1	0.4	0.5		-0.1	-0.0		-0.0	0.0		0.0	-0.0		-0.0	-0.1		-0.0	0.0	
Q4				-0.1	-0.1	0.1	0.1	-0.1	0.5	0.0	-0.1		-0.0	0.1		0.0	0.0		0.0	0.0		0.0	0.1	
1987 Q1							-0.1	-0.2	-0.4	0.3	0.1		-0.0	-0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Q2							0.4	0.1	0.3	-0.2	-0.0		-0.0	0.1		0.0	0.0		0.0	0.0		-0.0	-0.0	
Q3							0.0	0.0	0.0	0.1	0.3		-0.0	0.3		0.0	-0.0		0.0	0.0		-0.1	-0.1	
Q4							0.2	0.0	0.1	0.1	0.3	0.2	-0.0	0.1		0.0	-0.0		0.0	0.1		0.1	0.1	
1988 Q1										0.0	0.1	0.1	0.1	-0.1		0.0	0.0		-0.0	0.0		-0.0	0.1	
Q2										0.2	0.2	0.0	-0.1	0.0		0.0	-0.0		-0.0	-0.0		-0.0	-0.0	
Q3										0.2	0.3	0.3	-0.0	-0.3		0.0	0.1		0.0	0.1		-0.0	0.1	
Q4										0.0	-0.1	-0.1	0.0	0.3	0.4	0.0	0.0		-0.0	0.0		0.0	0.0	
1989 Q1													0.3	0.1	0.0	0.0	0.2		0.0	0.0		-0.0	-0.1	
Q2													-0.1	0.0	0.1	-0.1	0.1		-0.0	0.1		0.0	0.0	
Q3													0.1	0.3	0.1	0.1	0.1		0.0	0.1		-0.0	-0.1	
Q4													0.1	0.3	0.0	-0.1	-0.1	0.4	0.0	0.1		0.0	-0.1	
1990 Q1																0.3	0.0	0.1	-0.1	-0.0		-0.0	-0.1	
Q2																0.3	0.4	0.4	-0.1	0.1		0.0	-0.1	
Q3																0.0	0.2	0.2	0.1	0.3		-0.1	0.1	
Q4																0.0	0.1	0.0	0.2	0.1	0.0	0.0	0.0	
1991 Q1																			-0.1	0.1	0.1	0.2	0.1	
Q2																			0.2	0.0	0.2	-0.1	-0.2	
Q3																			0.1	0.5	0.2	-0.1	-0.1	
Q4																			-0.1	0.7	0.2	-0.2	-0.1	-0.1
1992 Q1																						0.2	0.4	0.0
Q2																						0.2	0.1	0.7
Q3																						0.1	0.2	0.3
Q4																						0.0	0.1	0.2

Note: These revisions do not include effects due to revisions in seasonal adjustment factors and/or changes in definitions.
Source: Data shown in shaded areas are taken from the issues of the Federal Reserve Board's H.6 statistical releases published after the
         annual benchmark. See Kavajecz (1994) for exact dates. Other data shown are the authors' calculations from annual issues
         of Money Stock Revisions.

Table 3 (con't)
Page 2: Revisions to previously published quarterly growth rates of the monetary aggregates (s.a.) due to revisions to seasonal adjustment factors

↓ Year of annual seasonal adjustment review (usually published in February along with benchmark data revisions) ↓

Quarters	1986			1987			1988			1989			1990			1991			1992			1993		
	M1	M2	M3	M1	M2	M3	M1	M2	M3	M1	M2	M3	M1	M2	M3	M1	M2	M3	M1	M2	M3	M1	M2	M3
1984 Q4	0.9	0.0	-0.3	-0.6	-0.3		0.1	0.0		0.0	0.2		0.7	0.1		-0.1	-0.1		-0.1	0.0		0.1	-0.1	
1985 Q1	-0.6	0.0	0.4	0.8	0.6		0.0	0.1		0.0	-0.1		-0.2	0.0		0.0	0.1		-0.3	0.0		0.3	0.0	
Q2	0.2	0.7	0.6	-0.3	-0.3		-0.1	0.2		0.0	-0.3		0.0	0.1		0.1	0.1		0.1	0.0		-0.2	0.0	
Q3	-0.6	-0.7	0.6	-0.4	-0.2		0.1	-0.3		0.0	0.2		-0.2	-0.1		-0.0	-0.1		0.2	0.0		-0.2	0.0	
Q4	1.1	0.1	-0.4	-0.3	-0.3	0.0	-0.1	-0.1		0.3	0.4		0.1	-0.1		-0.1	-0.1		0.0	0.0		0.1	0.0	
1986 Q1				1.0	1.0	0.1	0.1	0.2		-0.3	-0.3		-0.2	0.0		0.0	0.0		-0.3	-0.1		0.2	0.0	
Q2				-0.2	-0.4	0.1	-0.4	0.2		0.0	-0.4		0.4	0.3		0.1	0.2		0.0	0.0		-0.1	0.0	
Q3				0.7	-0.3	-0.4	0.4	-0.3		-0.1	0.3		-0.0	-0.1		-0.0	-0.1		0.2	0.0		-0.1	0.0	
Q4				-0.1	-0.2	0.1	0.1	-0.2	-0.2	0.6	0.6		-0.5	-0.3		-0.2	-0.0		0.1	0.0		0.1	0.0	
1987 Q1							0.1	0.3	0.4	-0.5	-0.4		-0.1	0.2		0.0	-0.1		-0.2	0.0		0.1	0.0	
Q2							-0.6	0.2	0.1	0.0	-0.5		0.7	0.4		0.3	0.2		-0.1	0.0		-0.1	0.0	
Q3							0.6	-0.2	-0.3	-0.3	0.3		0.1	-0.2		-0.2	-0.2		0.2	0.1		-0.1	0.0	
Q4							-0.2	-0.2	-0.2	1.0	0.7	0.7	-0.9	-0.5		-0.1	0.0		0.1	0.0		0.1	0.0	
1988 Q1										0.6	0.7	-0.3	-0.1	0.3		-0.0	-0.1		-0.2	-0.1		0.0	0.0	
Q2										0.1	0.6	0.5	1.1	0.5		0.4	0.3		-0.2	-0.1		0.0	0.0	
Q3										0.2	0.5	0.1	0.1	-0.3		-0.3	-0.2		0.4	0.2		-0.1	0.1	
Q4										1.1	0.9	0.6	-1.3	-0.6	-0.6	-0.1	0.0		0.1	0.0		0.1	0.0	
1989 Q1													0.0	0.4	0.2	0.0	-0.1		-0.3	-0.1		-0.2	-0.1	
Q2													1.3	0.5	0.5	0.4	0.4		-0.3	-0.2		0.0	0.0	
Q3													0.2	-0.1	-0.1	-0.4	-0.3		0.5	0.3		0.1	0.2	
Q4													1.0	0.8	0.6	-0.0	0.0	0.5	0.0	0.0		0.0	0.0	
1990 Q1																0.1	-0.2	-0.1	-0.4	0.0		-0.4	-0.3	
Q2																0.4	0.5	0.1	-0.3	-0.4		0.1	0.1	
Q3																-0.4	-0.3	-0.3	0.6	0.4		0.7	0.4	
Q4																-0.1	0.0	0.6	0.2	0.0	0.2	-0.3	-0.1	
1991 Q1																			0.6	0.0	0.6	-0.8	-0.4	
Q2																			-0.2	-0.4	-0.2	0.3	0.1	
Q3																			0.6	0.6	0.6	1.1	0.6	
Q4																			0.2	0.0	0.2	-0.4	-0.2	-0.3
1992 Q1																						1.2	0.5	-0.2
Q2																						0.6	0.1	0.3
Q3																						1.4	0.7	0.4
Q4																						0.7	0.5	-0.3

Note: Revisions shown do not include effects of benchmark data revisions to and/or changes in definition.

Source: Data shown in shaded areas are taken from the issues of the Federal Reserve Board's H.6 statistical releases published after the annual benchmark. See Kavajecz (1994) for exact dates. Other data shown are the authors' calculations from annual issues of *Money Stock Revisions*.

Table 3 (con't)

Page 3: Revisions to previously published quarterly growth rates of the monetary aggregates (s.a.) due to changes in definition

↓ Year of redefinition (published at time of benchmark and seasonal review) ↓

Quarters	1986			1987			1988			1989			1990			1991			1992		
	M1	M2	M3	M1	M2	M3	M1	M2	M3	M1	M2	M3	M1	M2	M3	M1	M2	M3	M1	M2	M3
1984 Q4																					
1985 Q1																					
Q2																					
Q3																					
Q4																					
1986 Q1																					
Q2																					
Q3																					
Q4							0.4	0.0	0.0												
1987 Q1							0.1	0.0	0.0												
Q2							0.4	0.0	0.0												
Q3							0.3	0.0	0.0												
Q4							0.2	0.0	0.0												
1988 Q1																					
Q2																					
Q3																					
Q4													0.0	-0.1	0.0						
1989 Q1													0.0	-0.1	0.0						
Q2													0.0	-0.1	0.0						
Q3													0.0	-0.2	0.0						
Q4													0.0	-0.1	0.0						
1990 Q1																					
Q2																					
Q3																					
Q4																					
1991 Q1																					
Q2																					
Q3																					
Q4																					

Note: Revisions shown do not include effects due to benchmark data revisions and changes in seasonal adjustment factors.
Source: Federal Reserve Board Statistical releases (H.6) published after the annual benchmark.

Table 4

Growth Cones for the Monetary and Credit Aggregates
(percent annual rate)

Date established	Base period	Span	M1	M2	M3	Bank credit proxy
				Target and Monitoring Ranges		
Apr.75	Mar.75	Mar.75-Mar.76	5.0 - 7.5	8.5 - 10.5	10.0 - 12.0	6.5 - 9.5B
Jun.75	Jun.75	Jun.75-Jun.76	5.0 - 7.5	8.5 - 10.5	10.0 - 12.0	6.5 - 9.5
Jul.75	75Q2	75Q2 - 76Q2	5.0 - 7.5	8.5 - 10.5	10.0 - 12.0	6.5 - 9.5
Oct.75	75Q3	75Q3 - 76Q3	5.0 - 7.5	7.5 - 10.5	9.0 - 12.0	6.0 - 9.0
Jan.76	75Q4	75Q4 - 76Q4	4.5 - 7.5	7.5 - 10.5	9.0 - 12.0	6.0 - 9.0
Apr.76	76Q1	76Q1 - 77Q1	4.5 - 7.0	7.5 - 10.0	9.0 - 12.0	6.0 - 9.0
Jul.76	76Q2	76Q2 - 77Q2	4.5 - 7.0	7.5 - 9.5	9.0 - 11.0	5.0 - 8.0
Nov.76	76Q3	76Q3 - 77Q3	4.5 - 6.5	7.5 - 10.0	9.0 - 11.5	5.0 - 8.0
Jan.77	76Q4	76Q4 - 77Q4	4.5 - 6.5	7.0 - 10.0	8.5 - 11.5	7.0 - 10.0
Apr.77	77Q1	77Q1 - 78Q1	4.5 - 6.5	7.0 - 9.5	8.5 - 11.0	7.0 - 10.0
						Bank credit
Jul.77	77Q2	77Q2 - 78Q2	4.0 - 6.5	7.0 - 9.5	8.5 - 11.0	7.0 - 10.0
Oct.77	77Q3	77Q3 - 78Q3	4.0 - 6.5	6.5 - 9.0	8.0 - 10.5	7.0 - 10.0
Feb.78	77Q4	77Q4 - 78Q4	4.0 - 6.5	6.5 - 9.0	7.5 - 10.0	7.0 - 10.0
Apr.78	78Q1	78Q1 - 79Q1	4.0 - 6.5	6.5 - 9.0	7.5 - 10.0	7.5 - 10.5
Jul.78	78Q2	78Q2 - 79Q2	4.0 - 6.5	6.5 - 9.0	7.5 - 10.0	8.5 - 11.5
Oct.78	78Q3	78Q3 - 79Q3	2.0 - 6.0	6.5 - 9.0	7.5 - 10.0	8.5 - 11.5
Feb.79	78Q4	78Q4 - 79Q4	1.5 - 4.5	5.0 - 8.0	6.0 - 9.0	7.5 - 10.5
Feb.80	79Q4	79Q4 - 80Q4	4.0 - 6.5(M1B)	6.0 - 9.0	6.5 - 9.5	6.0 - 9.0
Feb.81	80Q4	80Q4 - 81Q4	3.5 - 6.0(M1B)	6.0 - 9.0	6.5 - 9.5	6.0 - 9.0
Feb.82	81Q4	81Q4 - 82Q4	2.5 - 5.5	6.0 - 9.0	6.5 - 9.5	6.0 - 9.0
						Debt
Feb.83	83Feb/Mar	83Feb/Mar-83Q4	--	7.0 - 10.0	----	---
Feb.83	82Q4	82Q4 - 83Q4	4.0 - 8.0	--	6.5 - 9.5	8.5 - 11.5
Jul.83	83Q2	83Q2 - 83Q4	5.0 - 9.0	NC	NC	NC
Jan.84	83Q4	83Q4 - 84Q4	4.0 - 8.0	6.0 - 9.0	6.0 - 9.0	8.0 - 11.0
Feb.85	84Q4	84Q4 - 85Q4	4.0 - 7.0	6.0 - 9.0	6.0 - 9.5	9.0 - 12.0
Jul.85	85Q2	85Q2 - 85Q4	3.0 - 8.0	NC	NC	NC
Feb.86	85Q4	85Q4 - 86Q4	3.0 - 8.0	6.0 - 9.0	6.0 - 9.0	8.0 - 11.0
Feb.87	86Q4	86Q4 - 87Q4	NS	5.5 - 8.5	5.5 - 8.5	8.0 - 11.0
Feb.88	87Q4	87Q4 - 88Q4	NS	4.0 - 8.0	4.0 - 8.0	7.0 - 11.0
Feb.89	88Q4	88Q4 - 89Q4	NS	3.0 - 7.0	3.5 - 7.5	6.5 - 10.5
Feb.90	89Q4	89Q4 - 90Q4	NS	3.0 - 7.0	2.5 - 6.5	5.0 - 9.0
Jul.90	89Q4	89Q4 - 90Q4	NS	NC	1.0 - 5.0	NC
Feb.91	90Q4	90Q4 - 91Q4	NS	2.5 - 6.5	1.0 - 5.0	4.5 - 8.5
Feb.92	91Q4	91Q4 - 92Q4	NS	2.5 - 6.5	1.0 - 5.0	4.5 - 8.5
Feb.93	92Q4	92Q4 - 93Q4	NS	2.0 - 6.0	0.5 - 4.5	4.5 - 8.5
Jul.93	92Q4	92Q4 - 93Q4	NS	1.0 - 5.0	0.0 - 4.0	4.0 - 8.0

The FOMC first set desired longer-run growth targets for M1, M2, M3 and the bank credit proxy at its meeting on April 14-15, 1975. On February 15, 1977, ranges for the monetary aggregates were added to the Domestic Policy Directive sent to the Open Market Desk at the Federal Reserve Bank of New York. On April 18, 1978, the range for bank credit was added to the Domestic Policy Directive.

NC: Not Changed
NS: None Specified

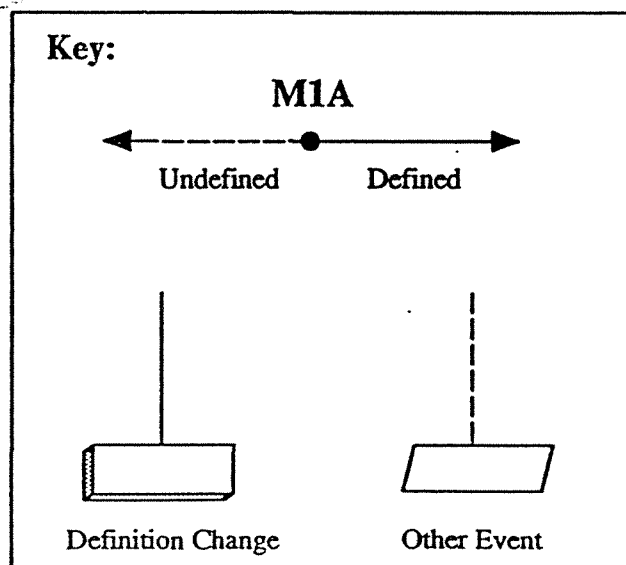# The Evolution of the Federal Reserve's Monetary Aggregates: A Timeline

Kenneth Kavajecz

This timeline follows the history of the monetary aggegates published by the staff of the Federal Reserve's Board of Governors. The chronology is based on the Board's J.3 and H.6 statistical releases as well as material from the *Federal Reserve Bulletin, Money Stock Revisions*, and other publications.

The timeline includes descriptions of all definition changes and benchmark revisions, the basis on which data were published (monthly, bimonthly, weekly), and the day of the week and time of day that the money stock data were released to the public. The last are of particular importance for financial researchers using high frequency data. Additional miscellaneous items related to the monetary aggregates are included, selected by the author on the basis of their likely importance to the evolution of the monetary aggregates and/or the role of monetary aggregates in monetary policy.

Note the following in the timeline:

- Each page gives information on events that occurred during a single year.

- The lines at the top of the pages trace the life of every official monetary aggregate published by the Board staff between 1959 and 1993 (experimental aggregates are excluded). The names of monetary aggregates that were defined and being published during a year are shown in bold face on that page, and the period over which they were being published is shown as a solid line.

- Each event of interest is shown as a vertical line with a parallelogram attached. Each event is also dated in the upper left corner of the parallelogram.

- Definitional changes are distinguished from other events by having a solid vertical line with a three dimensional rectangle attached.

Key:

M1A

Undefined   Defined

Definition Change   Other Event

1960

J	F	M	A	M	J	J	A	S	O	N	D

M1A

- ◄● ———————►

M1/M1B

- -

M1+

- -

M1 – shift adjusted

- -

M2

- -

M3

- -

M4

- -

M5

- -

L

- -
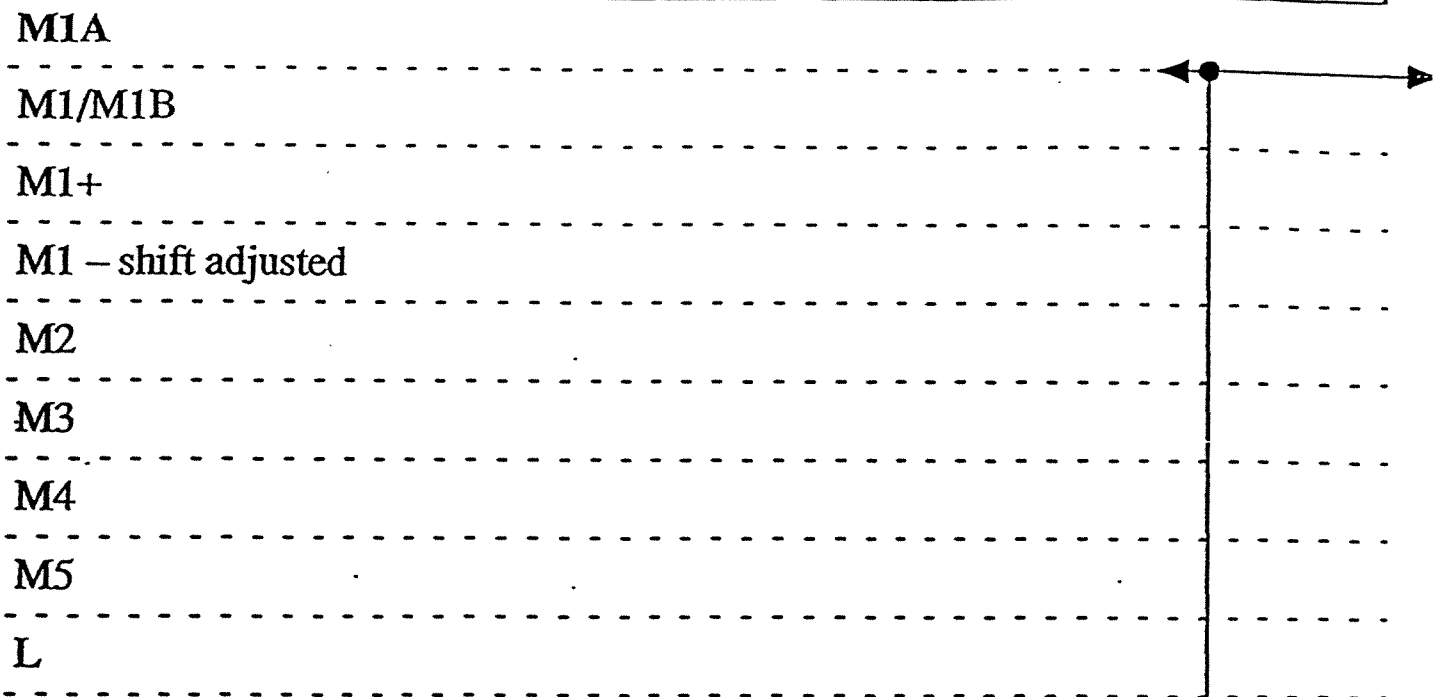
November 14, 1960

On November 14, 1960, the first Federal Reserve statistical release on the money supply was published. The J.3 release entitled *Demand Deposits, Currency, and Related Items* was thereafter published twice a month. The reported figures were averages of daily figures rather than the one-day figures reported in the *Federal Reserve Bulletin.* The money stock was called "the money supply." It measured a concept that would later be called M1A, namely currency plus demand deposits adjusted. The currency component included currency held outside the Treasury, the Federal Reserve and the vaults of all commercial banks. The demand deposit component consisted of demand deposits other than those due to commercial banks and the U.S. government, less cash items in process of collection (CIPC) and Federal Reserve float. CIPC items at member and nonmember banks were deducted separately from demand deposits at member and nonmember banks, respectively. Since Federal Reserve float was not divisible on the basis of a member-nonmember attribution, it was deducted in whole from the member bank deposit component. (Ref. footnote on J.3 release)

Thursday Release

Day of the week released and release time.   Thursday Release
                                                                               Immediate Release

1961

J F M A M J J A S O N D

M1A

M1/M1B

M1+

M1 – shift adjusted

M2

M3

M4

M5

L

1962

| J | F | M | A | M | J | J | A | S | O | N | D |

M1A

M1/M1B

M1+

M1 – shift adjusted

M2

M3

M4

M5

L
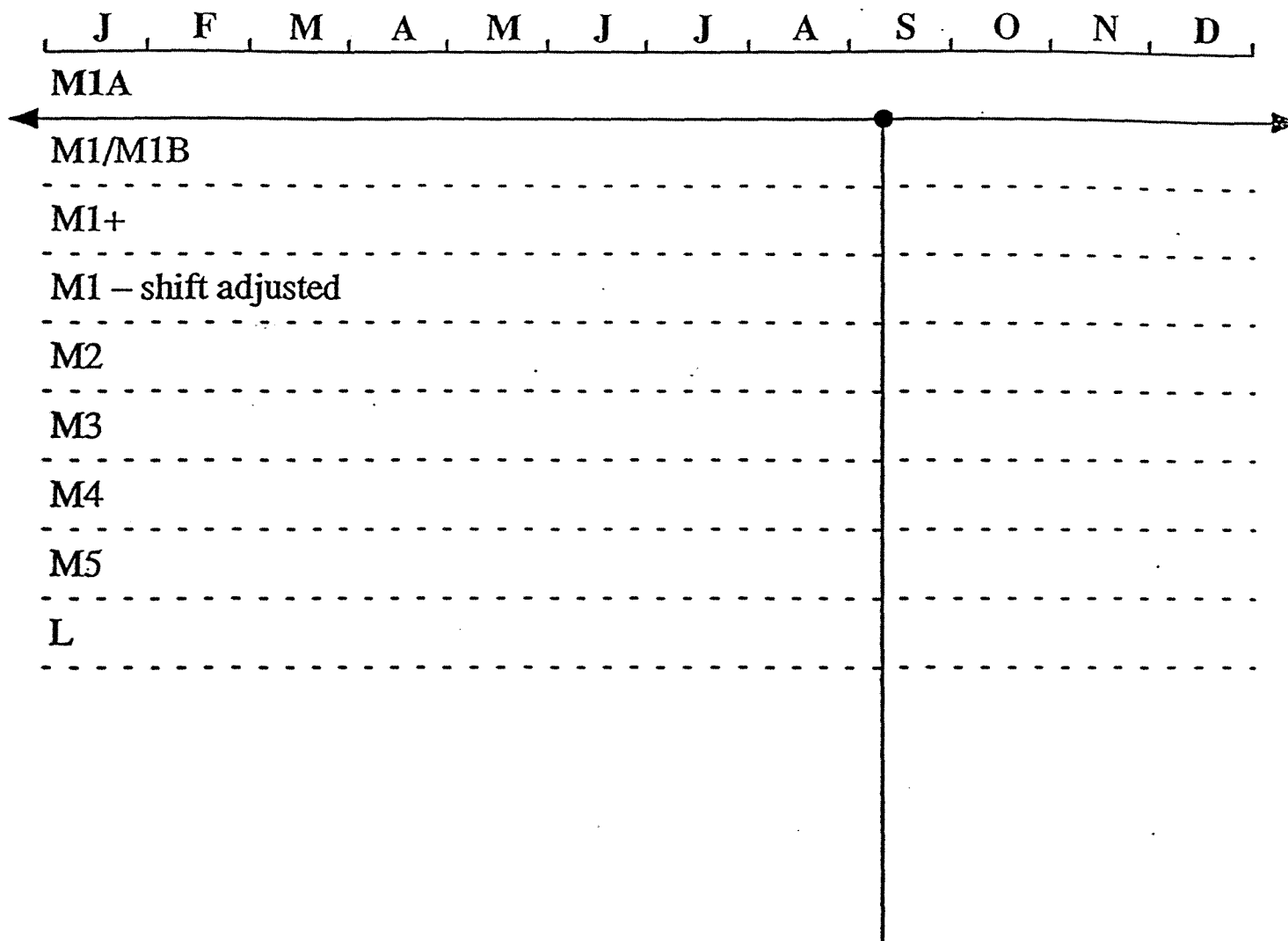
September 11, 1962
Annual benchmark and seasonal review
Benchmarked to Call reports available for 1961.
The definition of M1A was expanded to include demand deposits held by banks located
in U.S. territories and possessions at U.S. commercial banks plus foreign demand bal-
ances at Federal Reserve banks. Foreign demand balances included demand deposits
due to foreign governments, central banks and international institutions.
(See FR Bulletin Aug. 1962 for details)

1963

J　F　M　A　M　J　J　A　S　O　N　D

M1A

⟵─────────────────────────────────⟶

M1/M1B

- -

M1+

- -

M1 – shift adjusted

- -

M2

- -

M3

- -

M4

- -

M5

- -

L

- -

Thursday Release

Immediate Releas

1964

J   F   M   A   M   J   J   A   S   O   N   D

M1A

M1/M1B

M1+

M1 – shift adjusted

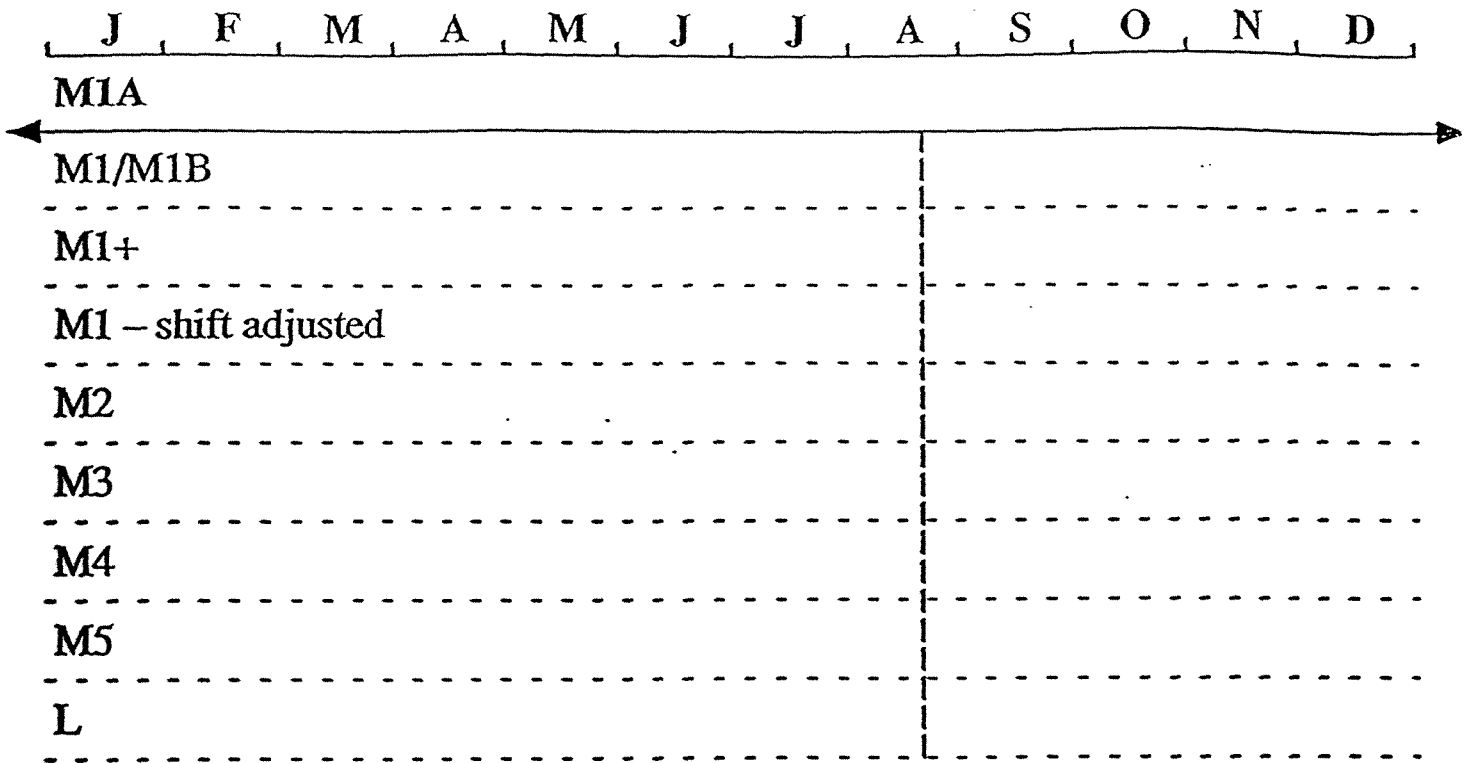**M2**

M3

M4

M5

L

June 29, 1964
Annual benchmark and seasonal review
Benchmarked to Call reports available for 1962 and 1963.
(See FR Bulletin June 1964 for details)

Thursday Release
Immediate Release

J   F   M   A   M   J   J   A   S   O   N   D

M1A

M1/M1B

M1+

M1 – shift adjusted

M2

M3

M4

M5

L

July 30, 1965
Annual benchmark and seasonal review. Benchmarked to the June and December 1964 call reports. The J.3 release was replaced by the H.6 release, published weekly on Thursday. The H.6 release showed week averages of daily data on a week ending Wednesday basis. (Ref. *Federal Reserve Bulletin*, July 1965)

Thursday Release
Immediate Release

Thursday Release
Immediate Release

J	F	M	A	M	J	J	A	S	O	N	D

M1A

←——→

M1/M1B

- -

M1+

- -

M1 – shift adjusted

- -

M2

- -

M3

- -

M4

- -

M5

- -

L

- -

June 23, 1966
Effective June 9, 1966, balances accumulated for payment
of personal loans were reclassified for reserve purposes and
were excluded from time deposits reported by member banks.
Although this did not affect the reported money supply at the
time, it did affect the time deposit series reported separately
on the H.6. The estimated amount of such deposits at all
commercial banks ($1,140 million) was excluded from time
deposits adjusted thereafter.
(See H.6 Release for details)

Setember 29, 1966
Annual benchmark and seasonal review
Benchmarked to the June and Dec. 1965 Call reports.
(See FR Bulletin Sept. 1966 for details)

1967

J F M A M J J A S O N D

M1A

M1/M1B

M1+

M1 – shift adjusted

M2

M3

M4

M5

L

August 31, 1967
Annual benchmark and seasonal review
Benchmarked to the June and Dec. 1966 Call reports.
(See FR Bulletin Aug. 1967 for details)

1968

J F M A M J J A S O N D

M1A

M1/M1B

M1+

M1 – shift adjusted

M2

M3

M4

M5

L

June 27, 1968
Annual benchmark and seasonal review
Benchmarked to the June and Dec. 1967 Call reports.
(See FR Bulletin June 1968 for details)

1969

J	F	M	A	M	J	J	A	S	O	N	D

M1A

M1/M1B

M1+

M1 – shift adjusted

M2

M3

M4

M5

L

August 14, 1969
Effective August 6, 1969, the demand deposit component of the money supply was increased substantially due to a change in accounting procedures associated with bank clearing of Eurodollar transactions. Previously, an increasing volume of such transactions had increased CIPC without increasing demand deposits. Since CIPC was deducted from gross demand deposits in computing the money supply, the net demand deposit concept measured in the money supply had been understated by an increasing amount in recent years. A tentative revision was made to correct the downward bias from June 1967 to July 1969.

September 25, 1969
Annual benchmark and seasonal review
Benchmarked to the June and Dec. 1968 and June 1969 Call reports.
(See FR Bulletin Oct. 1969 for details)

Thursday Release
Immediate Release

1970

	J	F	M	A	M	J	J	A	S	O	N	D	

M1A

M1/M1B

M1+

M1 – shift adjusted

M2

M3

M4

M5

L

February 1, 1970
Mr. Arthur F. Burns replaced Mr. William McChesney Martin, Jr. as Chairman of the Federal Reserve Board. Chairman Martin had served since April 2, 1951.

November 27, 1970
Annual benchmark and seasonal review
Benchmarked to the Dec. 1969 and June 1970 Call reports.
The revision this year encompassed for the first time certain new data, mainly from agencies and branches in the U.S. of foreign banks and from subsidiaries of U.S. banks organized under the Edge act to engage in international banking business. These new data served to correct a downward bias in the money supply series caused by the generation of "CIPC" on the books of U.S. domestic banks as a result of clearing a large daily volume of international transactions.
(See FR Bulletin Dec. 1970 for details)

Thursday Release
Immediate Release

1971

J F M A M J J A S O N D

M1A*

M1*/M1B

M1+

M1 – shift adjusted

M2

M3

M4

M5

L
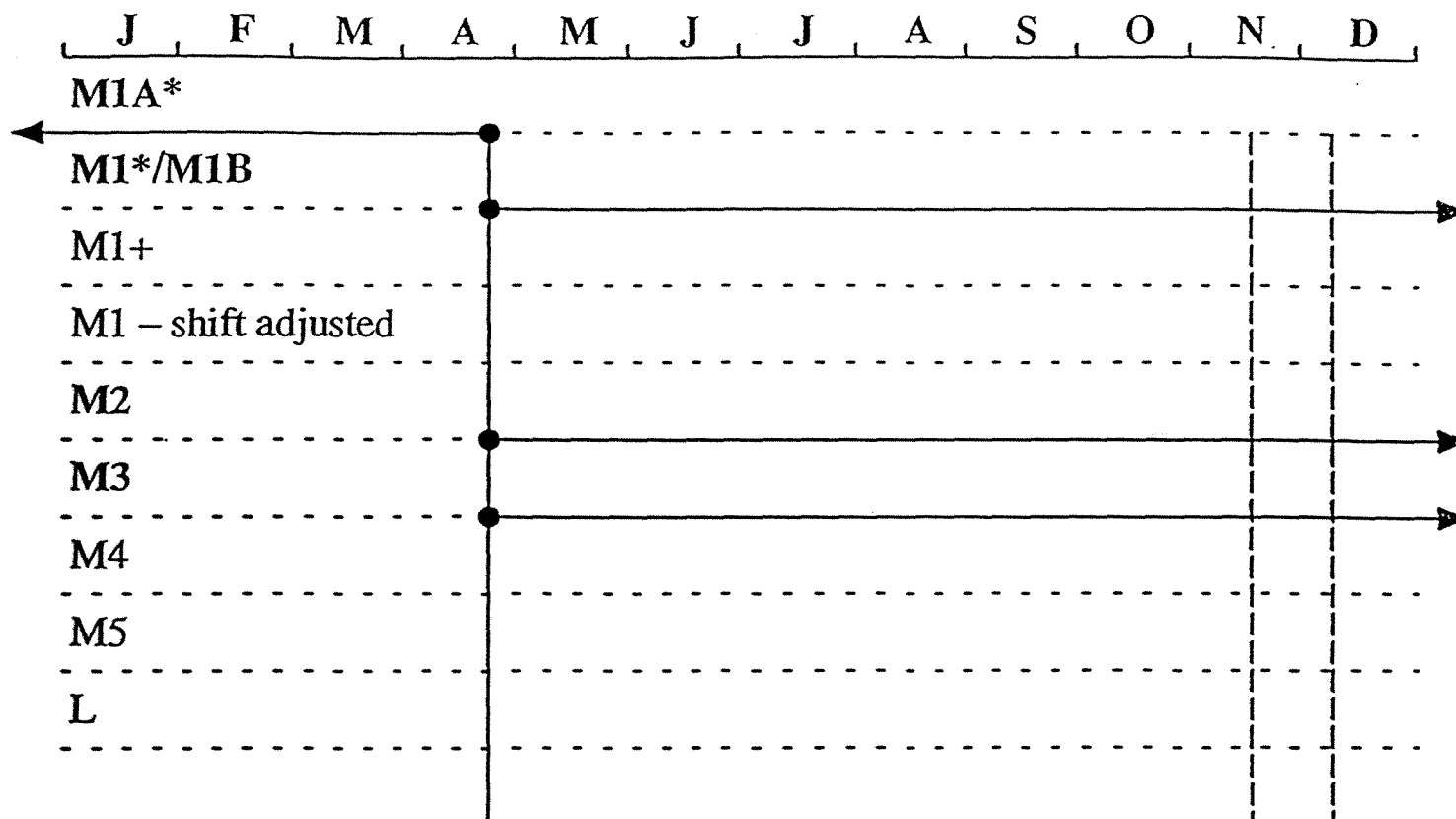
April 22, 1971
On April 22, 1971, the Federal Reserve started to publish 3 monetary aggregates, M1,
M2, M3. M1 and M2 were reported on a weekly and monthly basis while M3 was re-
ported only on a monthly basis due to a lack of data sources at the time.
*M1 was the same as the previously published money stock, listed above as M1A, only
the name had changed.
M2 was a broader aggregate that included M1 plus commercial banks' savings deposits,
time deposits open account, and time certificates of deposit other than negotiable CD's
issued in denominations of $100,000 or more by large weekly reporting commercial
banks.
M3 was M2 plus deposits at mutual savings banks and savings and loan associations.

November 18, 1971
Annual benchmark and seasonal review
Benchmarked to the Dec. 1970 and
· June 1971 Call Reports.
(See FR Bulletin Nov. 1971 for details)

December 9, 1971
Money stock measures have been revised, beginning
in September 1971 to reflect the formation of new
banking institutions doing primarily international
business. The vague description listed above was
taken from a footnote on the H.6 Release.
To what this refers is subject to some debate.

Thursday Release
Immediate Release

J F M A M J J A S O N D

M1A

M1/M1B

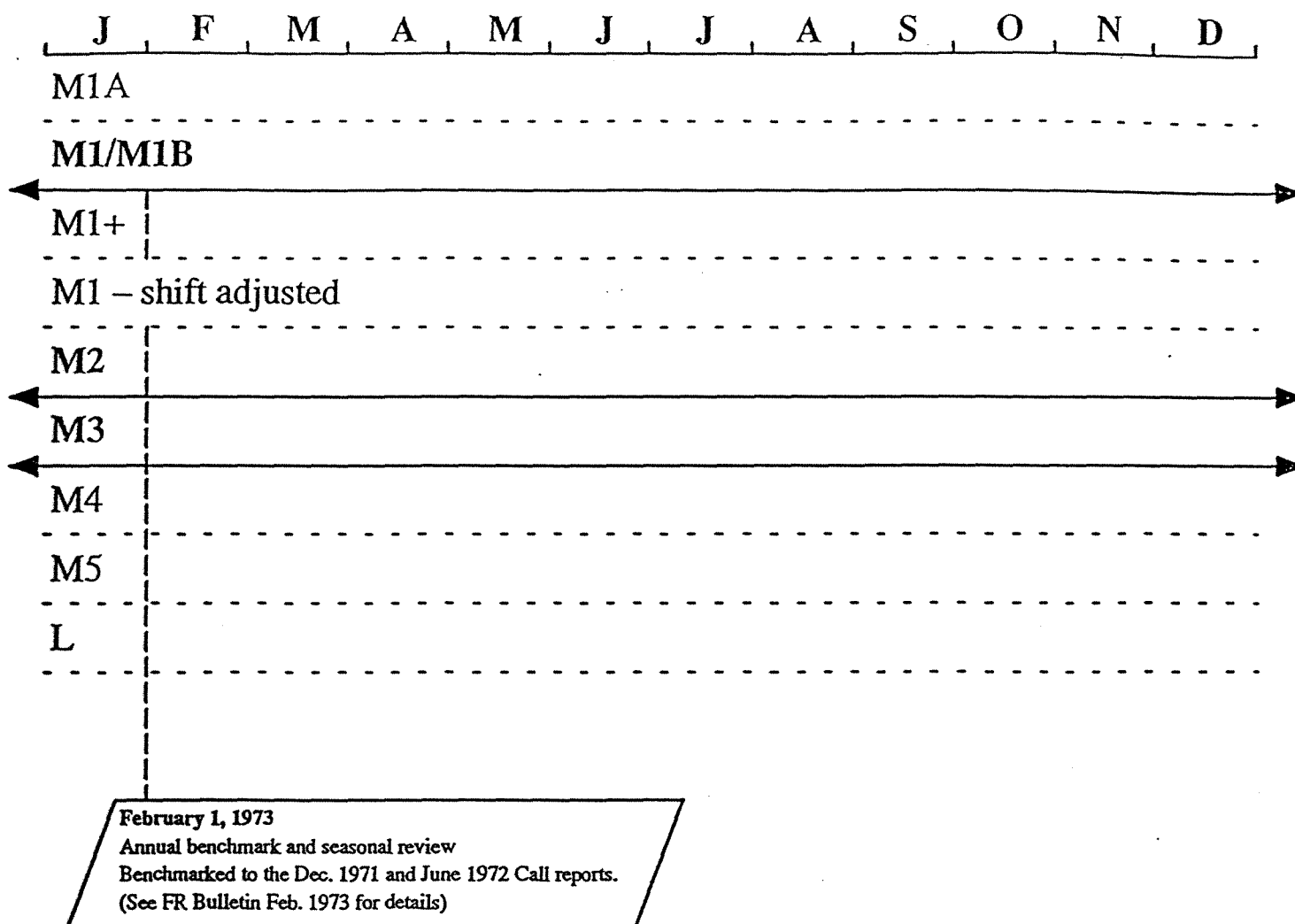M1+

M1 – shift adjusted

M2

M3

M4

M5

L
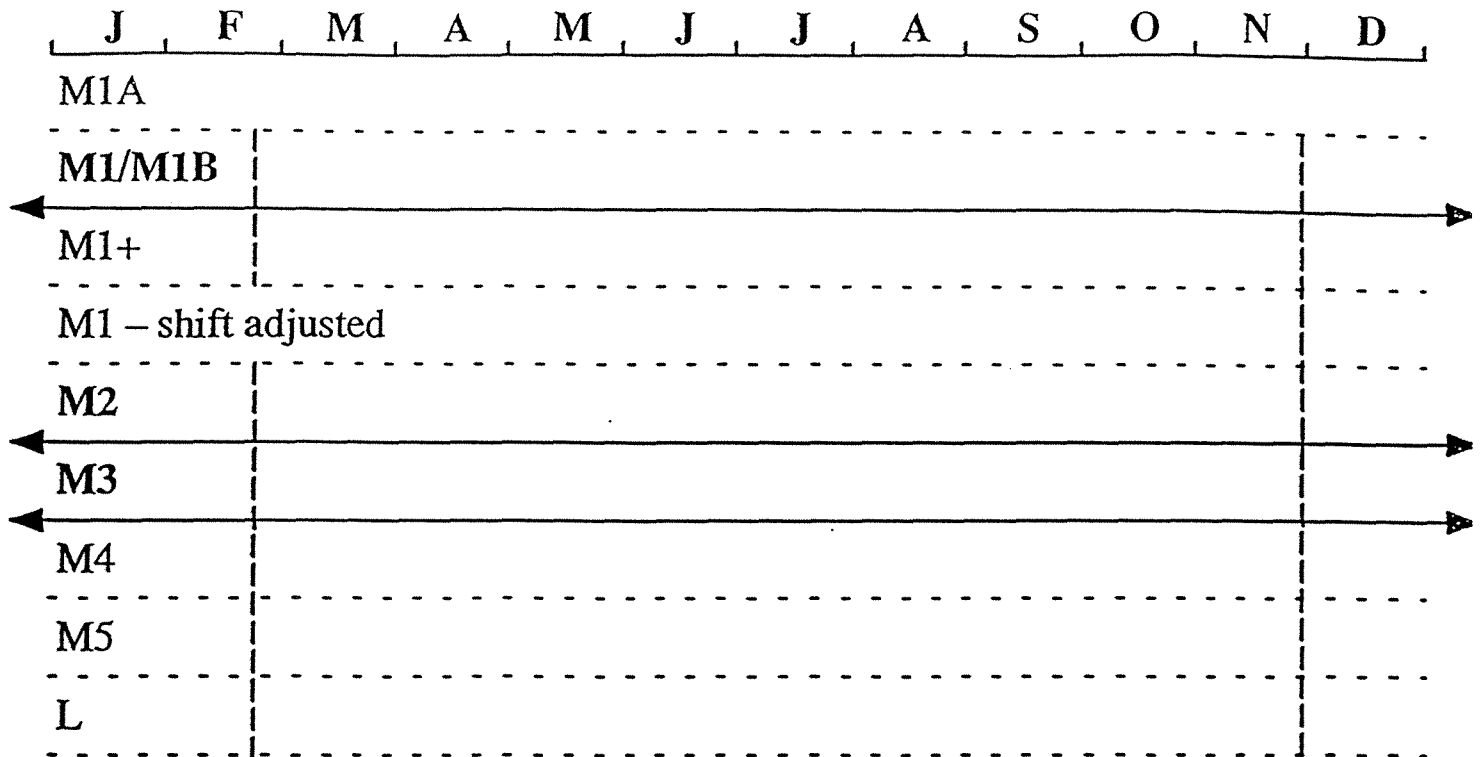
February 24, 1972
Benchmark and seasonal review of M3 data
Benchmarked to reflect new data for deposits
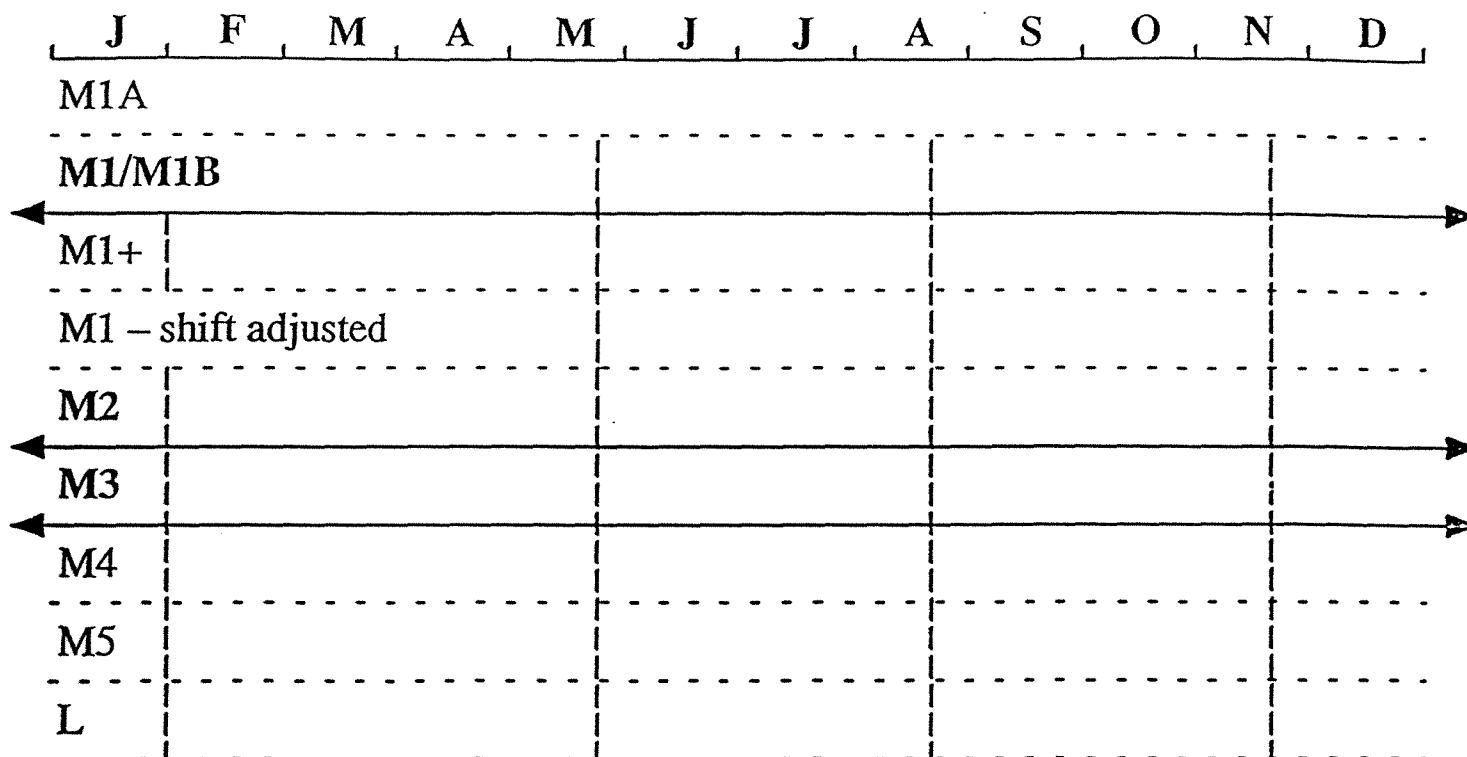at mutual savings banks and savings and loan
shares.

November 24, 1972
A change in Regulation J, governing check collection procedures, was implemented on
November 9, 1972. Because of its effects on clearing accounts on bank balance sheets, it
had the effect of raising demand deposits as calculated for inclusion in the money supply.
However, to avoid any discontinuities in the series, the resulting increase had been elimi-
nated from the current series until the annual benchmark and seasonal review.

1973

J F M A M J J A S O N D

M1A

M1/M1B

M1+

M1 – shift adjusted

M2

M3

M4

M5

L

February 1, 1973
Annual benchmark and seasonal review
Benchmarked to the Dec. 1971 and June 1972 Call reports.
(See FR Bulletin Feb. 1973 for details)

Thursday Release
Immediate Release

1974

J F M A M J J A S O N D

M1A

M1/M1B

M1+

M1 – shift adjusted

M2

M3

M4

M5

L

January 31, 1974
Annual benchmark and seasonal review
Benchmarked to the Dec. 1972 as well as
the March, June and Oct. 1973 Call reports.
1973 was the first year since the early
1960's when Call report data appropriate
for money supply benchmarks had been
available for the spring and fall.
(See FR Bulletin Feb. 1974 for details)

May 23, 1974
Benchmark
Benchmarked to the Dec. 1973 Call report.
(See H.6 Release for details)

August 22, 1974
Benchmark
Benchmarked to the April 1974 Call report.
(See H.6 Release for details)

November 21, 1974
Annual benchmark and seasonal review
Benchmarked to the June 1974 Call report.
(See FR Bulletin Dec. 1974 for details)

Thursday Release
Immediate Release

1975

J   F   M   A   M   J   J   A   S   O   N   D

M1A

M1/M1B

M1+

M1 – shift adjusted

M2

M3

M4

M5

L

February 20, 1975
Benchmark and seasonal review
Benchmarked to the Oct. 1974 Call report.
(See H.6 Release for details)

April 3, 1975
On April 3, 1975, the Federal Reserve published two additional monetary aggregates,
M4 and M5.
M1 and M2 remained unchanged from their inception in 1971.
The definition of M3 was revised to include credit union shares.
M4 was defined as M2 plus large negotiable time certificates of deposits issued by large
weekly reporting commercial banks.
M5 was defined as M3 plus the same large time deposits added to M4..

FOMC Meeting, April 14-15, 1975
First target growth cones announced for the
monetary aggregates (Ref. Anderson and
Kavajecz, 1994, Table 4)

September 18, 1975
Benchmark
Benchmarked to the April 1975 Call report.
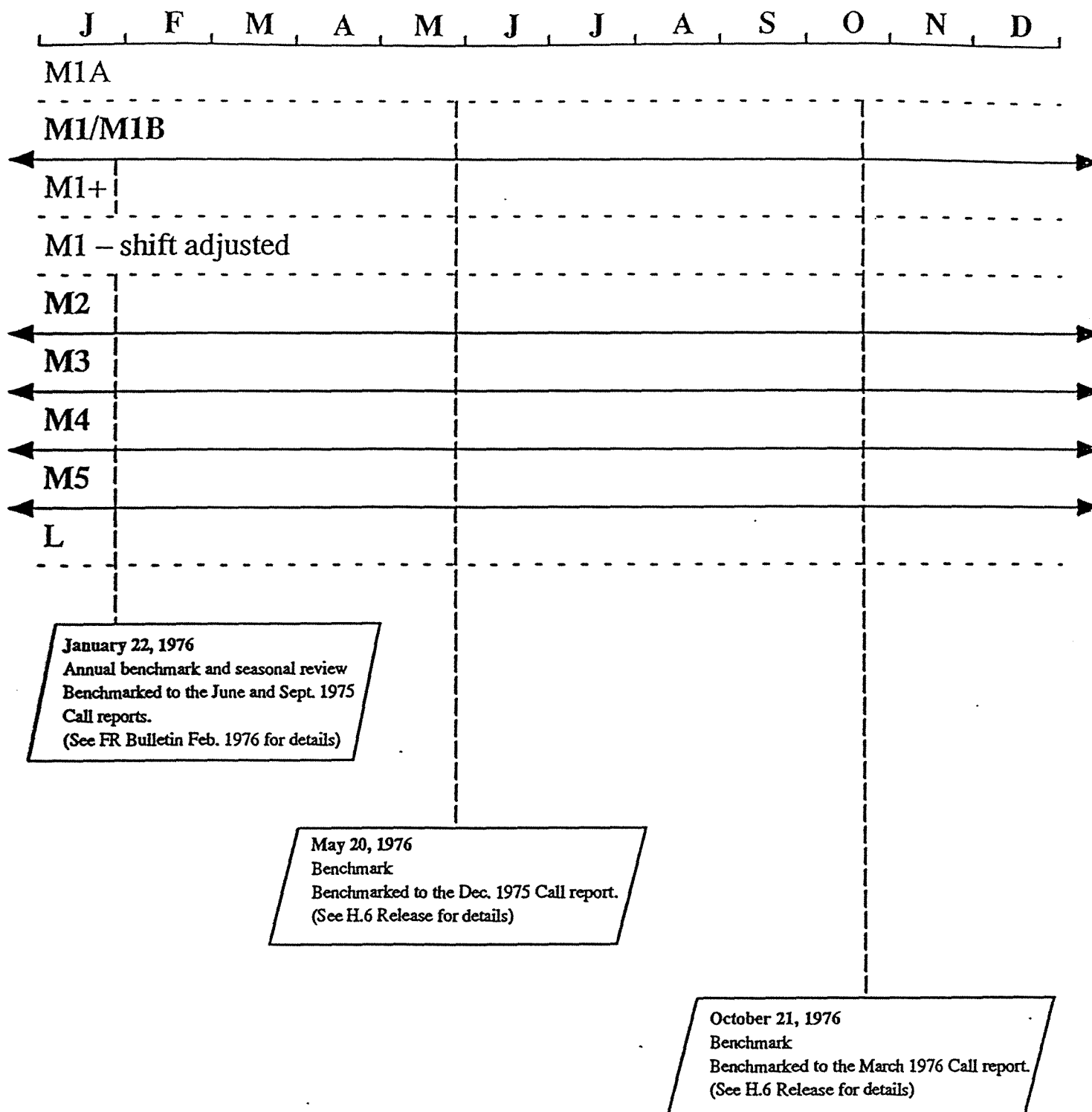(See H.6 Release for details)

May 22, 1975
Benchmark
Benchmarked to the Dec. 1974 Call report.
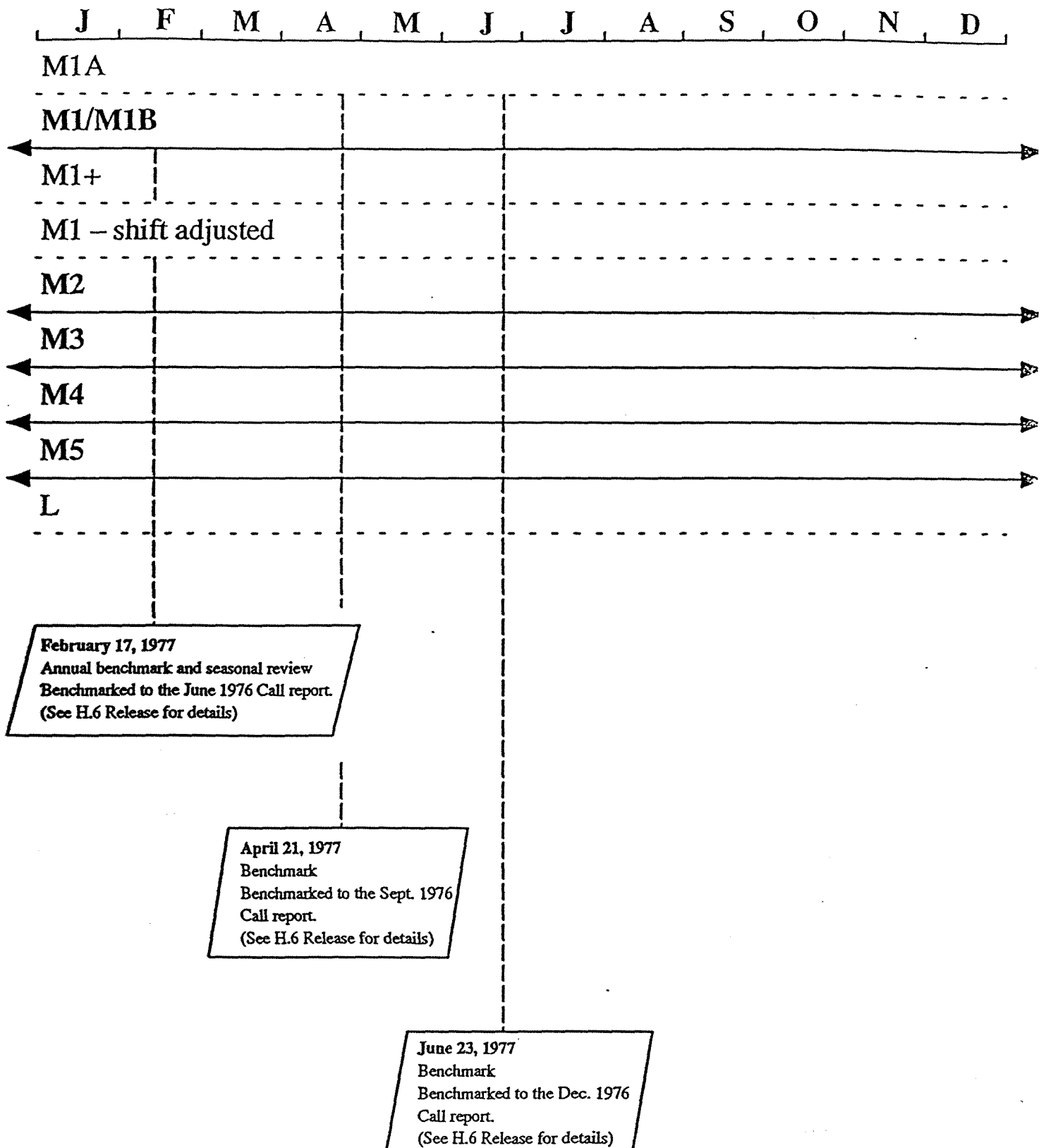(See H.6 Release for details)
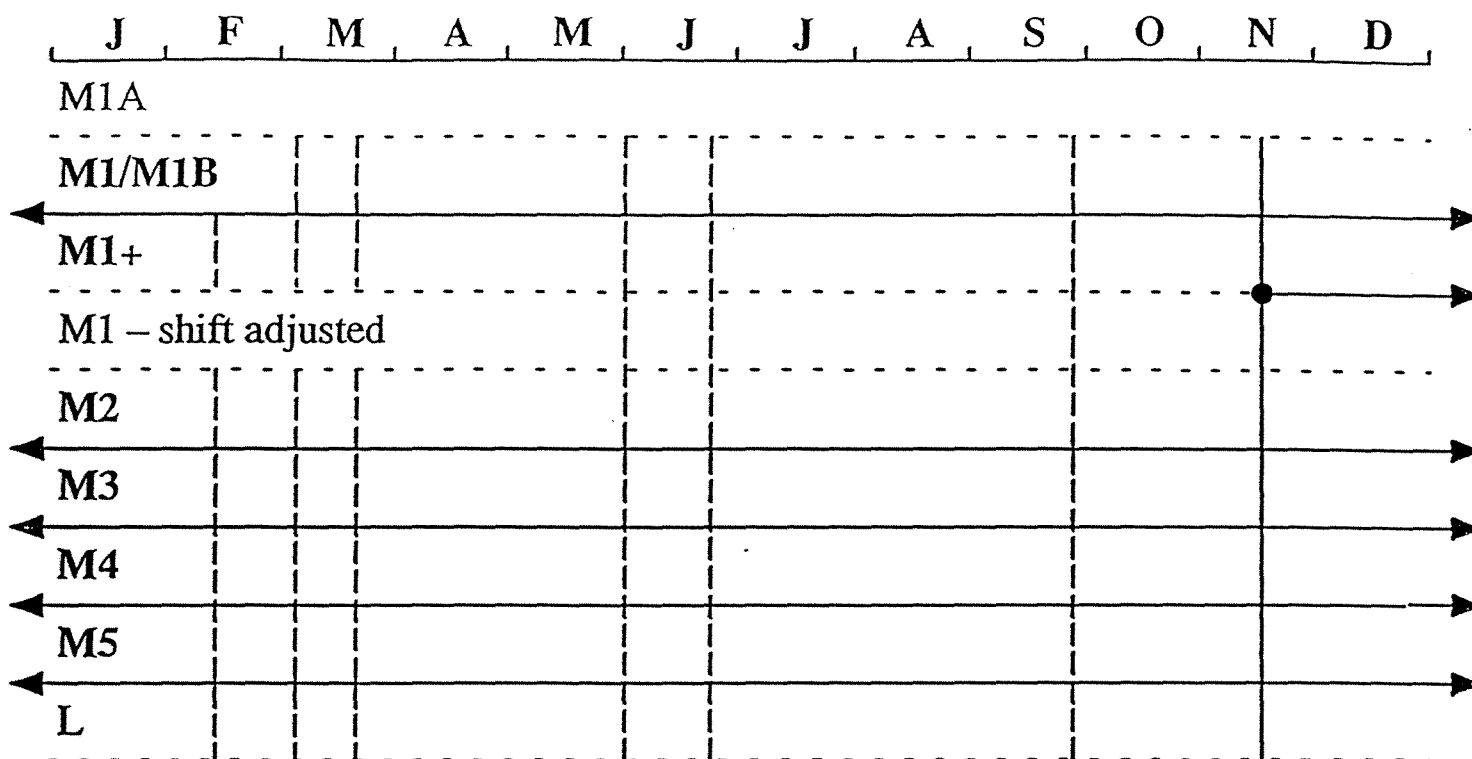
Thursday Release
Immediate Release

1976

J F M A M J J A S O N D

M1A

M1/M1B

M1+

M1 – shift adjusted

M2

M3

M4

M5

L

January 22, 1976
Annual benchmark and seasonal review
Benchmarked to the June and Sept. 1975
Call reports.
(See FR Bulletin Feb. 1976 for details)

May 20, 1976
Benchmark
Benchmarked to the Dec. 1975 Call report.
(See H.6 Release for details)

October 21, 1976
Benchmark
Benchmarked to the March 1976 Call report.
(See H.6 Release for details)

Thursday Release
Immediate Release

1977

J F M A M J J A S O N D

M1A

M1/M1B

M1+

M1 – shift adjusted

M2

M3

M4

M5

L

February 17, 1977
Annual benchmark and seasonal review
Benchmarked to the June 1976 Call report.
(See H.6 Release for details)

April 21, 1977
Benchmark
Benchmarked to the Sept. 1976
Call report.
(See H.6 Release for details)

June 23, 1977
Benchmark
Benchmarked to the Dec. 1976
Call report.
(See H.6 Release for details)

Thursday Release
Immediate Release

1978

J F M A M J J A S O N D

M1A

M1/M1B

M1+

M1 – shift adjusted

M2

M3

M4

M5

L

February 10, 1978
Data from the Boston District estimated.
Money stock measures for the week of
February 1, 1978 subject to larger than
normal revisions.

June 1, 1978
Money Market Time Deposits
were authorized by Congress.

June 22, 1978
Benchmark
Benchmarked to the
Dec. 1977 Call report.
(See H.6 Release for details)

September 21, 1978
Annual benchmark and seasonal review
Benchmarked to the March 1978 Call report.
Corrected a recently discovered downward cash
items bias over the period mid–1975 through
September 1978. The bias was created by foreign
related institutions transferring funds for their
parent or subsidiaries.
(See H.6 Release for details)

March 8, 1978
Mr. G. William Miller replaced
Mr. Arthur F. Burns as Chairman
of the Federal Reserve Board.
Chairman Burns resigned on
January 31, 1978.

November 16, 1978
On November 16, 1978, the Federal Reserve published yet another money stock mea-
sure, M1+.
M1, M2, M3, M4 and M5 remained unchanged from the definitions outlined in 1975.
M1+ was defined as the narrow money stock measure, M1, plus savings deposits at com-
mercial banks, NOW accounts at banks and thrift institutions, credit union share drafts,
and demand deposits at mutual savings banks.

March 23, 1978
Annual benchmark and seasonal
review. Benchmarked to the
Dec. 1976 as well as March, June,
and Sept. 1977 Call reports.
(See H.6 Release for details)

Thursday Release
Immediate Release

1979

J F M A M J J A S O N D

M1A

M1/M1B

M1+

M1 – shift adjusted

M2

M3

M4

M5

L
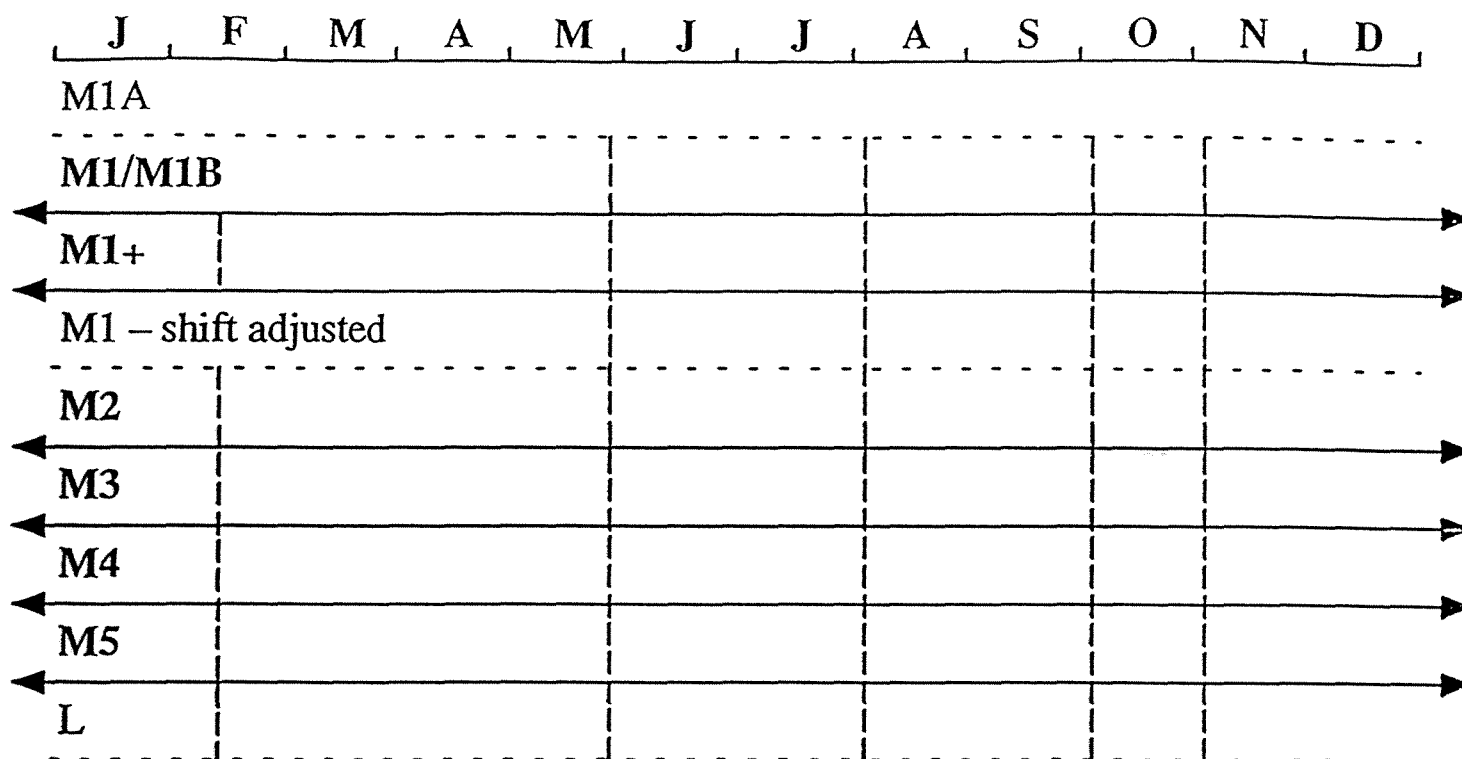
February 8, 1979
Annual benchmark and seasonal review
Benchmarked to the June 1978 Call report.
(See H.6 Release for details)

August 6, 1979
Mr. Paul A. Volcker replaced
Mr. G. William Miller as Chairman
of the Federal Reserve Board.

May 24, 1979
Benchmark
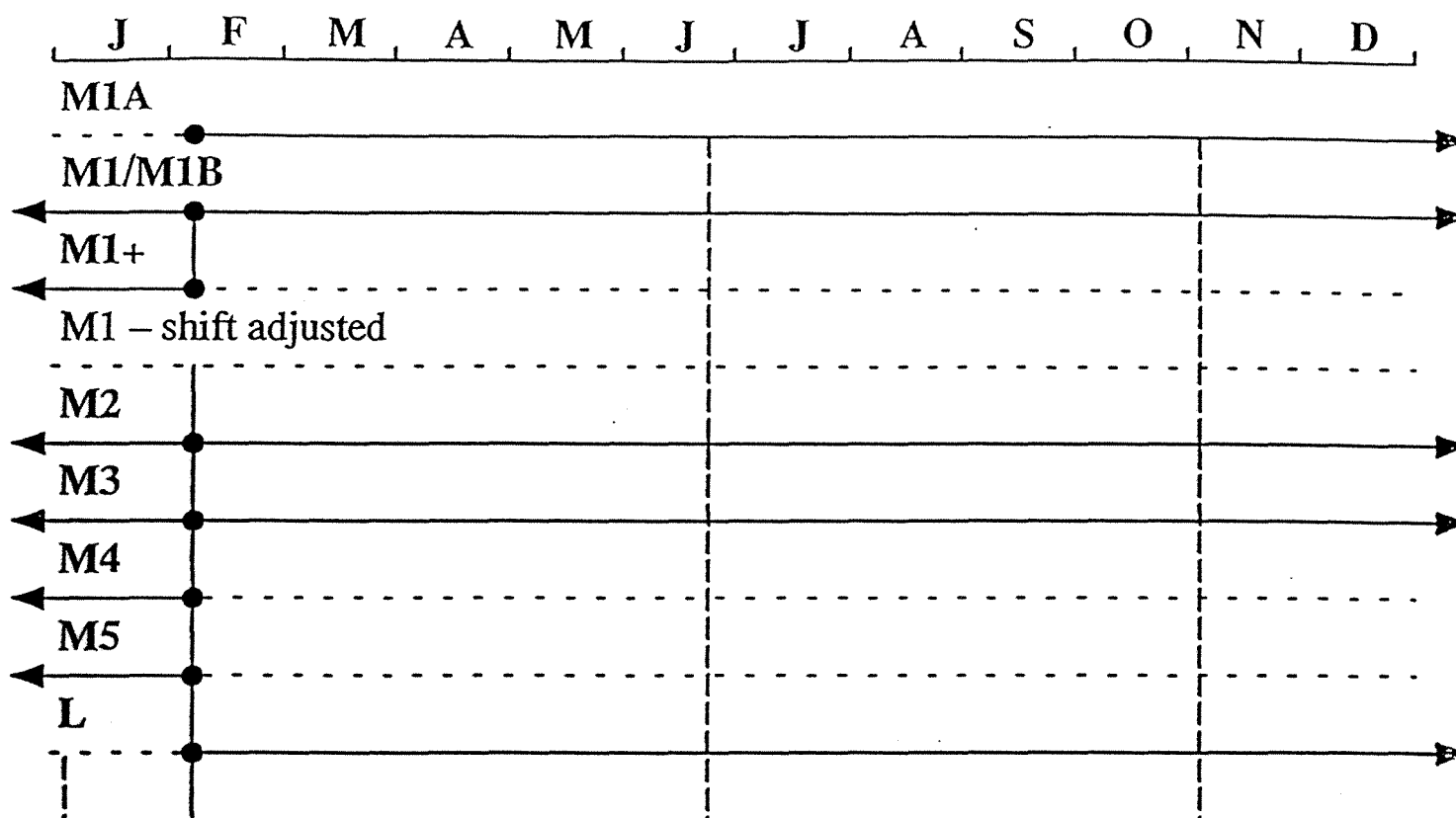Benchmarked to the Sept. 1978 Call report.
(See H.6 Release for details)

October 6, 1979
On Saturday October 6, 1979, Chairman Volcker
called a special meeting of the FOMC where he
announced the Federal Reserve would switch to
a nonborrowed reserve operation procedure.
The move placed a greater emphasis on the M1
aggregate due to its close relation to the
outstanding supply of reserves.

November 8, 1979
The money supply figures published on November 8, 1979 for the weeks
ending October 3, 10, 17, and 24th incorporated minor corrections made
to the data due to an understatement of the deposits provided by
Manufacturers Hanover Trust Company in the last four weeks. The
Federal Reserve had begun an inquiry, with the help of outside counsel,
to provide assurance that recent errors in the money supply data were
inadvertent and that no individual or institution obtained improper
advantage from the preparation, revision and release of these figures.

Thursday Release
Immediate Release

1980

J   F   M   A   M   J   J   A   S   O   N   D

M1A

M1/M1B

M1+

M1 – shift adjusted

M2

M3

M4

M5

L

Febrary 8, 1980
On February 8, 1980, the Federal Reserve radically reorganized how the monetary aggregates were defined.
M1 was renamed M1A without changing its definition.
M1B was defined to be M1A plus NOW and ATS accounts at banks and thrift institutions, credit union share draft accounts and demand deposits at mutual savings banks.
M2 was redefined to be M1B plus overnight (and continuing contract) RPs that are issued by commercial banks to the non–bank public, overnight Eurodollars issued by Caribbean branches of member banks to U.S. non–bank customers, money market mutual fund shares, savings deposits and small time accounts (those issued in denominations less than $100,000) at commercial banks and thrift institutions. Note that M2 will differ from the sum of its components by a consolidation adjustment made to avoid double–counting the public's monetary assets, namely, the amount of demand deposits held by thrift institutions at commercial banks.
M3 was defined to be M2 plus large time deposits (those issued in denominations of $100,000 or more, net of the holdings of domestic banks, thrift institutions, the U.S. government, money market mutual funds, and foreign banks and official institutions), and term RPs at commercial banks and thrift institutions, net of term RPs held by money market mutual funds.
A new aggregate, L, was created and defined to be M3 plus the non–bank public's holdings of U.S. savings bonds, short–term Treasury securities, commercial paper and bankers acceptances (which excludes money market mutual fund holdings of these assets.) In addition, two addenda were included on the H.6 release, overnight RPs at commercial banks plus overnight Eurodollars and money market mutual fund shares.
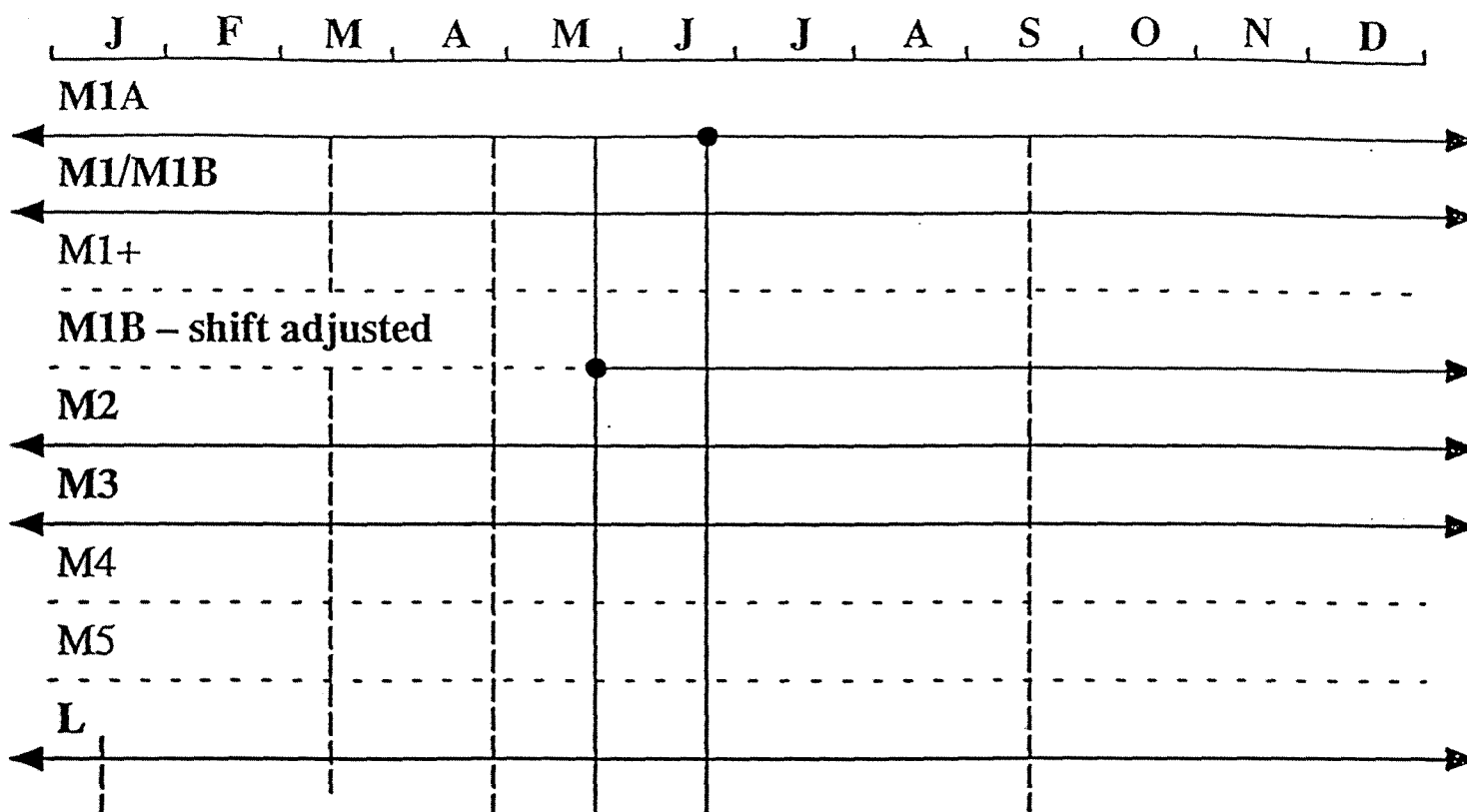
February 15, 1980
On February 15, 1980, seasonal factors for the newly defined aggregates were released on the H.6.

(See FR Bulletin Feb. 1980 for details)

Friday Release
Immediate Release

1981

J F M A M J J A S O N D

M1A

M1/M1B

M1+

M1B – shift adjusted

M2

M3

M4

M5

L

January 16 and 23, 1981
The H.6 emphasized caution when
interpreting the monetary aggregates
because of the introduction of NOW
accounts on a nationwide basis with
heavy promotional efforts.

January 23, 1981
Benchmark
Benchmarked to the Dec. 1979 and
March 1980 Call reports.
This incorporated all the changes due to
the implementation of the Monetary
Control Act.
(See H.6 Release for details)

May 22, 1981
Another monetary aggregate, called M1B–shift adjusted, was introduced. It was defined
to be M1B less shifts to OCD from non–demand deposit sources.
All the definitions of the other monetary aggregates remained unchanged.

June 26, 1981
Benchmark
Benchmarked to the September and December 1980 Call reports.
The definition of the narrowest measure of the money stock, M1, was revised to include
non–bank travelers checks.
All the definitions of the other monetary aggregates remained unchanged.

May 1, 1981
Annual seasonal review
Adjustment of the monetary aggregates
to include the effects of NOW accounts.
(See H.6 Release for details)

March 13, 1981
The H.6 cautioned the interprepation of the aggregate measures
due to the shifting of demand deposits and savings deposits into
OCD accounts. Estimates of the shifts obtained from various
depository institution samples suggested that in January and
February, 75 to 80% of the increase in excess of "trend" came
from demand deposits and the other 20 to 25% came from
savings deposits and other sources.
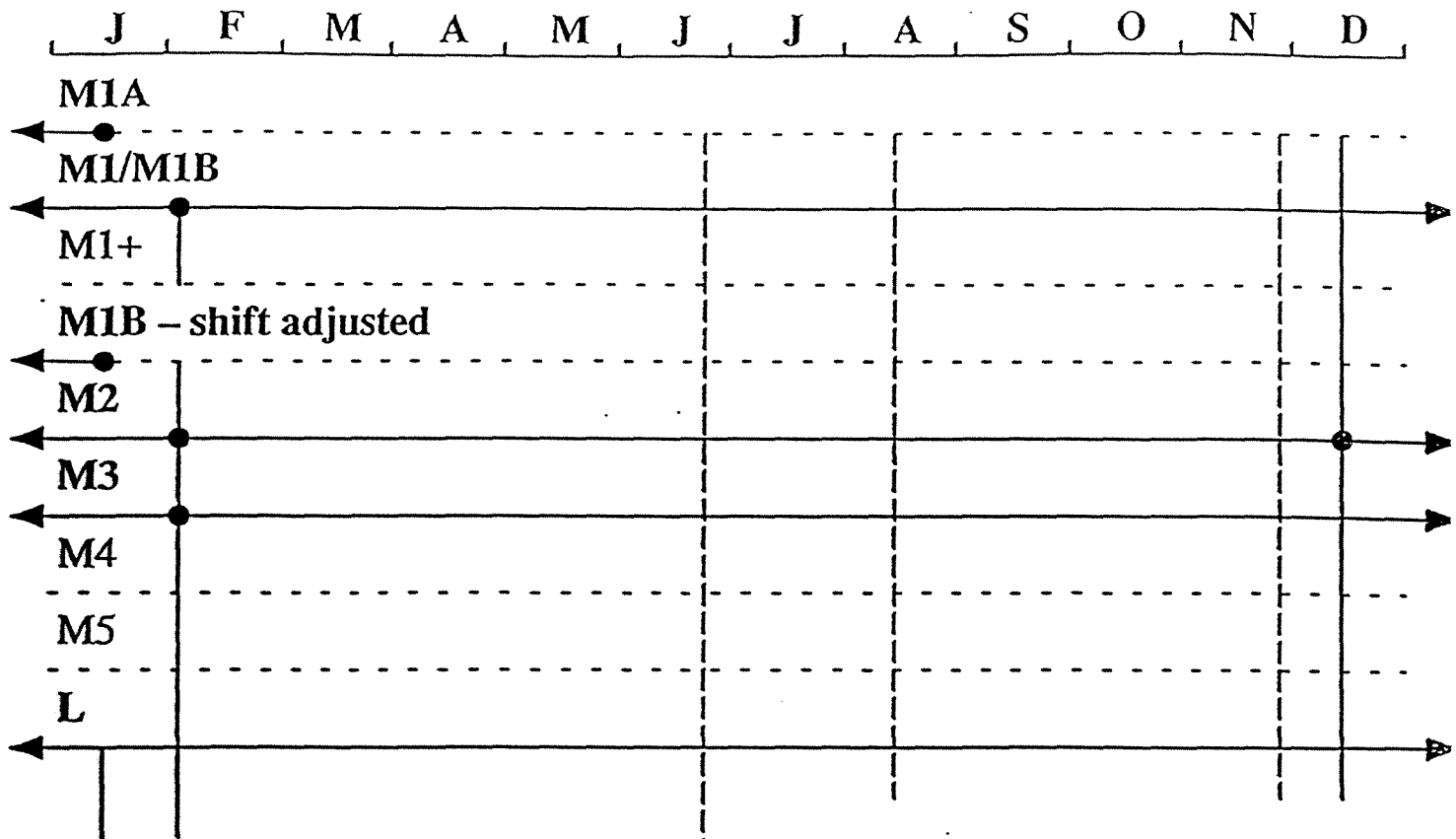(See H.6 Release for details)

September 18, 1981
The term RP component of M3 was revised
and benchmarked to a survey of "retail RPs"
conducted on Aug. 31, 1981. The current methods
of estimation did not pick up the increase
which was attributed to recent active promotion.
(See H.6 Release for details)

Friday Release
Immediate Release

1982

J F M A M J J A S O N D

M1A

M1/M1B

M1+

M1B – shift adjusted

M2

M3

M4

M5

L

January 15, 1982
The H.6 was revised to only show 4 monetary aggregates, M1, M2, M3 and L. M1A and M1B–shift adjusted were dropped from the release. M1B was renamed M1 and the other aggregates remained unchanged.
(See H.6 Release for details)

June 18, 1982
Revisions to the data reported on the H.6 dated June 18, 1982 were due to the inclusion of historical data on 3 general purpose/broker dealer (GP/BD) money market mutual funds that began reporting in May 1982, though their operations had begun earlier.

August 13, 1982
The Federal Reserve began publishing experimental seasonal factors once each month.

November 29, 1982
The H.6 was revised to exclude the addenda items from the first page and only showed the aggregates: M1, M2, M3, and L.

February 5, 1982
Annual benchmark and seasonal review
Benchmarked to the March, June and September 1981 Call reports.
M1 analogous to the old M1B was redefined to exclude the estimated amount of vault cash held by thrift institutions to service their OCD liabilities in addition to the amount of thrift demand deposits already excluded from M1 for that reason. CIPC of thrift institutions was netted against the transactions deposits at the M1 level. Owing to unavailability of data, thrift CIPC previously had not been deducted.
M2 was redefined to include retail RPs (those issued in denominations of less than $100,000) as well as exclude institution–only money market mutual funds.
M3 had institution–only money market mutual fund shares added to it plus a consolidation component which is the amount of overnight RPs held by I/O money market mutual funds.
(See H.6 Release for details)

December 14, 1982
The Depository Institution Deregulation Committee revised Regulation Q to eliminate interest rate ceilings on MMDAs with a required minimum balance of $2,500. (Ref. Federal Reserve Bulletin, January 1983, Table 1.16)

Friday Release
@ 4:10 PM EDT

Friday Release
4:15 PM EDT

1983

J F M A M J J A S O N D

M1A

M1/M1B

M1+

M1B – shift adjusted

M2

M3

M4

M5

L
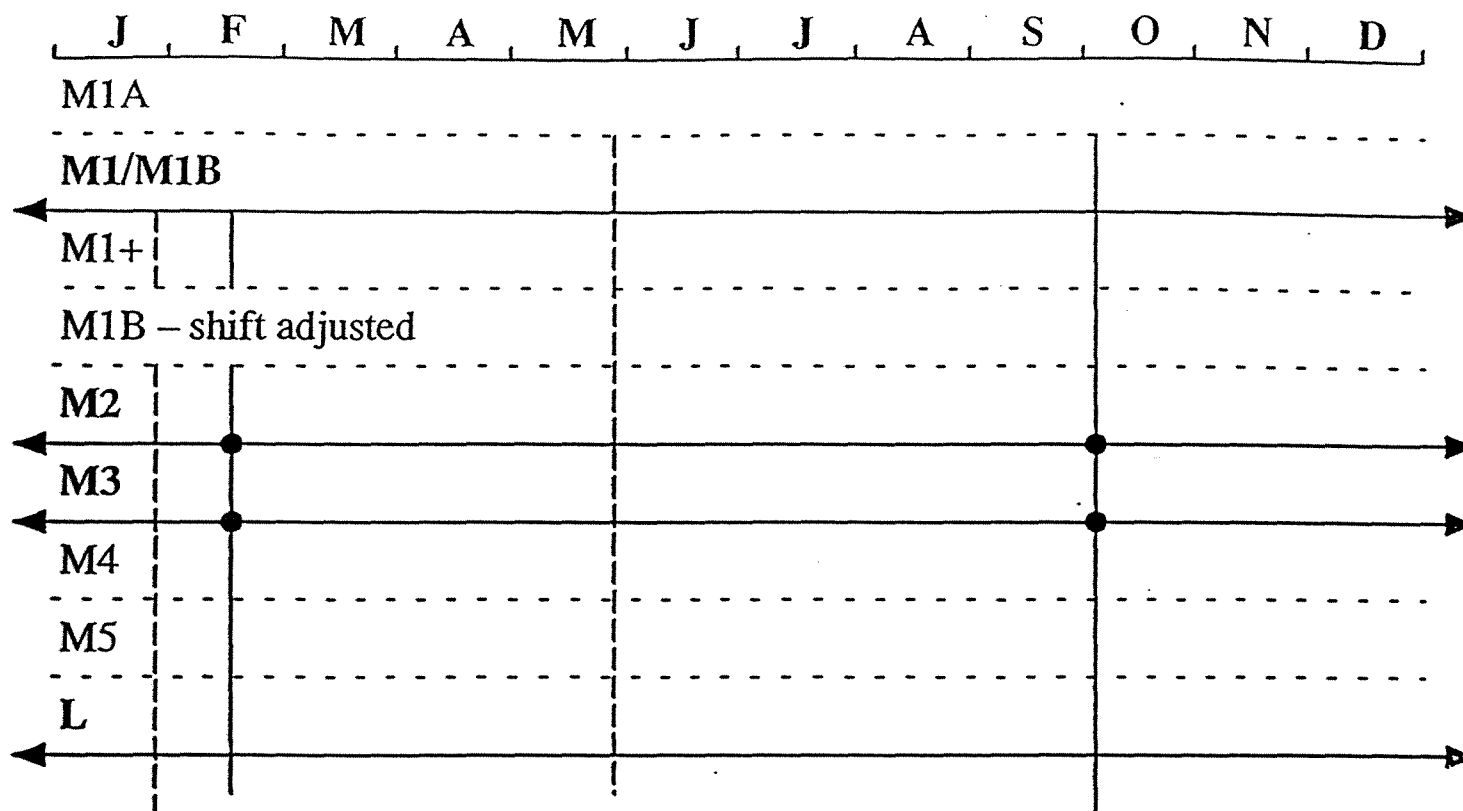
January 28, 1983
The Garn–St. Germain Act of 1982 had recently authorized money market deposit accounts. Beginning on January 28, 1983, money market deposit accounts (MMDAs) were reported separately as a component of the broader monetary aggregates. Due to the lack of historical data, they were reported on a NSA basis. Note that this did NOT revise the monetary aggregates because the deposits had previously been included in the savings component of M2.

February 14, 1983
Annual benchmark and seasonal review
Benchmarked to the Dec. 1981 and March, June, and September 1982 Call reports.
Two definitional changes have been implemented.
M2 was revised to include general purpose/broker dealer (GP/BD) tax–exempt money market mutual funds and exclude all IRA/Keogh balances at depository institutions and money market mutual funds.
M3 was revised to include institution–only (I/O) tax–exempt money market mutual funds.
(See H.6 Release for details)

October 1, 1983
The Depository Institution Deregulation Committee (DIDC) moved to amend Regulation Q by eliminating interest rate ceilings on time deposits with maturities greater than 31 days and principal greater than $2,500.
(See November 1983 FRB Bulletin Table 1.16 for details)

**May 20th through June 10th 1983**
Weekly data on savings deposits and small time deposits were not reported due to reporting difficulties associated with MMDAs. In addition, historical data were revised to reflect corrections of reporting errors beginning in December 1982.
(See H.6 Release dated June 10, 1983 for details)

Friday Release
@ 4:15 PM EDT

1984

J F M A M J J A S O N D

M1A

M1/M1B

M1+

M1B – shift adjusted

M2

M3

M4

M5

L
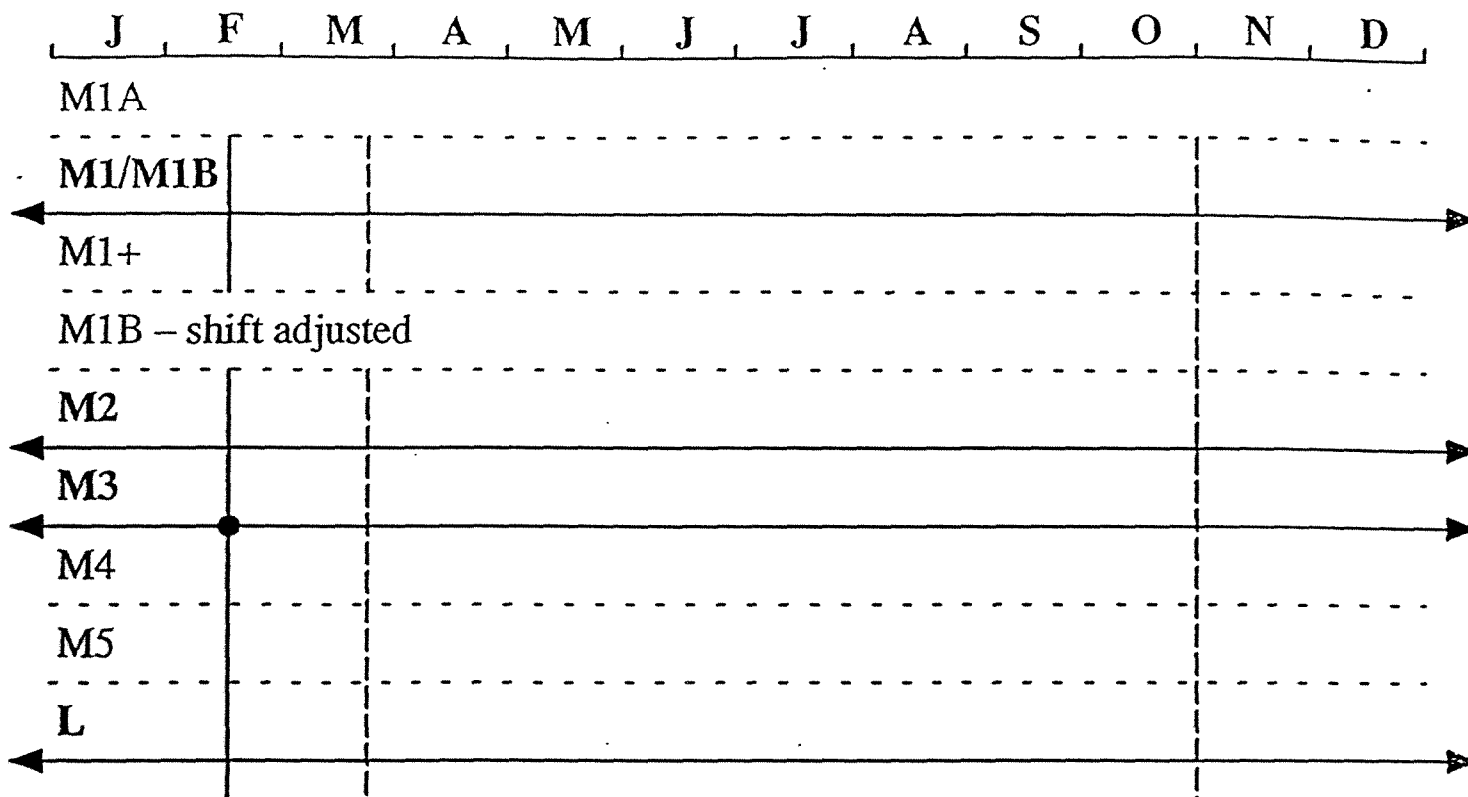
February 16, 1984
Annual benchmark and seasonal review
Benchmarked to recent Call reports.
The H.6 published on February 10, 1984 was the last one that
presents deposits data on a week-ending Wednesday basis.
All data shown on the H.6 dated February 16, 1984, was shown on
a week-ending Monday basis to correspond with the new reporting
cycle under contemporaneous reserve requirements. (CRR)
In addition, M3 was redefined to include term Eurodollars in Canada
and the United Kingdom that are held by U.S. residents.
The rest of the aggregates remained unchanged definitionally.
(See H.6 Release for details)

March 22, 1984
The H.6 began being released at 4:30 PM EDT on Thursdays.

November 1, 1984
Benchmark
Benchmark due to revised data received in conjunction with annual shifts among
weekly, quarterly and annual reporting panels. Similar benchmarks were not needed
in later years because of improvements in the procedure used to handle the panel shifts
at the Federal Reserve. In addition, institution-only money market mutual fund shares
were revised back to November 1980 to reflect new data.

Friday Release	Thursday	Thursday Release
@ 4:15 PM EDT	4:15 PM	@ 4:30 PM EDT

1985

J F M A M J J A S O N D

M1A

M1/M1B

M1+

M1B – shift adjusted

M2

M3

M4

M5

L
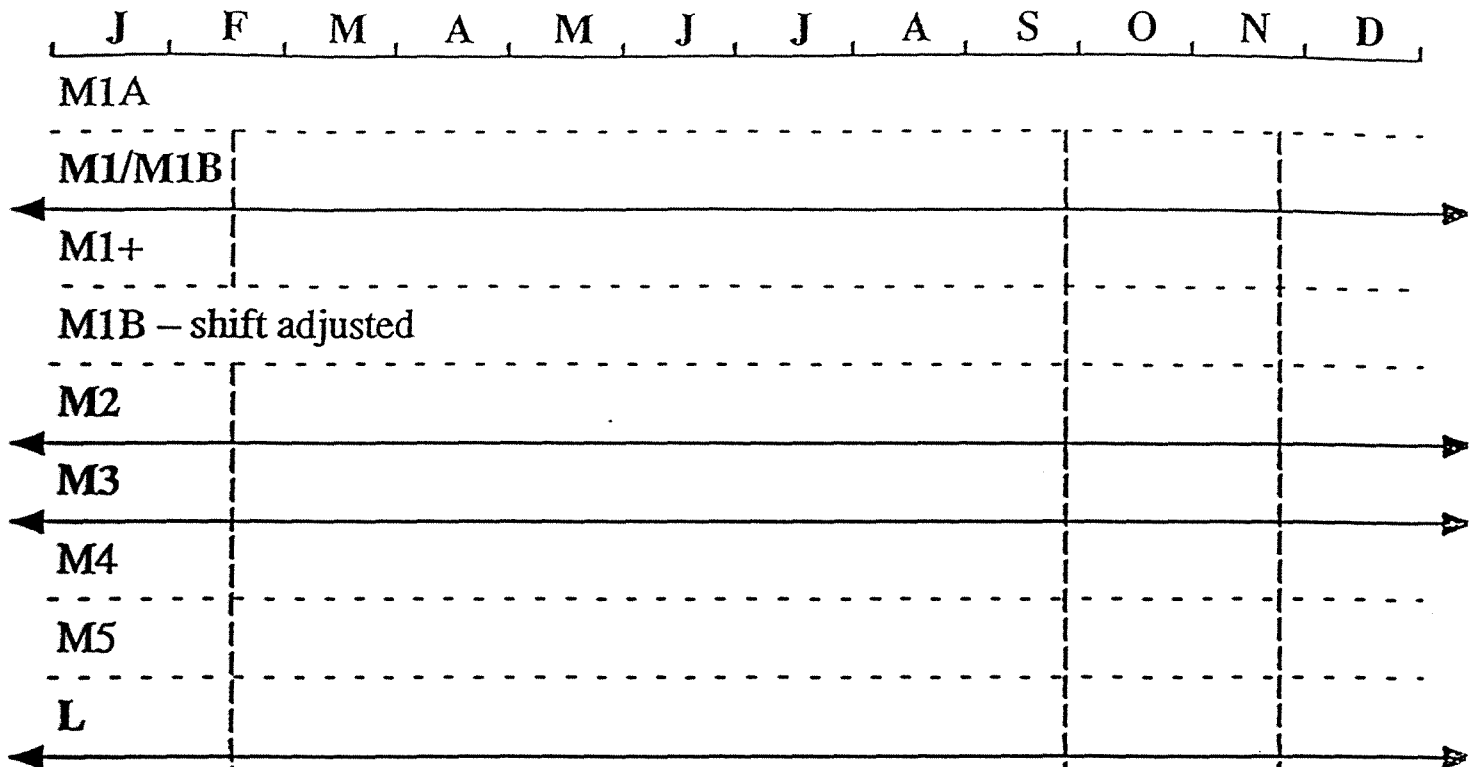
February 14, 1985
Annual benchmark and seasonal review
Benchmarked to Call reports through June 1984.
In addition, new data sources started being used
in estimating RPs and term Eurodollars.
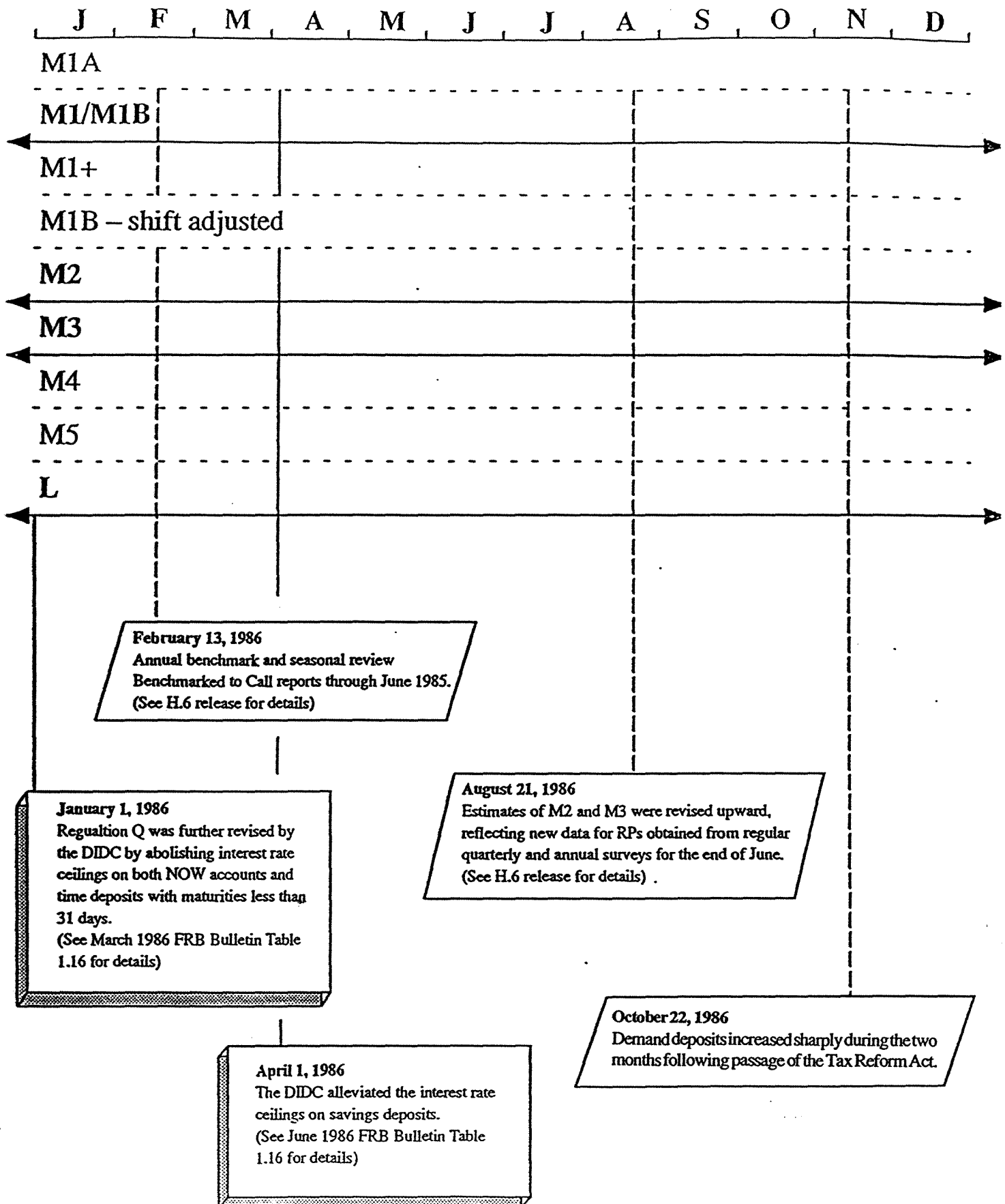(See H.6 release for details)

September 27, 1985
On September 27, 1985, hurricane Gloria hit the
eastern coast driving up demand deposits and
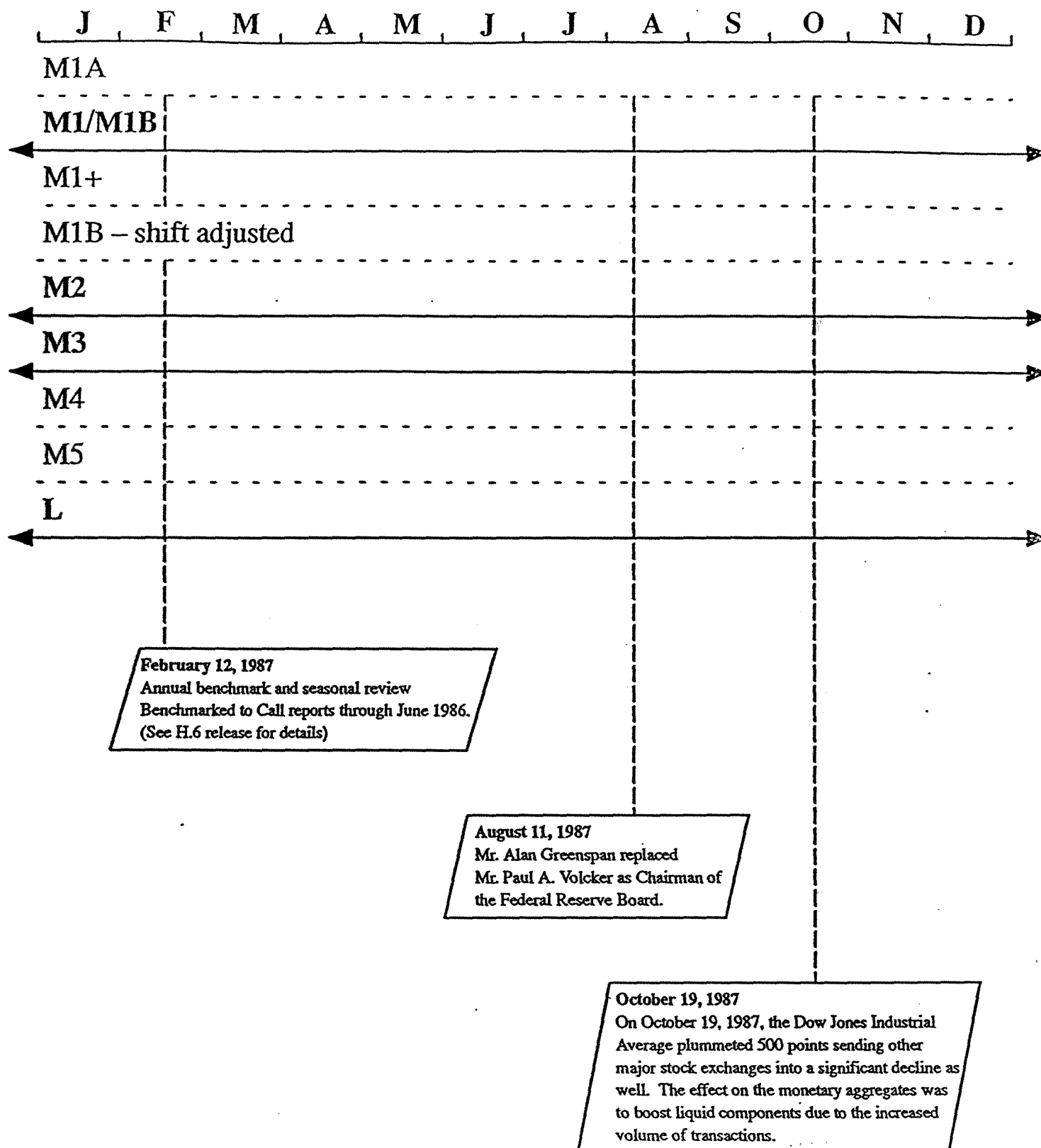Federal Reserve float.

November 21, 1985
The Bank of New York experienced a com-
puter failure that resulted in a substantial tran-
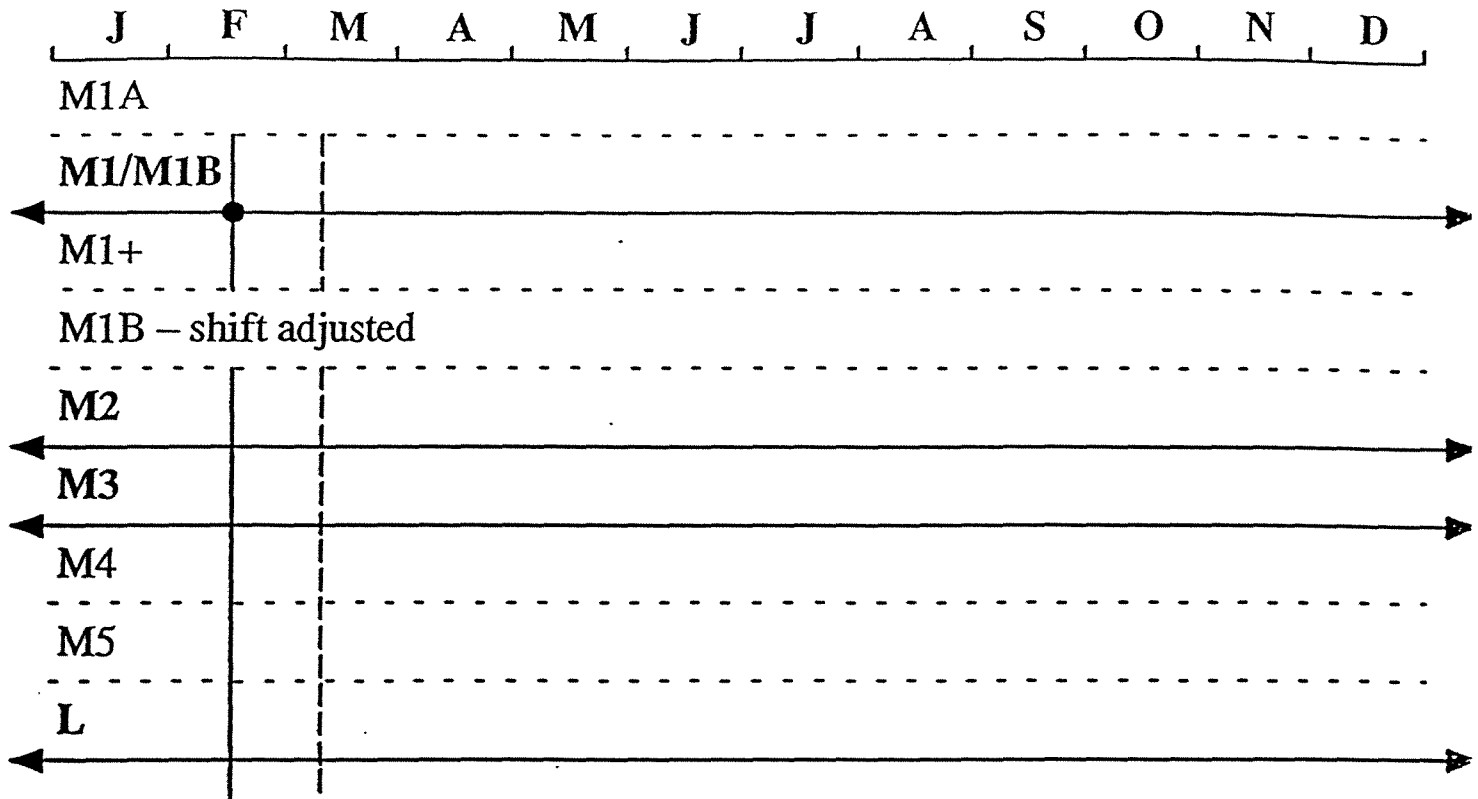sitory increase in reported demand deposits.

Thursday Release
@ 4:30 PM EDT

1986

J F M A M J J A S O N D

M1A

M1/M1B

M1+

M1B – shift adjusted

M2

M3

M4

M5

L

February 13, 1986
Annual benchmark and seasonal review
Benchmarked to Call reports through June 1985.
(See H.6 release for details)

January 1, 1986
Regualtion Q was further revised by
the DIDC by abolishing interest rate
ceilings on both NOW accounts and
time deposits with maturities less than
31 days.
(See March 1986 FRB Bulletin Table
1.16 for details)

August 21, 1986
Estimates of M2 and M3 were revised upward,
reflecting new data for RPs obtained from regular
quarterly and annual surveys for the end of June.
(See H.6 release for details) .

October 22, 1986
Demand deposits increased sharply during the two
months following passage of the Tax Reform Act.

April 1, 1986
The DIDC alleviated the interest rate
ceilings on savings deposits.
(See June 1986 FRB Bulletin Table
1.16 for details)

Thursday Release
@ 4:30 PM EDT

1987

J F M A M J J A S O N D

M1A

M1/M1B

M1+

M1B – shift adjusted

M2

M3

M4

M5

L

February 12, 1987
Annual benchmark and seasonal review
Benchmarked to Call reports through June 1986.
(See H.6 release for details)

August 11, 1987
Mr. Alan Greenspan replaced
Mr. Paul A. Volcker as Chairman of
the Federal Reserve Board.

October 19, 1987
On October 19, 1987, the Dow Jones Industrial
Average plummeted 500 points sending other
major stock exchanges into a significant decline as
well. The effect on the monetary aggregates was
to boost liquid components due to the increased
volume of transactions.

Thursday Release
@ 4:30 PM EDT

1988

J F M A M J J A S O N D

M1A

M1/M1B

M1+

M1B – shift adjusted

M2

M3

M4

M5

L

Thursday Release
@ 4:30 PM EDT

1989

J F M A M J J A S O N D

M1A

M1/M1B

M1+

M1B – shift adjusted

M2

M3

M4

M5

L

February 9, 1989
Annual benchmark and seasonal review
Benchmarked to Call reports through June 1988.
(See H.6 release for details)

J	F	M	A	M	J	J	A	S	O	N	D

M1A

- -

M1/M1B

←——→

M1+

- -

M1B – shift adjusted

- -

M2

←——→

M3

←——→

M4

- -

M5

- -

L

←——→

February 15, 1990
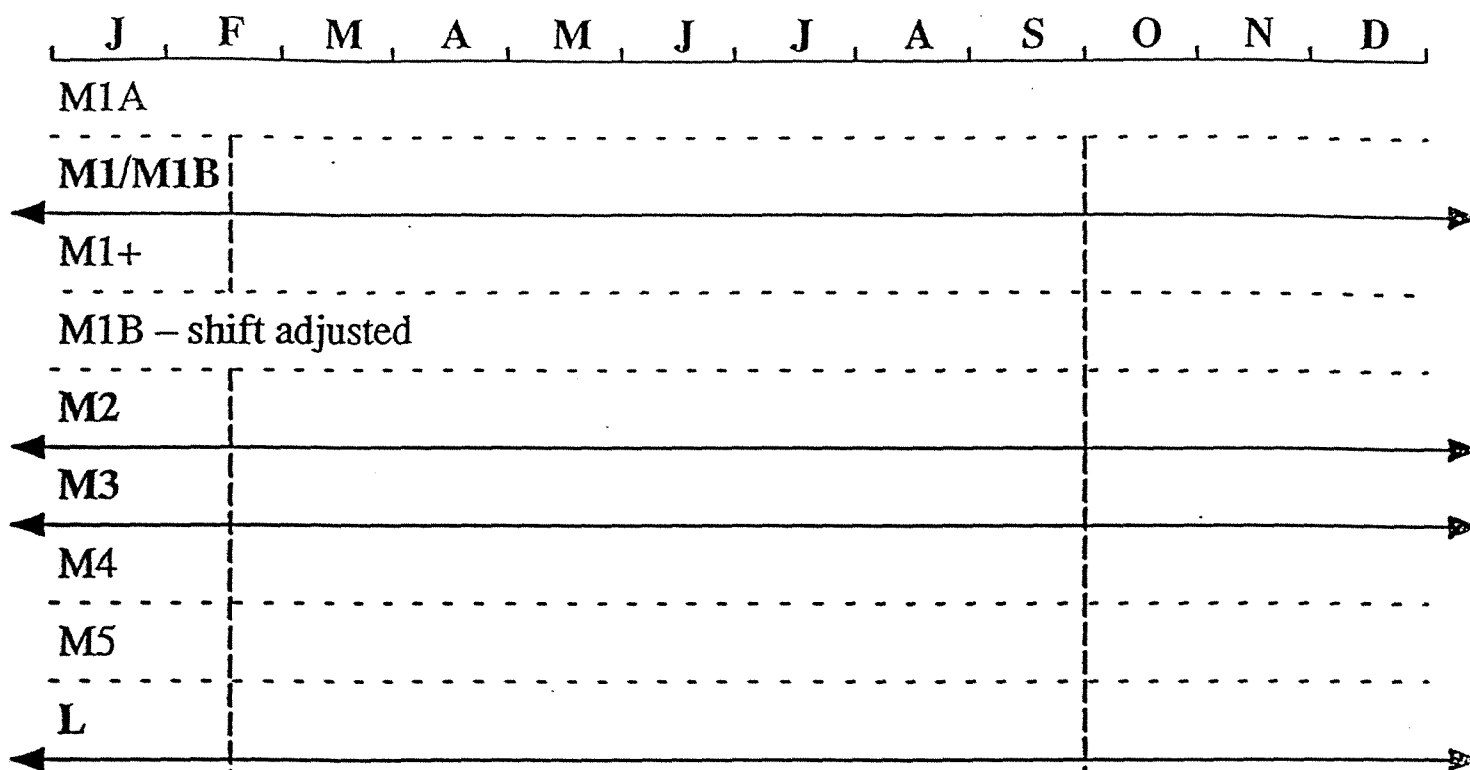Annual benchmark and seasonal review
Benchmarked to Call reports through June 1989.
M2 was revised to include overnight repurchase agreements issued by thrift institutions,
formerly included with term repurchase agreements in the non–M2 component of M3.
This redefinition had no effect on the levels of M1 , M3 or L.
(See H.6 release for details)

1991

J　F　M　A　M　J　J　A　S　O　N　D

M1A

M1/M1B

M1+

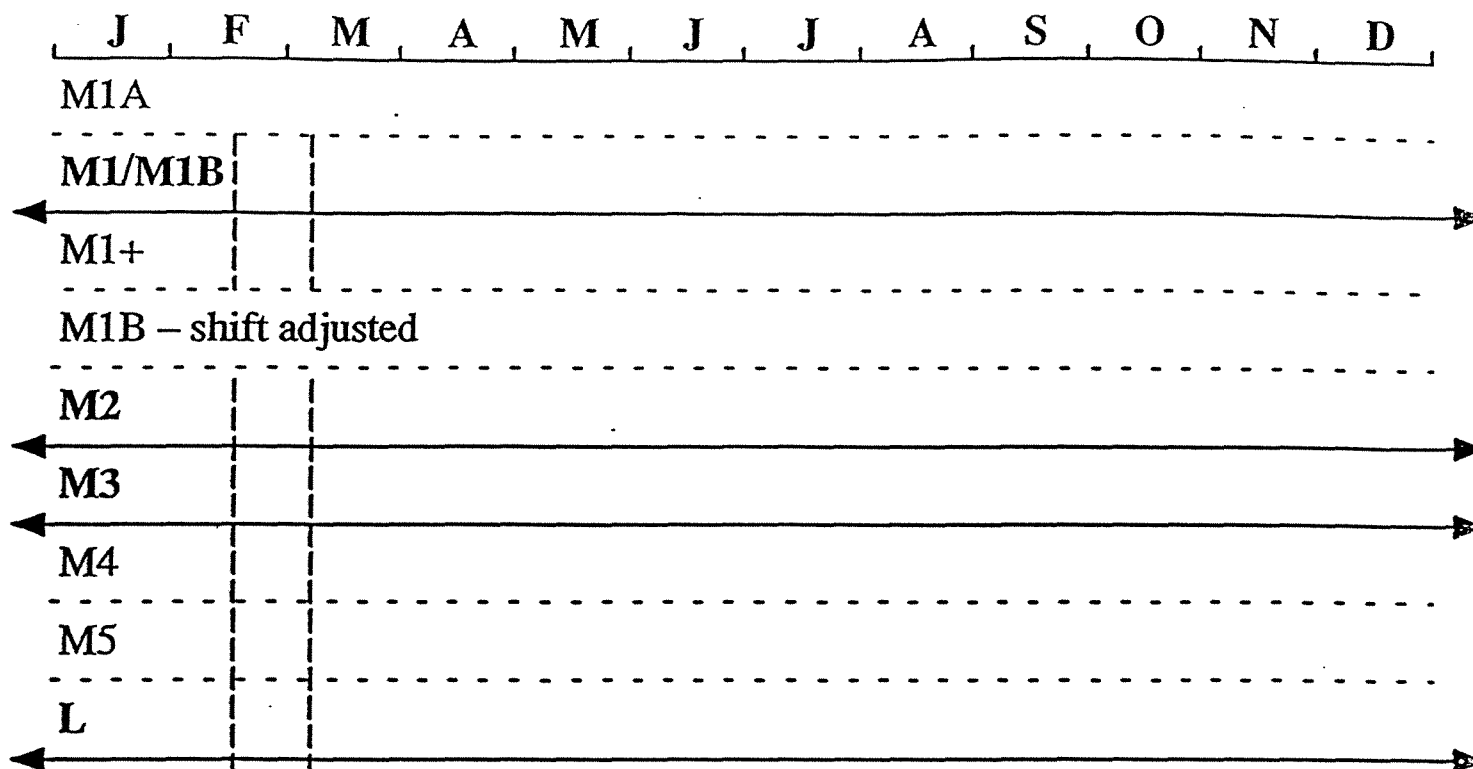M1B – shift adjusted

M2

M3

M4

M5

L

February 7, 1991
Annual benchmark and seasonal review
Benchmarked to Call reports through June 1990.
(See H.6 release for details)

October 3, 1991
There was a change in the format of the H.6 release. The change is necessary because, on September 17, 1991, depository institutions began reporting to the Federal Reserve only their combined savings deposits and money market deposit accounts (MMDAs), rather than reporting them separately, owing to changes in the deposits reports (FR2900).
In order to calculate consistent seasonally adjusted data, the new seasonal factors are equal to the inverse of the weighted average of the inverses of the seasonal factors for savings deposits and MMDAs, where the weights are defined as the ratio of each component to the sum of the components during the month of August. In other words, the total of savings and MMDAs was split into its two components, 'savings' and 'MMDAs' for both commercial banks and thrifts. Then its old seasonal factors (published in February 1991) continued to be used, namely, the seasonal factors for bank savings, bank MMDAs, thrift savings, and thrift MMDAs.
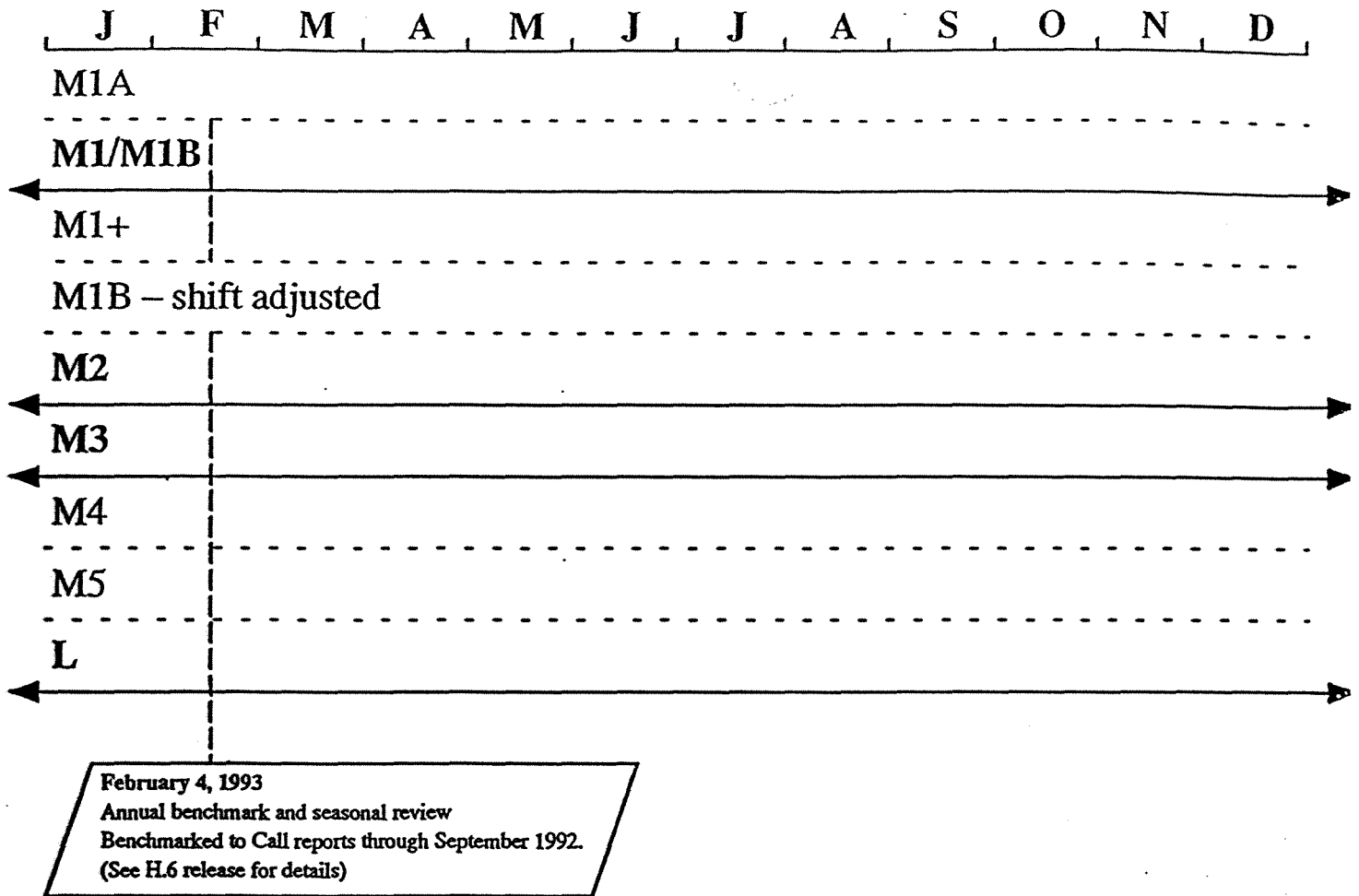(See H.6 release for details)

Thursday Release
@ 4:30 PM EDT

1992

J F M A M J J A S O N D

M1A

M1/M1B

M1+

M1B – shift adjusted

M2

M3

M4

M5

L

February 13, 1992
Annual Benchmark and seasonal review
Benchmarked to Call reports through Sept. 1991.
(See H.6 release for details)

March 5, 1992
The release dated March 5, 1992 incorporates further
revisions to historical data. The change was due to the
reclassification of some brokered deposits from large time
to small time deposits in addition to those reported in the
annual benchmark on February 13, 1992.
(See H.6 release for details)

Thursday Release
@ 4:30 PM EDT

1993

J F M A M J J A S O N D

M1A

M1/M1B

M1+

M1B – shift adjusted

M2

M3

M4

M5

L

February 4, 1993
Annual benchmark and seasonal review
Benchmarked to Call reports through September 1992.
(See H.6 release for details)