The Supply of Money in the United States

Part II — The Monetary Framework

Part I of this essay summarized some of the principal institutions and events that have been instrumental in shaping control over the money supply in the United States. This section examines the more important technical factors and processes that generate change in the U. S. money stock at the present time.[1]

High-Powered Money The units of money in common use are the final products of a refined technical operation. Two different industries combine and coordinate resources and raw materials to generate the dollars that compose this product. The primary industry is the central bank. It produces what is sometimes known as high-powered money (HPM), which consists of (1) currency and (2) commercial bank reserve accounts in the central bank. These components make up the base on which the actual money supply of hand-to-hand currency and demand deposits is formed. Most currency is a part of the actual money supply, but it also may be held by banks as reserves on which demand deposits are expanded.[2]

Two institutions, other than the gold and silver industries, have furnished the monetary system with HPM in the past. First, the Treasury Department at various times printed paper currency (e.g., U. S. notes, Treasury notes, and silver certificates) when authorized to do so by Congress. During the late nineteeth and early twentieth centuries it also manipulated its deposit balances in national banks as a part of deliberate policy to increase and decrease bank reserves at different seasons of the year.

Since 1914, the Federal Reserve System has been the more prominent institution for furnishing HPM. It issues Federal Reserve notes and maintains the reserve (or deposit) accounts of member banks. The Treasury still has some outstanding currency in the form of silver certificates and fractional coin, and it still has substantial balances (tax and loan accounts) with commercial banks. However, the Federal Reserve System has taken over most of the currency-issuing job, and member bank deposits in Federal Reserve Banks have been substituted for the specie reserves that used to be held by the banks themselves.

Both the central bank and the Treasury may carry out seasonal policies with HPM but only the central bank can provide year-to-year (secular) increases in this basic stock. Where the Treasury must rely on bank reserves already in existence to change its balances at commercial banks, the Federal Reserve System creates HPM from scratch by buying government securities or acquiring other assets. The final payment for the securities takes the form either of an issue of Federal Reserve notes or of a new credit to the reserve accounts of member banks. Both of these items are counted as liabilities of Federal Reserve Banks, and both of them are HPM.

Once HPM has been created by the central bank, its final monetary effect depends on its route through the second of the two money-generating industries —the commercial banking system. Most Federal Reserve notes are channeled through commercial banks to become a part of hand-to-hand currency. However, commercial banks keep about 10 percent of these notes as reserves in addition to their deposit reserve accounts in the central bank.

The Currency-Deposit Ratio In addition to the quantity of HPM, two ratios have an important influence in determining the ultimate quantity of money. One is the ratio of currency to demand deposits expressed as

$$r_C = \frac{C}{D_d} ,$$

that households and business firms wish to maintain. This ratio is a function of technical factors, such as checking facilities available to the nonbank public. It also depends on such behavioral factors as trust or mistrust of banks, desire to avoid inflation or evade taxes, black market activities, and the extent of personal travel. Given the total amount of the

[1] Much of the following discussion on high-powered money and the two determining ratios are presented in greater depth in Philip Cagan, *Determinants and Effects of Changes in the Stock of Money, 1875-1960*, NBER, Columbia University Press, 1965.

[2] The total stock of HPM as of June 30, 1970 was $80.0 billion. This total consisted of (1) member bank reserve accounts with Federal Reserve Banks—$22.2 billion; (2) Federal Reserve notes outstanding—$50.6 billion; and (3) Treasury currency outstanding—$7.2 billion. The defined narrow stock of money was $222 billion, consisting of $172 billion private demand deposits adjusted for interbank holdings and $50 billion of currency held outside commercial banks and the Federal government.

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HPM base, the narrow money supply (defined in footnote 2) is larger when the currency-deposit ratio is smaller, and vice versa. For example, let this ratio be one-to-five at some point in time. Then assume that households and business firms experience some change in preferences that prompts them to maintain a ratio of only one dollar in currency to six dollars in checkbook balances, and let them deposit some of their currency in commercial banks in order to achieve this new ratio. The net effect of currency deposited in the banks is to give the banks excess reserves. If the central bank holds constant the stock of HPM, that is, if it does nothing to offset the additional currency in the commercial banks, these banks now have the means to expand credit on the asset side and deposits on the liability side. The volume of deposits then increases by the amount of excess reserves times the inverse of the average ratio of reserves to demand deposits maintained by the commercial banking system. Thus, a unit of HPM held as hand-to-hand currency by the nonbank public has much less monetary influence than the same dollar held as a reserve unit in a commercial bank.

The Reserve-Deposit Ratio The second of the two determining ratios is largely a function of central bank policy. It is the ratio of all banks' reserves to their total demand deposits. It may be expressed as

$$r_R = \frac{R}{D_d} ,$$

where R is the dollar volume of commercial bank reserves held against demand deposits and D_d is the dollar value of demand deposits. Generally, the banks make loans and investments until the actual ratio is reduced to the legal minimum ratio required by law. By increasing earning assets and thereby reducing this ratio, banks maximize the earnings potential of their portfolios.

The minimum required ratio varies from one bank classification to another and between state banks and member banks of the Federal Reserve System. Reserve requirements for state chartered banks are subject to state laws. While these laws may be very different one from another, they generally specify reserve requirements in terms of vault cash (currency), deposits in "other" banks—usually member banks of the Federal Reserve System—and "approved" government securities. The "approved" securities are limited issues of state or Federal government securities bearing relatively low rates of interest. Most of the reserves maintained by these banks, however, are interbank deposits with member banks; so the reserve requirement limitations imposed by the Federal Reserve System on member banks indirectly restrict creation of state bank deposits as well.

For the commercial banking system as a whole, some ratio of total reserves to total deposits exists at any given moment. If the quantity of HPM and the value of the currency-deposit ratio mentioned above are already determined, the volume of demand deposits (and also the total stock of money) is greater when the reserve-deposit ratio is lower and smaller when this ratio is higher.

These three basic parameters define an unadjusted money stock. However, several factors involving monetary accounting and classification must be disposed of before the narrow stock of money is obtained.

Accounting Issues in Classifying the Stock of Money One item to be considered is interbank demand deposits—deposits to the credit of one bank and accounted as a liability by another bank. According to current Federal Reserve regulation, a commercial member bank that makes such a deposit in another member bank may deduct this amount from the total of its own demand deposits subject to reserve requirements. Even though the *recipient* bank must keep reserves against these deposits, the net effect is to exempt the member banking system as a whole from maintaining reserves against interbank deposits. If this allowance were not made—if reserve requirements were in full force against interbank deposits—an increase in this item would diminish the *measured* narrow money supply even though gross demand deposits remained constant. As it is, the reserve allowance permits an increase in interbank deposits with no corresponding decrease required in deposits held by the nonbank public, foreigners, or the government. Member interbank deposits, therefore, neither absorb reserves nor are a part of a classified money stock.

Another difficulty, one which cannot be handled so readily, is the fact that both time and demand deposits require reserves. Therefore, reserves held against time deposits in commercial banks must be deducted from total reserves in order to count the amount of reserves that can be used to expand demand deposits.

Time deposits raise yet another problem. Since interest is paid on them, they are in competition with a whole complex of interest-earning assets in financial markets. Therefore, their creation by commercial banks is subject to interest rate effects and interactions of demands and supplies of other financial assets. These feedbacks may alter the re-

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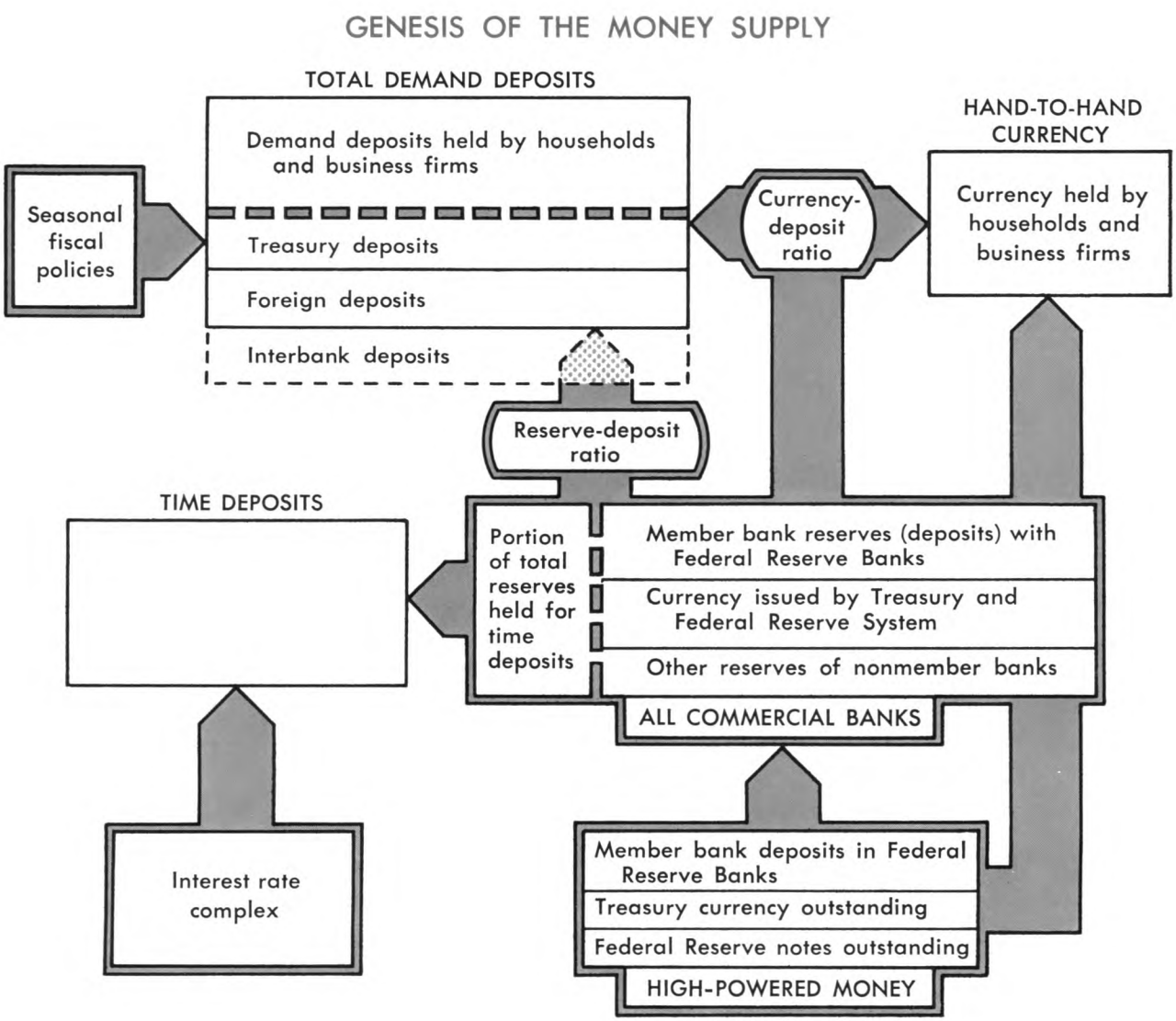
serves available for demand deposit creation, so that interest rates on financial assets may have some indirect bearing on the volume of demand deposits. This influence is so roundabout that it is difficult to measure. The opinion here is that it is visible but of low significance.

Dollar demand deposits held by foreigners in U. S. commercial banks also require an accounting pigeonhole. These deposits absorb reserves just as any other deposits do. Since they may be used to buy goods and services produced in the United States and are largely behavioral, they are included in the narrowly defined money supply.

The Federal government also has demand deposit balances in commercial banks, as well as vault cash (currency) in government offices, and deposit accounts with Federal Reserve Banks. The latter two of these three items remain relatively constant, but the tax and loan accounts at commercial banks are another matter. While subject to reserve requirements, they are not usually counted as a part of the narrowly defined stock of money. The government is assumed to carry out policies and make decisions that require spending without regard to its cash balance holdings. Only money held by private households and business firms can influence (or be influenced by) individual behavior. However, classifying *the* money supply to include or exclude government balances is purely arbitrary. It can be done either way. The way it is done should depend on the function of the money supply so classified.

Short-Run Effects of Treasury Balances The ability of the Treasury to create HPM has become



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negligible. Its fiscal powers of taxing and spending, however, cause the balances it keeps in commercial banks to fluctuate widely. These balances average about $6 billion, but their month-to-month variation is often $2 billion and is sometimes more than $4 billion due to a lack of synchronization between federal tax receipts and disbursements. Since none of the government's cash holdings is created by the Treasury, increases and decreases in government balances must be reciprocated by corresponding decreases and increases in the money holdings of households and business firms in the private economy. Sometimes, the change of the month-to-month money supply in the private economy from this source is larger than the annual secular change due to Federal Reserve policy effects either on HPM or on the reserve-deposit ratio. This datum emphasizes that the Treasury's short-run influence on the private money stock is frequently massive.

Figure 1, in which some nonmonetary details are condensed, gives a schematic view of the whole money-generating process. HPM originating in the Federal Reserve System (and to some extent in the Treasury) is channeled through commercial banks to become either hand-to-hand currency or bank reserves. The currency-deposit and reserve-deposit ratios establish the ultimate amounts of deposits and currency that will be generated as well as the total of both. Offstage, a complex of interest rates in the money market has some possible effects on total time deposits created, and thus on the total of demand deposits. Seasonal fiscal policies, finally, are seen defining the short-run volume of Treasury deposits held in the aggregate of total demand deposits.

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