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The Effect of War on Currency and Deposits

THE AMOUNT OF MONEY in circulation in the United States doubled during the three and a half years ending in 1942. The addition to the supply of circulating medium¹ in this brief space of time was greater than the total increase in the preceding century and a half. The quantity of greenbacks authorized during the Civil War amounted to \$450 million. In every month from August to December 1942 inclusive, the net increase in currency outstanding was more than this total. During the second half of 1942 currency outside the Treasury and Federal Reserve Banks increased by over \$3 billion. In addition, there was an even larger increase in demand deposits, amounting in these six months to a total of \$7.2 billion.

The first World War was also a period of great monetary expansion. In the six years from the end of June 1914 to the end of June 1920 the circulating medium of the United States increased by 102 percent. The increase in the three and a half years ending in 1917 was approximately 36 percent as compared with 109 percent in the three and a half years ending in 1942. The over-all price effect of deposit inflation in the last war was not

¹ The word *currency* will be employed to describe common money such as is now legal tender in the United States; it consists chiefly of coins, silver certificates, United States notes, and Federal Reserve notes. *Currency in circulation* represents the total amount of currency issued, less the amount held in the Treasury, in the Federal Reserve Banks (including that held by Federal Reserve agents), and in the vaults of banks in the United States, Alaska, and the island possessions. Unless otherwise stated, currency will refer exclusively to currency in circulation. (This is not identical with the series for currency in circulation published by the Treasury, which includes cash in the vaults of banks.) *Total deposits* consists of all demand, time, and savings deposits as reported by the Comptroller (with adjustment for float and interbank deposits), United States deposits in the Federal Reserve Banks, certified and cashiers' checks, and deposits in postal savings banks and school banks. *Circulating deposits and currency* consist of total deposits and currency in circulation less time deposits and demand certificates of deposits. The terms *circulating medium, money, and money supply* are used interchangeably with circulating deposits and currency. The terminology adopted here is in accord with general usage. By some writers the expression money is restricted to currency only and by others is extended to include time deposits and other liquid assets.

materially different from that of the so-called greenback inflation of the Civil War. In one respect, however, the two periods were in sharp contrast: while prices began to decline even before the end of the Civil War, they continued to rise for a year and a half after the conclusion of hostilities in 1918. Thus far in the present war the rise in prices has been much more moderate than it was in either of the other periods.

The purpose of this paper is to present the significant facts in regard to changes in the volume and composition of circulating medium in this country since the start of the war in Europe. It will trace the details of the changes that have occurred, the processes whereby they have come about, and some of the accompanying changes and adjustments among related economic phenomena. It will then undertake to discuss a few of the problems, particularly those relating to the process of expansion and price movements, that are associated with alterations in the circulating medium.

THE GROWTH OF CURRENCY AND DEPOSITS

Changes in the Volume of Circulating Medium

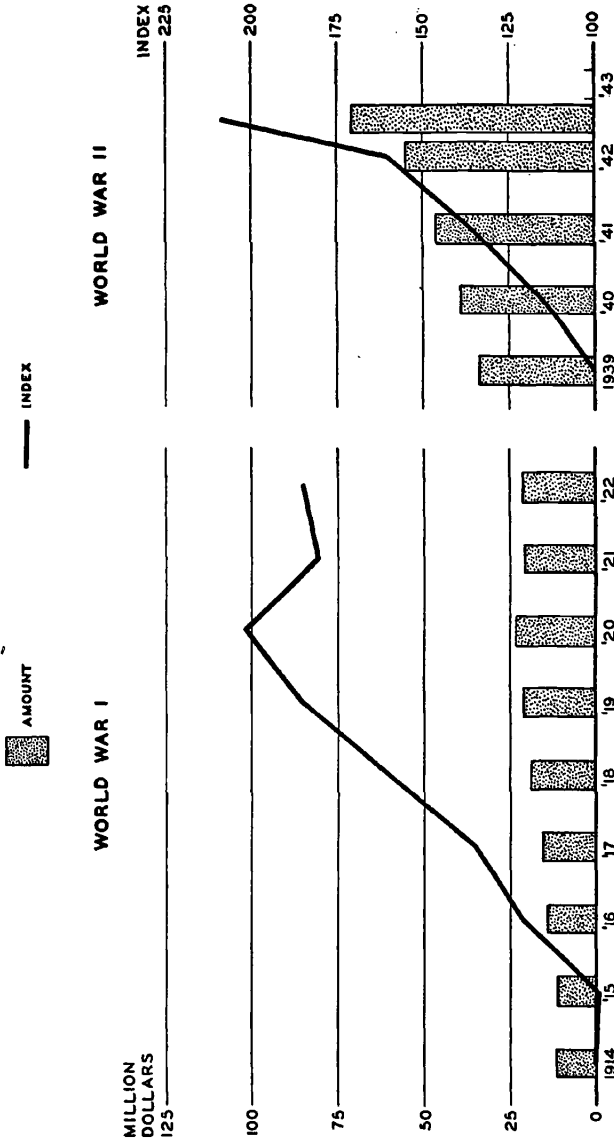
The most striking feature of recent changes in circulating medium is the increase of over 30 percent during the second half of 1942 (see Chart 1). The rate of growth in this six-month period was far in excess of that reached at any time during the last war period, reflecting the much larger scale of war financing, relative to national income, attained in this war. During the fiscal year 1942-43 alone, the increase in circulating medium was greater than the total amount outstanding in any year of the first World War.

Since September 1939 the quantity of circulating medium has risen rapidly, in immediate and pronounced response to the effects of war. This is in sharp contrast to the slight increase in the first year of the other war. A further difference between the two periods is that where previously the most rapid increase occurred before our entry into the war, in this period the most rapid increase was after Pearl Harbor.

The general rule that war stimulates the growth of the circulating medium has been demonstrated repeatedly both in this country and abroad. It is illustrated by comparing the rate of growth in years of war and peace over the past half century. From 1892 to 1942 the circulating medium of this country increased at an average rate of 6 percent a year.² The average annual increase during the prosperous peacetime years from 1922 to 1929 was only 3 percent, but it was 13 percent from June 1914 to June 1919 and 23 percent from June 1939 to the end of 1942. This compares with 2 percent in the intervening years and 5 percent in the period from 1892 to 1914. The extent

² Average annual rates of increase or decrease are calculated by the compound interest formula.

CHART 1—TOTAL CIRCULATING MEDIUM, WORLD WARS I AND II^a



^a Based on *Federal Reserve Bulletin* and Board of Governors of the Federal Reserve System, *Banking Studies* (1941) Table 29. Includes currency outside banks and total deposits less interbank deposits, time deposits, items in process of collection, and certificates of deposit. Dates are for June 30.

of variation in the volume of circulating medium ranged from a decrease of 14 percent in 1931-32 to an increase of 41 percent in the calendar year 1942.

The recent monetary expansion is the more remarkable in that the volume of circulating medium was already large when the present war began. In June 1939 the total of circulating deposits and currency was \$34 billion, or nearly three times what it was in 1914 and nearly 50 percent above the high point reached soon after the last war. While prices, national income, and physical production were substantially higher in 1939 than in 1914, the increase in circulating medium was still greater. Per capita circulation stood at \$72 in 1900, \$222 in 1920, \$208 in 1930, and \$301 in 1940. At the end of 1942 it was in excess of \$540.

Changes in Composition of the Circulating Medium

The circulating medium consists of three parts, currency in circulation, adjusted demand deposits, and United States government deposits with commercial banks and Federal Reserve Banks.

The increased use of currency in recent years, relative to the use of checks, is less a symptom of reversion to more primitive financial methods than an indication of certain shifts in the distribution of income and in methods of conducting trade. Moreover, the change in composition of the money supply, though accentuated by the two wars, has been going on for a quarter of a century. Demand deposits in 1914 were nearly seven times currency in circulation, but by the end of 1939 they were only about four and a half times as large as currency.

Table 1 shows that although the absolute increase in adjusted demand deposits between 1939 and 1942 was considerably greater than in currency or United States government deposits the relative increase was smaller. The more rapid growth of currency than of deposits repeats the experience of the first World War when currency rose from a ratio of 15 percent of deposits in 1914 to a ratio of 24 percent in 1918. In the middle of 1939 currency amounted to 23 percent of demand deposits and at the end of 1942 to 29 percent. This is equivalent to saying that the average annual rate of increase in currency between 1939 and the end of 1942 was 27 percent, while that of demand deposits was only 18 percent. While, as seems to be typical, the growth of currency has attracted more widespread interest, the expansion of deposits is, from most points of view, of greater economic significance.

Of the increase between June 1939 and December 1942 in total currency held both inside and outside banks, 45 percent was in denominations of \$10 and less, and 77 percent was in denominations of \$20 and less. Corresponding figures for the period 1914-20 are 42 percent and 84 percent. In the earlier period only 16 percent of the increase, as compared with 23 percent

TABLE 1—COMPOSITION OF CIRCULATING MEDIUM AND TIME DEPOSITS, WORLD WARS I AND II^a

| June 30 | CIRCULATING MEDIUM | | | | | | | | | | | | |
|----------------|-------------------------|-------|-------------------|--------------------------|-------|-------------------|--------------------------|---------|--------------------|-------------------|-------|------------------|--|
| | Currency in Circulation | | | Adjusted Demand Deposits | | | U.S. Government Deposits | | | Time Deposits | | | |
| | Amount (millions) | Index | Annual Change | Amount (millions) | Index | Annual Change | Amount (millions) | Index | Annual Change | Amount (millions) | Index | Annual Change | |
| | | | | WORLD WAR II | | | | | | | | | |
| 1939 | \$6,010 | 100.0 | .. | \$27,350 | 100.0 | .. | \$790 | 100.0 | .. | \$26,800 | 100.0 | .. | |
| 1940 | 6,700 | 111.5 | 11.5% | 31,960 | 116.9 | 16.9% | 830 | 105.1 | 5.1% | 27,470 | 102.5 | 2.9% | |
| 1941 | 8,200 | 136.4 | 22.3 | 37,320 | 136.5 | 16.8 | 750 | 94.9 | -9.7 | 27,880 | 104.0 | 1.5 | |
| 1942 | 10,940 | 182.0 | 33.4 | 41,840 | 153.0 | 12.1 | 1,840 | 232.9 | 145.3 | 27,510 | 101.9 | -2.1 | |
| 1942 (Dec. 31) | 13,950 | 232.1 | 27.5 ^b | 48,850 | 178.6 | 16.8 ^b | 8,470 | 1,073.2 | 360.3 ^b | 28,400 | 106.0 | 4.0 ^b | |
| | | | | WORLD WAR I | | | | | | | | | |
| 1914 | \$1,530 | 100.0 | .. | \$10,060 | 100.0 | .. | \$70 | 100.0 | .. | \$7,980 | 100.0 | .. | |
| 1915 | 1,580 | 103.3 | 3.3% | 9,900 | 98.4 | -1.6% | 50 | 71.4 | -28.6% | 8,930 | 111.9 | 11.9% | |
| 1916 | 1,880 | 122.9 | 19.0 | 12,250 | 121.8 | 23.7 | 40 | 57.1 | -20.0 | 9,840 | 123.3 | 10.2 | |
| 1917 | 2,280 | 149.0 | 21.3 | 12,570 | 125.0 | 2.6 | 830 | 1,185.7 | 1,975.0 | 12,430 | 155.8 | 26.3 | |
| 1918 | 3,300 | 215.7 | 44.7 | 13,780 | 137.0 | 9.6 | 1,570 | 2,242.9 | 89.2 | 12,990 | 162.8 | 4.5 | |
| 1919 | 3,610 | 235.9 | 9.4 | 16,980 | 168.8 | 23.2 | 960 | 1,371.4 | -38.9 | 13,970 | 175.1 | 7.5 | |
| 1920 | 4,130 | 269.9 | 14.4 | 19,080 | 189.7 | 12.4 | 300 | 428.6 | -68.7 | 16,310 | 204.4 | 16.8 | |
| 1921 | 3,700 | 241.8 | -10.4 | 17,030 | 169.3 | -10.7 | 420 | 600.0 | 40.0 | 16,690 | 209.1 | 2.3 | |
| 1922 | 3,360 | 219.6 | -9.2 | 17,990 | 178.8 | 5.6 | 170 | 242.9 | -59.5 | 17,620 | 220.8 | 5.6 | |

^a Federal Reserve Bulletins and Board of Governors of the Federal Reserve System, *Banking Studies* (1941) Table 29.

^b Six months increase, June 30 to December 31, 1942.

in the later period, was in denominations over \$20. This difference is partially explained by the fact that in 1917 the law was changed to require member banks to hold legal reserves exclusively with the Reserve Banks. The effect of this change was to reduce the quantity of larger denominations needed by banks for reserve purposes as compared with what would otherwise have been required.

From 1939 to the end of 1942 the increase in the denominations of \$20 and less was greater than in denominations above. The greatest relative increase took place not in the smallest denominations but in \$20 bills which, in terms of total value, for the first time supplanted \$10 bills as the most widely used monetary type. The increase by value in dollar bills was less than in any of the other denominations from \$1 to \$500, with the single exception of \$2 bills.

Comparable data as to the number and size of demand deposits are not available, but on the basis of a special study by the Federal Deposit Insurance Corporation covering 1938-41 it appears that the increase in the number of accounts was largely in deposits of \$5000 and less while the increase in volume was chiefly in deposits over \$5000.

The remaining element of the circulating medium consists of deposits of the United States government held in commercial banks and with the Federal Reserve Banks. On the average these deposits are not a large part of the circulating medium, but they exhibit a high degree of variability. As is to be expected, their volume increases substantially in time of war.

Treasury expenditures rose from \$9 billion in the fiscal year 1938-39 to \$78 billion in the fiscal year 1942-43. The growth in Treasury balances of approximately \$8 billion between June 1939 and December 1942 is not extreme as compared with the increase in federal expenditures, but the growth in the balance in the last half of 1942 calls for particular notice. This increase, which took place chiefly at the end of the year, reflects a change in Treasury borrowing policy. Until December 1942 the Treasury made monthly offerings to meet current expenditures, and the Treasury balances maintained up to that time were not large. In December, however, the Treasury adopted a policy of more intensive borrowing with campaigns spaced at intervals of several months. To the extent that expenditures are balanced with receipts from taxation and borrowing, large Treasury balances are unnecessary. As a consequence of the change in borrowing methods, substantial Treasury balances are built up at the close of a loan campaign; these are then drawn down until the next campaign. Thus the amount of the Treasury balance reflects not only the scale of Treasury operations, but also the methods whereby those operations are financed.

Time Deposits

In addition to considering the changes in the circulating medium, the changes that have occurred in the volume of time deposits (including savings deposits) may also be noted. While these deposits are not ordinarily classed as part of the money supply they are convertible into circulating media on short notice and thus may have considerable monetary significance, as will be seen later.

From 1922 to 1939 time deposits rose by a little more than \$9 billion. The annual rate of growth was approximately the same as that for demand deposits during the same period. However, the movements during the period were by no means similar: a large part of the growth in demand deposits occurred in the latter part of the thirties, while time deposits increased more rapidly during the twenties and then declined so that the amount outstanding as recently as December 1942 was less than in 1928-29.

During the present war period the over-all growth in time deposits has been small, and for some months following Pearl Harbor there was a slight decline. This is in contrast with the first World War period when time deposits increased at a slightly faster rate than demand deposits. The increase in time deposits during the period of the first World War and in the twenties may be attributed in part to a reclassification of deposits to take advantage of the lower reserve requirements provided by the Federal Reserve Act on this category of deposits. It may also have been influenced by the fact that a fairly high rate of interest, in some cases above 6 percent annually was paid on time deposits during those years.

The failure of time deposits to rise materially during the present war may be due in part to the fact that some banks will no longer accept time deposits at all and others pay interest on time deposits only up to a limited amount of such deposits. If the bonds are held to maturity, the return to small savers on war savings bonds is today considerably greater than on savings deposits. The resulting opportunity to combine patriotism and good business judgment has probably induced many individuals to put their funds in government bonds rather than in savings deposits. To some extent, indeed, savings deposits appear to have been withdrawn in order to enable individuals to purchase war savings bonds.³ The strong pressure to invest savings in government bonds—in which many savings banks have joined—has undoubtedly served to hinder the growth of time deposits.⁴

³ This also happened on a small scale in the last war.

⁴ The fact that time deposits have failed to rise appreciably in the present war does not reflect any shrinkage in the relative proportion of highly liquid earning assets owned by the public. For millions of people redeemable war savings bonds have largely taken the place of savings deposits.

Differences by Location and Class of Bank

From the middle of 1939 to the end of 1942 the rate of growth of demand deposits in the three eastern Federal Reserve districts, Boston, New York and Philadelphia, was below the average for the country as a whole, while the increase in all other districts was above the average (see Table 2). The New York district had the smallest relative expansion, but this constituted over a quarter of the total absolute increase for the country. The greatest relative increase occurred in the San Francisco district, with nearly 14 percent of the total increase for the country. The rate of growth was also high in the Richmond and Atlanta districts, but together these two districts accounted for only 10 percent of the total increase in deposits during the period.

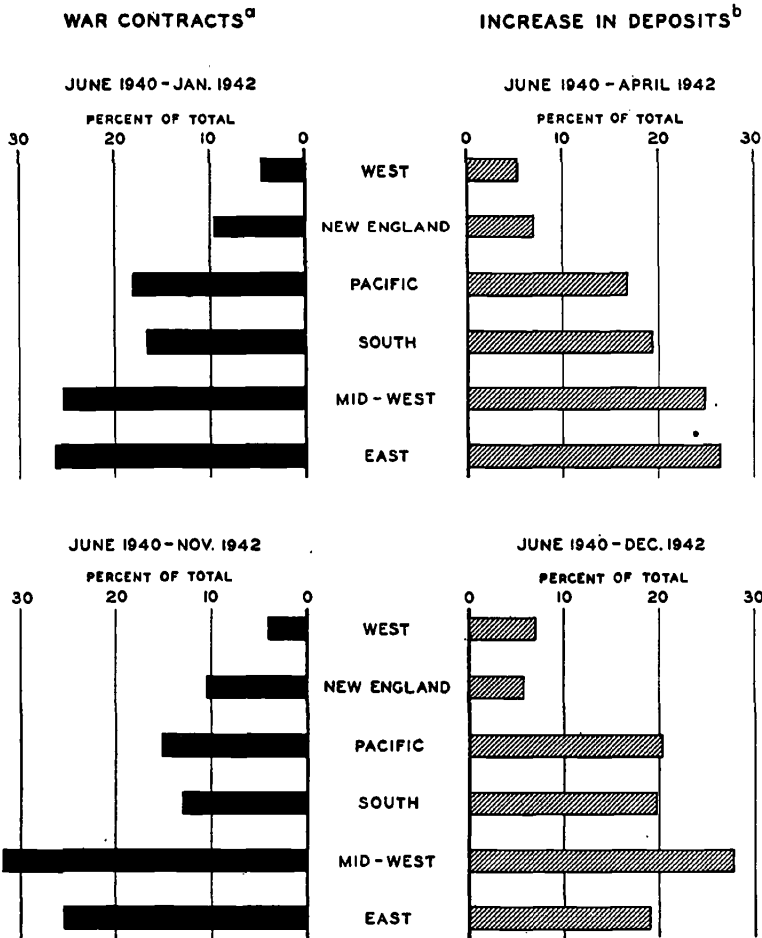
Chart 2 shows the distribution of war contracts and the growth of deposits of national banks among major geographical divisions of the United States between the middle of 1940 and the end of 1942. The correspondence

TABLE 2—PERCENTAGE INCREASE IN DEMAND DEPOSITS OF FEDERAL RESERVE MEMBER BANKS, AND PERCENTAGE DISTRIBUTION, JUNE 1939 TO DECEMBER 1940, BY FEDERAL RESERVE DISTRICTS ^a

| <i>District</i> | <i>Percentage Distribution</i> | | <i>Percent of Increase, Dec. 1942 over June 1939</i> | <i>Percentage Distribution of Increase</i> | <i>Relative Change in Percentage Distribution</i> |
|-----------------|--------------------------------|------------------|--|--|---|
| | <i>June 1939</i> | <i>Dec. 1942</i> | | | |
| San Francisco | 7.5% | 10.3% | 157.4% | 13.5% | 37.0% |
| Richmond | 3.4 | 4.2 | 137.1 | 5.3 | 26.2 |
| Atlanta | 3.0 | 3.7 | 131.9 | 4.5 | 23.5 |
| Minneapolis | 1.8 | 2.1 | 118.8 | 2.5 | 16.4 |
| St. Louis | 3.1 | 3.5 | 112.3 | 3.9 | 13.0 |
| Dallas | 3.6 | 4.0 | 108.8 | 4.4 | 11.2 |
| Cleveland | 7.1 | 7.7 | 104.4 | 8.4 | 8.9 |
| Chicago | 13.6 | 14.7 | 103.4 | 16.0 | 8.3 |
| Kansas City | 3.6 | 3.9 | 100.0 | 4.1 | 6.3 |
| Philadelphia | 5.6 | 5.4 | 82.8 | 5.3 | —2.7 |
| Boston | 6.3 | 5.8 | 71.9 | 5.2 | —8.4 |
| New York | 41.4 | 34.7 | 56.9 | 26.9 | —16.4 |
| UNITED STATES | 100.0% | 100.0% | 87.7% | 100.0% | .. |

^a Based on data from Board of Governors of the Federal Reserve System, *Member Bank Call Reports*. Demand deposits include deposits of individuals, partnerships, and corporations.

CHART 2—WAR CONTRACTS AND INCREASE IN DEMAND DEPOSITS OF NATIONAL BANKS, BY REGION, JUNE 1940 TO DECEMBER 1942



^a Based on National Industrial Conference Board, *America's War Effort* (May 1942) and *Economic Record*, Vol. V, No. 2 (February 1943).

^b Based on Comptroller of the Currency, *Abstracts of Reports of Condition of National Banks*. All demand deposits except interbank and United States Government deposits.

between war contracts and deposit growth was particularly close in the earlier of the periods shown, namely, for contracts placed between June 1940 and January 1942 and deposit growth from June 1940 to April 1942. For the longer periods, starting in June 1940 and ending in November 1942 and December 1942 respectively, the correspondence was less close, but was nevertheless sufficient to suggest that the distribution of war contracts may have been an important factor in the regional expansion of deposits.

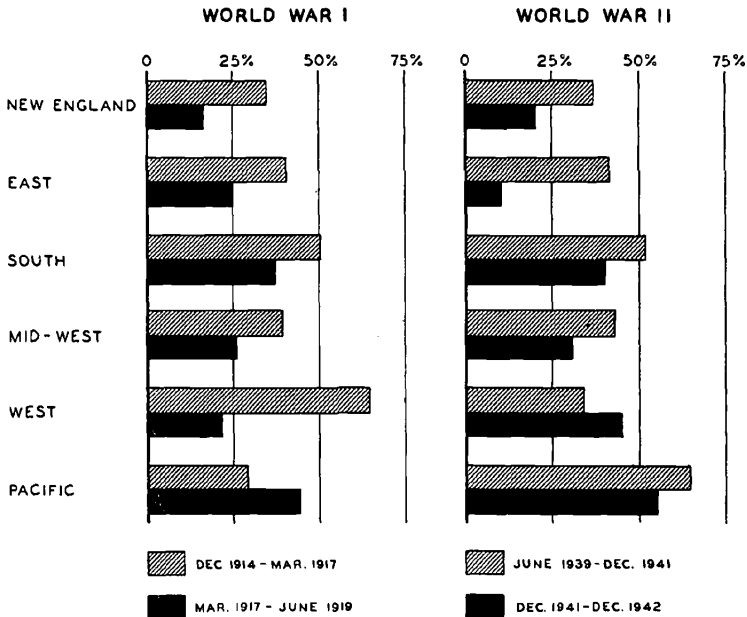
Nor has the rate of increase in deposits been uniform within Federal Reserve districts. In the same area and within the same class some banks showed increases in deposits, while others experienced little or no increase and a few have lost deposits. On the average, country banks had the largest relative increase in deposits (Table 3). In all districts the deposits of country banks rose more rapidly than the deposits of Reserve City banks, but in some districts the difference was large, especially in the Boston district, and in others slight, as in the Chicago and New York districts. The per-

TABLE 3—PERCENTAGE INCREASE IN DEMAND DEPOSITS OF FEDERAL RESERVE MEMBER BANKS, JUNE 1939 TO DECEMBER 1942, BY FEDERAL RESERVE DISTRICTS ^a

| <i>District</i> | <i>All Member Banks</i> | <i>Central Reserve City Banks</i> | <i>Reserve City Banks</i> | <i>Country Banks</i> |
|-----------------|---------------------------------|---|-----------------------------------|--------------------------|
| San Francisco | 157.4% | .. | 152.5% | 185.6% |
| Richmond | 137.1 | .. | 123.9 | 152.3 |
| Atlanta | 131.9 | .. | 112.8 | 152.5 |
| Minneapolis | 118.8 | .. | 99.4 | 137.7 |
| St. Louis | 112.3 | .. | 91.5 | 149.3 |
| Dallas | 108.8 | .. | 86.0 | 132.9 |
| Cleveland | 104.4 | .. | 91.6 | 133.6 |
| Chicago | 103.4 | 65.4% | 143.2 | 143.7 |
| Kansas City | 100.0 | .. | 83.1 | 125.9 |
| Philadelphia | 82.8 | .. | 76.5 | 92.1 |
| Boston | 71.9 | .. | 46.3 | 102.1 |
| New York | 56.9 | 51.0 | 101.0 | 105.1 |
| UNITED STATES | 87.7% | 53.3% | 105.4% | 127.4% |

^a Based on data from Board of Governors of the Federal Reserve System, *Member Bank Call Reports*. Demand deposits include deposits of individuals, partnerships, and corporations.

CHART 3—DEMAND DEPOSITS IN NATIONAL BANKS, BY REGION,
WORLD WARS I AND II ^a



^a Based on Comptroller of the Currency, *Abstracts of Reports of Condition of National Banks*. All demand deposits except interbank and United States Government deposits.

centage increase for Central Reserve City banks was far below that for the other two classes of banks. In the last war the rate of increase was greatest in Reserve City banks. The growth in deposits from June 1939 to December 1942 was distributed among the different classes of banks as follows: country banks 34 percent, Reserve City banks 39 percent, Central Reserve City banks 27 percent.

The nature of deposit growth before and after America's formal entry as a belligerent discloses a number of differences in the two wars (Chart 3). Deposit expansion in New York City was rapid after we entered the last war. It was large from the start of hostilities in 1939 to the middle of 1941 but has been small since that time, a difference closely associated with the heavy inflow of gold from 1939 to the spring of 1941 and the virtual cessa-

tion of this movement since. In the Middle West deposit expansion was only moderate in the last war and before our entry into the present war. Following Pearl Harbor, deposits in the Middle West increased more rapidly than the average for the country. The Pacific states, which had experienced the smallest increase before we entered the last war, showed the highest rate of increase thereafter. During the present war they have experienced a more rapid increase than any other region both before and after our entry. In both wars deposit expansion in New England was consistently below the average for the country and in the South consistently above.

HOW THE QUANTITY OF CIRCULATING MEDIUM CHANGES

Since a demand deposit is, by definition, the right to demand currency whenever desired, it is within the power of individuals to increase or decrease the amount of currency outstanding by simply cashing checks drawn on demand deposits or, conversely, by adding to checking accounts through the deposit of currency. Likewise, an increase or decrease in the volume of other highly liquid assets, such as time deposits and short-term obligations, may influence the amount and activity of currency in circulation.

The Volume of Currency

The composite choice of individuals, then, governs the amount of currency in circulation. The decision lies with the public. The process of increasing or decreasing the currency outstanding is largely automatic and commercial banks, the Reserve Banks, and the Treasury are, at any given moment, merely the agents through which the preference of individuals is expressed. "Neither the Federal Reserve Banks nor the Treasury have under ordinary circumstances any direct way of keeping in circulation a larger amount of currency than the public requires or of reducing the amount of currency that the public needs to finance its current operations."⁵

Since the attitude of the public governs proximately the volume of currency, it is pertinent to ask what determines the attitude of the public. In general terms this may be said to depend chiefly on the physical volume of trade and the prevailing level of prices; the methods by which trade is conducted, whether by check or cash; the types of economic activity pursued; and the volume of demand deposits. At times it may be affected by such factors as confidence in the banks and changes in the distribution of the national income.

⁵ Board of Governors of the Federal Reserve System, *Banking Studies* (1941), p. 310.