Monetary Aggregates

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Monetary aggregates are measures of the total stock of money held by the public. Empirical measures of U.S. monetary aggregates have changed and adapted through time in response to changes in the range of available instruments and the transaction cost of exchanging one asset for another. Friedman and Schwartz (1970, p. 198) note that "the purpose of a definition is to facilitate organizing the data in a useful way, not to prejudge conclusions." As a result, monetary aggregates "cannot be defined by any single set of hard and fast rules. It is a question of judgment on the basis of criteria that are inevitably incomplete and often unformulated."

Historically, alternative monetary aggregates have been constructed simultaneously at various levels of aggregation because of uncertainty regarding the correspondence among financial instruments, the functions of money, and the cost of converting less-liquid assets into a medium of exchange. Over time, financial innovation has both introduced new assets and changed the feasibility and cost of conversion among existing assets. As a result, definitions of U.S. monetary aggregates have changed. Prior to the imposition of federal statutory reserve requirements in 1914, for example, banks often did not distinguish sharply among demand, savings, and time deposits. Demand deposits sometimes paid interest, and time deposits sometimes were transferable via checks. During the 1980s, thrift institutions began offering checkable deposits, commercial banks began paying explicit interest on certain checkable deposits, and the popularity of money market mutual funds soared.

The U.S. economy comprises a wide variety of financial assets, and there is no simple rule for determining which assets should be included in a monetary aggregate. The tables in this chapter focus on four aggregates: currency, M1, M2, and M3. Two currency aggregates are included. The *currency stock* refers to the total amount of currency in the economy, including currency issued by U.S. firms and by the monetary authorities (the U.S. Treasury and, after 1914, the Federal Reserve), whether held in the United States or abroad. *Currency in circulation* refers to the currency stock minus currency held by the monetary authorities. Table Cj54–69 shows currency in circulation, by kind, and Table Cj70–74 compares the currency stock and currency in circulation. The Treasury has compiled figures on currency in circulation since 1800, and the tables are based on these data. Depending on date, the currency aggregates may include specie coin (gold and silver), nominal coin (nonprecious metals), paper currency legally convertible into specie coin or bullion, and paper currency not convertible into specie. Historically, many types of firms have issued currency. Prior to the Civil War, currency was issued, with the approval of state governments, by railroad and canal development companies as well as by banks. Following the Civil War, a federal excise tax on notes issued by state-chartered banks made their issue unprofitable; as a result, most currency came to be issued by national banks. Today, Federal Reserve notes are dominant (see Tables Cj54–74 for details).

The M1, M2, and M3 monetary aggregates in Table Cj84–99 are the measures currently published by the Board of Governors of the Federal Reserve System. Unfortunately, owing to limited source data, these figures begin only in 1959 (Anderson and Kavajecz 1994; Kavajecz 1994). Tables Cj42–53 display monetary aggregate measures for earlier years. Data in Table Cj42–48 are annual averages for years through 1947, calculated from the mixed-frequency figures compiled by Friedman and Schwartz; data in Table Cj49–53 are annual averages for 1947–1958 of the monthly figures compiled by Rasche (Friedman and Schwartz 1970; Rasche 1987, 1990).

The M1 aggregate includes currency in circulation outside the vaults of depository financial institutions; travelers' checks issued by nonbank financial institutions; and certain deposits, transferable by check, that are held by the nonbank public. The nonbank public is defined to consist of households, firms other than depository institutions, state and local governments, and federal government agencies other than the Treasury. The financial assets included in M1 function as a medium of exchange, that is, they are commonly used to settle debts resulting from the exchange of goods and services. Checks have been used in the United States to transfer ownership of deposits since at least 1800. Prior to the Banking Act of 1933, little distinction was drawn between demand deposits (which the bank was required to pay out immediately, on demand) and other types of savings deposits. Although only demand deposits could be transferred to third parties via negotiable instruments (checks), banks often allowed customers to shift funds among different types of accounts without penalty, and interest could be paid to customers. The Banking Act of 1933, however, prohibited banks from paying explicit interest on demand deposits, and it required banks to impose penalties on customers who withdrew time deposits prior to the contractual maturity. Since 1994, the Federal Reserve's published measure of M1 has been distorted by the operation of automated retail-deposit sweep programs. As of December 1999, such programs were estimated to have reduced the amount of checkable deposits included in M1 by approximately $369 billion, relative to the level of checkable deposits that the nonbank public perceives itself to be holding at depository institutions (for details, see Anderson and Rasche 2001).

The M2 aggregate equals the sum of M1 plus the nonbank public's holdings of certain savings and time deposits at depository institutions and of shares in retail-oriented money market mutual funds. These deposits, although not commonly used as a medium of exchange, are highly liquid (that is, they may be converted quickly and at very low cost into a medium of exchange). Deposits and mutual fund shares linked to retirement accounts, such as IRAs and Keoghs, are excluded because high penalties are imposed for their early conversion (prior to legal specifications) into a medium of exchange.

The M3 aggregate equals the sum of M2 plus the nonbank public's holdings of large-denomination time deposits at depository financial institutions, plus institutionally oriented money market mutual funds. The aggregate also includes certain repurchase agreements and Eurodollar deposits issued by depository institutions (see Table Cj84–99).

Traditionally, monetary aggregates have been constructed by summing, for each time period, the aggregate dollar values of the included assets. This practice ignores economic aggregation theory, which suggests that liquid financial instruments should be aggregated in a manner similar to durable goods. Barnett established that a superlative statistical index number, as defined by Diewert, provides an approximation to the appropriate economic aggregator function (Barnett 1980; Diewert 1976). Table Cj100–107 displays a set of such *monetary index numbers* and their (economically) dual user costs as produced by the Research Division of the Federal Reserve Bank of St. Louis (for details, see Anderson, Jones, and Nesmith 1997; or Barnett and Serletis 2000).

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Monetary Statistics before the National Banking Era

Hugh Rockoff

From the establishment of the federal government through the Civil War, money in the United States consisted mainly of specie (gold and silver coins), bank notes (paper money issued by banks), bank deposits, and at times currency issued by the federal government. The U.S. Mint, established in 1792, produced coins of gold, silver, and copper. Foreign coins also circulated, especially Mexican, Latin American, and Spanish silver pesos. These and other designated foreign coins were legal tender for most of the period. The Mint assayed specimens of these coins and determined their legal tender values. Legal tender status for foreign coins was discontinued in 1857.

During this period, the United States was on a bimetallic standard. Both gold and silver coins were legal tenders, and when specific amounts of gold and silver were brought to the Mint, it was required by law to convert the metals into coin. The content of the silver dollar was set at 371.25 grains of silver, and the content of the gold dollar was set at 24.75 grains of gold, thus establishing a "bimetallic ratio" or "mint ratio" of 15 : 1. One rationale for bimetallism was that gold coins would provide a convenient medium for large transactions, while silver coins would be convenient for small transactions. A second rationale, one that became more important after the Civil War, was that bimetallism would reduce the threat of deflation and produce greater price stability. If the stock of one metal, say gold, grew too slowly to produce stable prices, the other metal, silver, might be used in its place.

In practice, the ability of the United States to maintain both metals in circulation, and thus to satisfy the first rationale, was limited by the tendency of the coins made from the metal worth relatively more in world markets to be withdrawn from circulation and exported. In the early decades of the nineteenth century, the rising price of gold on world markets produced a situation in which most of the coin in circulation was silver. Partly to remedy this situation, the amount of gold in the gold dollar was reduced from 24.75 grains to 23.22 grains in 1834, thus establishing a mint ratio of 16 : 1, which was more in line with world markets. Although this change encouraged the circulation of gold, the main reason gold began to replace silver was the discovery of gold in California in 1848 and the related discoveries in other areas. Although silver did not entirely disappear, the circulation shifted rapidly toward gold in the 1850s. The idea that the cheaper money would replace the dearer (provided the two monies circulate at a fixed exchange rate owing to law, custom, or convenience) is known as Gresham's law, often summarized as "bad money drives out good," although "cheap money drives out dear" is more accurate.

Bank notes were payable in specie on demand except during financial crises or wars, when convertibility was suspended. Bank notes were issued by local private banks and by the First and Second Banks of the United States. The local banks were chartered by the states; the First and Second Banks were chartered by the federal government. The legal procedures for chartering local banks and the rules regulating banks varied greatly from state to state. In some states, banks were chartered individually by the state legislature but, under the so-called free banking laws, anyone could start a bank provided that the bank complied with certain rules and regulations. One of those regulations was that notes issued by free banks had to be backed by government bonds, typically bonds of the state where the bank was located. Perhaps the most important common feature of the early banking laws was that banks with charters from one state were not permitted to set up branches in other states. Restrictions on branching, particularly the ban on interstate branching, produced a system of geographically isolated banks that persisted well into the twentieth century and distinguished the U.S. banking system from the systems prevailing in other industrialized countries. In those countries, bank offices typically were branches of a few large banks with headquarters in the nation's financial center.

The large number of distinct bank notes in existence (because each bank issued its own notes) gave rise to an unusual currency system. Bank notes generally circulated in the vicinity of the bank that issued them. Notes taken into another region had to be converted into local money. Generally, a discount would be charged on nonlocal notes, analogous to the charges sometimes levied for withdrawing cash from an automated teller machine (ATM). The appropriate discounts on bank notes issued by solvent banks – and lists of notes of bankrupt banks, and counterfeits – were published in reference books known as bank note reporters. Although considerable research has been conducted on the determinants of the discounts and other aspects of the system, it is still not known whether the volume of discounted or counterfeit notes was sufficient to affect the accuracy of the monetary statistics from the era.

The First Bank of the United States was chartered in 1791 for a term of twenty years; the Second Bank was chartered in 1816,