

Appendix

Notes on Data Sources and Calculation of the Source Base and RAM

The Monetary (Source) Base

The FRB St. Louis monetary (source) base is defined as those liabilities of the monetary authorities (U.S. Treasury and the Federal Reserve) that (1) the nonbank public uses as media of exchange and (2) depository institutions use to satisfy statutory reserve requirements and/or to settle interbank debts (such as clearing checks or transferring funds by wire).

We measure the monetary base, monthly and biweekly, as the average daily level of (1) currency in circulation outside the Treasury and Federal Reserve Banks, plus (2) the deposits held by depository institutions at the Federal Reserve Banks. Monthly observations on the FRB St. Louis monetary base are available beginning December 1917, and biweekly observations are available beginning with the reserve maintenance period that ended February 15, 1984. (This is the first two-week “reserve maintenance period” under the system of statutory reserve requirements adopted by the Board of Governors as of February 2, 1984.)

Currency in Circulation: For monthly figures, our sources are:

- December 1917–December 1958: Figures through 1941 are from *Banking and Monetary Statistics 1914–1941* (1943, reprinted 1976), Table 101, pp. 369–371, the column labeled “Money in circulation.” Later figures are from *Banking and Monetary Statistics 1941–1970* (1976), Table 10.1B, pp. 526–535, the column labeled “Currency in circulation.”
- January 1959–date: internal Board of Governors database. These figures, except for very small infrequent revisions, are the same as those published in *Banking and Monetary Statistics 1941–1970* (above), various issues of the *Annual Statistical Digest*, the Board of Governors H.4.1 release (<http://www.federalreserve.gov/releases/h41/>), and the *Federal Reserve Bulletin* (ref. Table 1.11, page A5, line 17, January 2003).

For biweekly figures, we use arithmetic averages of weekly averages of daily figures. For weekly figures beginning February 1984, our sources are:

- Weeks ending February 15, 1984–December 26, 1984: *Annual Statistical Digest 1984* (Board of Governors, October 1985), Table 2.B., pp. 7–9, line 15, “Currency in circulation.”
- Weeks ending January 2, 1985–December 25, 1985: *Annual Statistical Digest 1985* (Board of Governors, October 1986), Table 2.B., pp. 7–9, line 15, “Currency in circulation.”
- January 1986–date: internal Board of Governors’ H.4.1 database. These figures are the same as those published in various issues of the *Annual Statistical Digest*, the Board of Governors H.4.1 release (<http://www.federalreserve.gov/releases/h41/>), and the *Federal Reserve Bulletin* (ref. Table 1.11, page A5, line 17, January 2003).

Federal Reserve Bank Deposits: Although the Board of Governors has collected daily balance-sheet figures from each Reserve Bank since the beginning of the System, the Board has not, and does not, publish monthly or weekly averages of these figures.¹ Rather, only Wednesday and end-of-month figures are published. Ideally, if these figures were available, we would measure the

¹ The report that collects these daily figures is referred to within the Federal Reserve as the FR34 report. Wednesday and end-of-month figures are published as the condition statement of the Federal Reserve Banks (ref. Table 1.18, page A10, *Federal Reserve Bulletin*, January 2003).

monetary base as period averages of the deposits of depository institutions at the Reserve Banks (ref. line 25, table 1.18, page A10, *Federal Reserve Bulletin*, January 2003). Instead, we measure the monetary base by the sum of “reserve balances at the Reserve Banks” (ref. table 1.11, page A5, line 25, *Federal Reserve Bulletin*) plus, beginning August 1981, “service-related balances and adjustments” (ref. table 1.11, page A5, line 22, *Federal Reserve Bulletin*). From an accounting viewpoint, the latter item was zero prior to implementation of the Monetary Control Act in November 1980 and, hence, reserve balances differed from member bank deposits at the Federal Reserve only by a variety of accounting adjustments related to check processing and other financial services. We acknowledge that for some early years this measure omits certain small deposit amounts at held at the Reserve Banks by nonmember institutions for settling interbank payments (as described by Friedman and Schwartz, 1963). Beginning August 1981 with the first published figures on service-related balances, in the *Annual Statistical Digest*, reserve balances excludes an amount of deposits at the Federal Reserve equal to the nominal amount of depository institutions’ required clearing balance contracts; for details, see Anderson and Rasche (1994).

The first published monthly average figures for member bank reserves are for August 1917. The St. Louis measures of adjusted monetary base and adjusted reserves begin in December 1917 because that is the first month for which deposit figures permit calculation of RAM.

For monthly figures, our sources are:

- December 1917–December 1970: Figures through 1941 are from *Banking and Monetary Statistics 1914–1941* (1943), Table 101, pp. 369–371, the column labeled “Member bank reserve balances, Total.” Later figures are from *Banking and Monetary Statistics 1941–1970* (1976), Table 10.1B, pp. 526–529, the column labeled “Member bank reserves, Total,” and pp. 530–535, the column labeled “Member bank reserves, With F.R. Banks.” Except for small accounting adjustments, these figures equal the deposits held by member banks at Federal Reserve Banks. So far as we are aware, these volumes are the only source for monthly averages of daily deposits at the Federal Reserve Banks.
- January 1970–December 1979: *Annual Statistical Digest 1970–1979* (Board of Governors, March 1981), Table 2.A., pp. 10–15, row 21, “Member bank reserves with Federal Reserve Banks.”
- January 1980–December 1989: *Annual Statistical Digest 1980–1989* (Board of Governors, 1991), Table 2.A., pp. 11–20, the sum of line 23 “Reserve balances with Federal Reserve Banks,” plus line 19, “Service-related balances and adjustments,” plus line 21, “Required clearing balances.” Note that the required-clearing balance figures reported 1981–1983 include adjustments, that is, although not labeled as such, the figures are the sum of service-related balances and adjustments.
- January 1990–December 1990: *Annual Statistical Digest 1990–1995* (Board of Governors, November 1996), Table 2, p. 7, the sum of line 22 “Reserve balances with Federal Reserve Banks” and line 19, “Service-related balances and adjustments.”
- January 1991–date: internal Board of Governors’ H.4.1 database. The sum of reserve balances plus service-related balances and adjustments. The figures match those published on the Board’s H.4.1 release and in table 1.18 of the *Federal Reserve Bulletin*.
- For biweekly figures, our sources are the *Annual Statistical Digests* from 1984 through 1990, and the Board of Governors’s H.4.1 database thereafter. Where necessary, biweekly figures are arithmetic averages of weekly figures.

The Reserve Adjustment Magnitude (RAM)

- *December 1917–August 1935*: During this period, the primary change to the Federal Reserve’s statutory reserve requirements was the reclassification in 1922 of St. Louis from a central reserve city to a reserve city. This change had been proposed by large St. Louis banks to reduce their required reserves. Our RAM calculation is based on figures from the *Federal Reserve Bulletin* regarding net demand deposits at weekly reporting member banks in the city of St. Louis. A second major change in reserve requirements occurred in August 1935 when the Banking Act of 1935 changed the calculation (definition) of net demand deposits and made U.S. government deposits subject to the same reserve requirements as applied to private deposits. For further details, see Anderson and Rasche (1999).
- *August 1935–August 1968*: Reserve requirements changed little during this period prior to 1966. Through June 1966, separate reserve-requirement ratios applied to net demand deposits classified by location (central reserve city, reserve city, and country), and a single ratio applied to all time (including saving) deposits. Beginning July 1966, the reserve-requirement distinction between central reserve city and reserve city banks was discontinued. In addition, time deposits became subject to reserve-requirement ratios that differed based on a bank’s aggregate time deposits. Our RAM construction uses deposit figures and reserve-requirement ratios from Tables 10.3 and 10.4 in *Banking and Monetary Statistics 1941-1970*. Beginning July 1966, for time deposits, use unpublished figures from the archives of the St. Louis Fed’s Research division.² We measure $RAM_{1935}^{deposits}$ as the difference between a counterfactual required-reserve figure calculated from the *BMS* deposit figures and the reserve requirement regime in effect during September 1935, minus the level of required reserves that we calculate from the *BMS* deposit figures.³ Note that $RAM_{1935}^{deposits}$ is zero for August 1935–July 1936. For all months in this segment, RAM_{1935}^{other} is equal to zero.
- *September 1968–December 1972*: Beginning September 12, 1968, banks’ weekly required reserves were computed on the basis of average daily deposits held two weeks earlier. In our calculation of $RAM_{1935}^{deposits}$, we apply the 1935 reserve-requirement ratios to monthly averages of lagged weekly deposits even though the 1935 regime (our “base period” for RAM) has contemporaneous requirements. Our monthly average figures for deposits subject to reserve requirements are pro rata averages of (lagged) weekly deposit figures from the Board of Governor’s J.1 and H.7 statistical release, supplemented by data from the archives of the St. Louis Fed’s research division.
- *December 1972–January 1975*: Beginning November 9, 1972, the reserve-requirement distinction for demand deposits between reserve city and country banks was removed. In its place, demand deposits became subject to a system of tiered, graduated requirements. On the same date, the system of graduated requirements on time deposits was extended such that the applicable ratios varied both with the bank’s aggregate time-deposit liabilities and with the

² Different requirement ratios applied to a bank’s total time (and savings) deposits under \$5 million and over \$5 million. Aggregate time deposits in these categories, aggregated across banks, are unpublished figures.

³ From January 1936 through December 1967, our calculated required-reserve figures differ from the *BMS* published figures by no more than two or three thousand dollars except for June 1966. In that month, the published and calculated values are \$22.212 billion and \$22.201 billion, respectively. We use the calculated values in measuring RAM. The Board of Governors has published revised total required reserves

remaining time to maturity of each deposit.⁴ During this period, the Board of Governors expanded its practice of imposing special and marginal reserve requirements (see Table 1).⁵ Our monthly deposit figures, constructed as pro rata averages of lagged weekly figures, are from the archives of the St. Louis Fed’s research division. For the part of required reserves that may be calculated from aggregate monthly deposit figures, $RAM_{1972}^{deposits}$ varies from zero (the value for each month from December 1972 through June 1973) to a low of $-\$715$ million in January 1974, with a mean value of $-\$421$ million. For the remainder of required reserves (largely, due to special and marginal reserve requirements), RAM_{1972}^{other} ranges from near zero during the early months of the interval to a low of approximately $-\$1.5$ billion during August and September 1974. Total RAM peaks at $-\$2.2$ billion in September 1974, and averages approximately $-\$1.1$ billion.

- January 1975–October 1980:* Beginning December 12, 1974, requirements on time deposits were changed such that only reserve-requirement ratios on deposits with remaining time-to-maturity of 30-179 days varied with the amount of the bank’s aggregate time-deposit liabilities. As above, monthly average deposit figures are constructed from the archives of the St. Louis Fed’s Research division. $RAM_{1975}^{deposits}$ is positive for all months after January 1975, beginning mid-February’s approximately $\$1$ billion reduction in required reserves, and averages approximately $\$2.4$ billion. During the early part of the period, through October 1978, RAM_{1975}^{other} is positive and averages approximately $\$225$ million. With the imposition of supplementary reserve requirements on large time deposits in November 1978, RAM_{1975}^{other} becomes sharply negative, averaging $-\$2.7$ billion during the next 21 months (the requirement was removed in July 1980). Total RAM ranges from a high of $\$3.4$ billion to a low of $-\$1.5$ billion, and averages $\$1.7$ billion over the period.
- November 1980–September 2002:* During this period, for months prior to January 1991, RAM is unchanged. Beginning January 1991 through December 1993, RAM is an updated version, to incorporate revised data, of that proposed in Anderson and Rasche (1996). Beginning January 1994, RAM is an updated version of the “preferred” RAM adjustment shown as line “1.” in Figure 10 of Anderson and Rasche (2001). This adjustment regards a bank’s implementation of a retail-deposit sweep program as economically equivalent to a reduction in the applicable reserve-requirement ratio for transaction deposits.⁶

⁴ Burger and Rasche (1977) discuss the impact of these changes on (a previous version of) RAM . Despite the technical change in requirements on time deposits that permitted varying the graduated reserve-requirement ratios by remaining maturity, ratios prior to December 1974 differed only by a bank’s aggregate time deposits with a 3 percent ratio applying up to $\$5$ million, and 5 percent thereafter.

⁵ Historically, a supplemental requirement was one imposed on a deposit or other liability that had not previously been subject to a requirement. A “marginal” requirement was a surcharge imposed in addition to a pre-existing regular requirement.

⁶ This RAM uses as its base period the reserve-requirement regime that became effective for weekly reporting banks on December 27, 1990 (the reserve maintenance period ending January 7, 1991).