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The trustworthiness of our residual series cannot be measured objectively. Any errors in our estimates of vault cash are transmitted directly to the estimates of the currency holdings of the public. The percentage error is always less, however, for currency in public circulation than for all bank vault cash (in cases of identical dating of currency outside the Treasury and the Federal Reserve Banks and the vault cash estimates) because in every month the former greatly exceeds the latter. Errors in the vault cash series, furthermore, affect the residuals less and less as the proportion that currency in public circulation constitutes of currency outside the Treasury and the Federal Reserve Banks rises. From about 70 percent at the end of 1917 it rises to above 90 percent in 1944.

#### FEDERAL RESERVE BANK AND TREASURY CURRENCY HOLDINGS

Currency assets of the Federal Reserve Banks were derived, in general, by totaling figures for reserves, non-reserve cash (before May 1933), Federal Reserve notes held by issuing and other Federal Reserve Banks, Federal Reserve bank notes held by other Federal Reserve Banks, and gold held abroad. For years before 1923, when end-of-month data alone could be obtained, revised figures derived from the Treasury Circulation Statement were the basis for our series. Since then the weekly condition statement of the Reserve Banks has been the source of data for Wednesdays closest to the end of the month (a minor portion was obtained as of the end of the month January 1923-April 1929; see App. D).

Our series of Treasury currency assets, identical with 'Treasury Cash', now used in Federal Reserve analysis of the demand for Reserve Bank credit, excludes from total currency reported in the Circulation Statement as held by the Treasury the cash held for the Federal Reserve Banks, the reserve held against gold and silver certificates, and the gold redemption fund for Federal Reserve notes. From 1922 through 1944 Wednesday figures closest to the end of the month are shown; for earlier years, end-of-month figures. Treasury currency assets include only holdings of the Treasury Department in Washington, D. C. and of the mints and assay offices throughout the country—not of the federal government generally.

### 3 SIGNIFICANCE OF FLUCTUATIONS IN CURRENCY HOLDINGS

#### PUBLIC DEMAND FOR CURRENCY

Though the public's currency holdings, December 1917-December 1944 (see Table 2 and Chart 5), usually changed relatively little from month to month they exhibited longer swings which may be conveniently summarized under five subperiods:

1) *1918-22.* Continuing a movement that began on the outbreak of

## Table 2

Currency Held by the Public, All Banks, Federal Reserve Banks, and the Treasury, about the End of Each Month, December 1917-December 1944 (millions of dollars)

| (1) | CURRENCY IN PUBLIC CIRCULATION (2) | VAULT CASH IN ALL BANKS (3) | CURRENCY OUTSIDE TREASURY & F. R. BANKS (4) | CURRENCY ASSETS F. R. Banks (5) | U. S. Treasury (6) |
|---|---|---|---|---|---|
| **1917** | | | | | |
| Dec. | 2,810 | 1,276 | 4,086 | 1,777 | 225 |
| **1918** | | | | | |
| Jan. | 2,780 | 1,069 | 3,849 | 1,897 | 371 |
| Feb. | 2,990 | 1,038 | 4,028 | 1,890 | 278 |
| Mar. | 3,074 | 1,035 | 4,109 | 1,941 | 277 |
| Apr. | 3,112 | 1,035 | 4,147 | 1,982 | 262 |
| May | 3,170 | 959 | 4,129 | 2,063 | 269 |
| June | 3,284 | 911 | 4,195 | 2,094 | 282 |
| July | 3,373 | 904 | 4,277 | 2,147 | 310 |
| Aug. | 3,571 | 918 | 4,489 | 2,168 | 269 |
| Sept. | 3,808 | 932 | 4,740 | 2,193 | 273 |
| Oct. | 3,876 | 982 | 4,858 | 2,265 | 262 |
| Nov. | 3,873 | 1,035 | 4,908 | 2,269 | 268 |
| Dec. | 3,818 | 1,133 | 4,951 | 2,385 | 288 |
| **1919** | | | | | |
| Jan. | 3,677 | 955 | 4,632 | 2,415 | 335 |
| Feb. | 3,706 | 929 | 4,635 | 2,362 | 360 |
| Mar. | 3,690 | 971 | 4,661 | 2,381 | 363 |
| Apr. | 3,682 | 974 | 4,656 | 2,405 | 358 |
| May | 3,657 | 974 | 4,631 | 2,434 | 345 |
| June | 3,590 | 1,000 | 4,590 | 2,366 | 380 |
| July | 3,612 | 971 | 4,583 | 2,339 | 384 |
| Aug. | 3,665 | 996 | 4,661 | 2,196 | 398 |
| Sept. | 3,724 | 1,026 | 4,750 | 2,202 | 414 |
| Oct. | 3,794 | 1,046 | 4,840 | 2,240 | 418 |
| Nov. | 3,866 | 1,116 | 4,982 | 2,200 | 403 |
| Dec. | 3,852 | 1,239 | 5,091 | 2,257 | 385 |
| **1920** | | | | | |
| Jan. | 3,849 | 1,041 | 4,890 | 2,205 | 423 |
| Feb. | 3,984 | 1,089 | 5,073 | 2,187 | 335 |
| Mar. | 4,030 | 1,074 | 5,104 | 2,207 | 268 |
| Apr. | 4,049 | 1,073 | 5,122 | 2,205 | 249 |
| May | 4,076 | 1,089 | 5,165 | 2,208 | 235 |
| June | 4,116 | 1,065 | 5,181 | 2,256 | 234 |
| July | 4,116 | 1,051 | 5,167 | 2,313 | 215 |
| Aug. | 4,231 | 1,030 | 5,261 | 2,290 | 216 |
| Sept. | 4,297 | 1,032 | 5,329 | 2,362 | 223 |
| Oct. | 4,336 | 1,075 | 5,411 | 2,408 | 219 |
| Nov. | 4,260 | 1,096 | 5,356 | 2,462 | 225 |
| Dec. | 4,296 | 1,029 | 5,325 | 2,642 | 218 |
| **1921** | | | | | |
| Jan. | 4,043 | 973 | 5,016 | 2,694 | 235 |
| Feb. | 4,045 | 941 | 4,986 | 2,648 | 223 |
| Mar. | 3,981 | 856 | 4,837 | 2,770 | 254 |
| Apr. | 3,851 | 942 | 4,793 | 2,783 | 232 |
| May | 3,824 | 904 | 4,728 | 2,829 | 224 |
| June | 3,693 | 931 | 4,624 | 2,955 | 198 |
| July | 3,636 | 874 | 4,510 | 3,036 | 208 |
| Aug. | 3,615 | 838 | 4,453 | 3,123 | 209 |
| Sept. | 3,570 | 887 | 4,457 | 3,197 | 218 |
| Oct. | 3,555 | 853 | 4,408 | 3,213 | 223 |
| Nov. | 3,488 | 876 | 4,364 | 3,309 | 215 |
| Dec. | 3,397 | 1,006 | 4,403 | 3,358 | 214 |
| **1922** | | | | | |
| Jan. | 3,362 | 782 | 4,144 | 3,437 | 226 |
| Feb. | 3,422 | 771 | 4,193 | 3,416 | 222 |
| Mar. | 3,366 | 810 | 4,176 | 3,431 | 228 |
| Apr. | 3,365 | 814 | 4,179 | 3,501 | 224 |
| May | 3,345 | 823 | 4,168 | 3,507 | 221 |
| June | 3,292 | 819 | 4,111 | 3,579 | 227 |
| July | 3,342 | 789 | 4,131 | 3,652 | 217 |

| (1) | CURRENCY IN PUBLIC CIRCULATION (2) | VAULT CASH IN ALL BANKS (3) | CURRENCY OUTSIDE TREASURY & F. R. BANKS (4) | CURRENCY ASSETS F. R. Banks (5) | U. S. Treasury (6) |
|---|---|---|---|---|---|
| Aug. | 3,377 | 795 | 4,172 | 3,679 | 224 |
| Sept. | 3,462 | 812 | 4,274 | 3,644 | 223 |
| Oct. | 3,557 | 796 | 4,353 | 3,645 | 225 |
| Nov. | 3,601 | 816 | 4,417 | 3,631 | 237 |
| Dec. | 3,592 | 929 | 4,521 | 3,661 | 220 |
| 1923 | | | | | |
| Jan. | 3,543 | 784 | 4,327 | 3,728 | 213 |
| Feb. | 3,619 | 797 | 4,416 | 3,665 | 221 |
| Mar. | 3,595 | 817 | 4,412 | 3,623 | 236 |
| Apr. | 3,671 | 790 | 4,461 | 3,613 | 217 |
| May | 3,699 | 798 | 4,497 | 3,638 | 211 |
| June | 3,675 | 789 | 4,464 | 3,730 | 214 |
| July | 3,717 | 771 | 4,488 | 3,762 | 212 |
| Aug. | 3,729 | 810 | 4,539 | 3,753 | 217 |
| Sept. | 3,804 | 835 | 4,639 | 3,746 | 214 |
| Oct. | 3,806 | 836 | 4,642 | 3,743 | 223 |
| Nov. | 3,800 | 887 | 4,687 | 3,744 | 210 |
| Dec. | 3,765 | 975 | 4,740 | 3,822 | 209 |
| 1924 | | | | | |
| Jan. | 3,639 | 833 | 4,472 | 3,922 | 215 |
| Feb. | 3,699 | 856 | 4,555 | 3,820 | 214 |
| Mar. | 3,778 | 826 | 4,604 | 3,738 | 222 |
| Apr. | 3,740 | 826 | 4,566 | 3,807 | 212 |
| May | 3,696 | 881 | 4,577 | 3,759 | 221 |
| June | 3,698 | 899 | 4,597 | 3,751 | 216 |
| July | 3,582 | 875 | 4,457 | 3,839 | 220 |
| Aug. | 3,715 | 861 | 4,576 | 3,688 | 220 |
| Sept. | 3,738 | 836 | 4,574 | 3,674 | 225 |
| Oct. | 3,697 | 901 | 4,598 | 3,678 | 221 |
| Nov. | 3,753 | 959 | 4,712 | 3,584 | 223 |
| Dec. | 3,756 | 1,004 | 4,760 | 3,512 | 211 |
| 1925 | | | | | |
| Jan. | 3,586 | 879 | 4,465 | 3,562 | 232 |
| Feb. | 3,587 | 932 | 4,519 | 3,422 | 211 |
| Mar. | 3,652 | 864 | 4,516 | 3,356 | 214 |
| Apr. | 3,565 | 920 | 4,485 | 3,378 | 211 |
| May | 3,589 | 922 | 4,511 | 3,306 | 218 |
| June | 3,592 | 938 | 4,530 | 3,270 | 207 |
| July | 3,518 | 926 | 4,444 | 3,323 | 212 |
| Aug. | 3,643 | 911 | 4,554 | 3,246 | 210 |
| Sept. | 3,654 | 975 | 4,629 | 3,223 | 208 |
| Oct. | 3,638 | 968 | 4,606 | 3,273 | 220 |
| Nov. | 3,709 | 989 | 4,698 | 3,227 | 220 |
| Dec. | 3,679 | 1,133 | 4,812 | 3,274 | 206 |
| 1926 | | | | | |
| Jan. | 3,600 | 918 | 4,518 | 3,384 | 225 |
| Feb. | 3,644 | 931 | 4,575 | 3,325 | 235 |
| Mar. | 3,663 | 910 | 4,573 | 3,309 | 223 |
| Apr. | 3,624 | 929 | 4,553 | 3,367 | 213 |
| May | 3,653 | 964 | 4,617 | 3,294 | 212 |
| June | 3,638 | 960 | 4,598 | 3,343 | 201 |
| July | 3,601 | 959 | 4,560 | 3,415 | 205 |
| Aug. | 3,693 | 934 | 4,627 | 3,373 | 205 |
| Sept. | 3,669 | 997 | 4,666 | 3,356 | 221 |
| Oct. | 3,663 | 1,056 | 4,719 | 3,304 | 214 |
| Nov. | 3,706 | 1,010 | 4,716 | 3,365 | 213 |
| Dec. | 3,675 | 1,131 | 4,806 | 3,445 | 212 |
| 1927 | | | | | |
| Jan. | 3,603 | 919 | 4,522 | 3,621 | 209 |
| Feb. | 3,651 | 916 | 4,567 | 3,582 | 218 |
| Mar. | 3,598 | 947 | 4,545 | 3,650 | 207 |
| Apr. | 3,590 | 944 | 4,534 | 3,692 | 209 |
| May | 3,655 | 924 | 4,579 | 3,645 | 205 |
| June | 3,563 | 955 | 4,518 | 3,656 | 208 |
| July | 3,624 | 900 | 4,524 | 3,617 | 206 |
| Aug. | 3,662 | 905 | 4,567 | 3,574 | 203 |
| Sept. | 3,655 | 936 | 4,591 | 3,602 | 209 |
| Oct. | 3,689 | 929 | 4,618 | 3,548 | 206 |
| Nov. | 3,671 | 994 | 4,665 | 3,429 | 203 |
| Dec. | 3,617 | 1,139 | 4,756 | 3,406 | 206 |

| (1) | Currency in Public Circulation (2) | Vault Cash in All Banks (3) | Currency Outside Treasury & F. R. Banks (4) | Currency Assets F. R. Banks (5) | Currency Assets U. S. Treasury (6) |
|---|---|---|---|---|---|
| 1928 | | | | | |
| Jan. | 3,518 | 866 | 4,384 | 3,522 | 208 |
| Feb. | 3,512 | 891 | 4,403 | 3,466 | 205 |
| Mar. | 3,509 | 871 | 4,380 | 3,399 | 202 |
| Apr. | 3,591 | 837 | 4,428 | 3,307 | 202 |
| May | 3,594 | 840 | 4,434 | 3,193 | 207 |
| June | 3,577 | 834 | 4,411 | 3,212 | 198 |
| July | 3,593 | 810 | 4,403 | 3,243 | 203 |
| Aug. | 3,572 | 871 | 4,443 | 3,217 | 206 |
| Sept. | 3,614 | 906 | 4,520 | 3,211 | 206 |
| Oct. | 3,624 | 895 | 4,519 | 3,237 | 208 |
| Nov. | 3,662 | 954 | 4,616 | 3,156 | 207 |
| Dec. | 3,617 | 1,029 | 4,646 | 3,280 | 204 |
| 1929 | | | | | |
| Jan. | 3,482 | 861 | 4,343 | 3,383 | 205 |
| Feb. | 3,512 | 871 | 4,383 | 3,342 | 206 |
| Mar. | 3,535 | 852 | 4,387 | 3,385 | 205 |
| Apr. | 3,589 | 784 | 4,373 | 3,468 | 209 |
| May | 3,561 | 846 | 4,407 | 3,489 | 209 |
| June | 3,676 | 803 | 4,479 | 3,640 | 205 |
| July | 3,604 | 826 | 4,430 | 3,766 | 212 |
| Aug. | 3,619 | 842 | 4,461 | 3,737 | 202 |
| Sept. | 3,680 | 822 | 4,502 | 3,692 | 214 |
| Oct. | 3,540 | 962 | 4,502 | 3,739 | 206 |
| Nov. | 3,620 | 949 | 4,569 | 3,741 | 222 |
| Dec. | 3,638 | 940 | 4,578 | 3,652 | 216 |
| 1930 | | | | | |
| Jan. | 3,385 | 836 | 4,221 | 3,688 | 212 |
| Feb. | 3,417 | 801 | 4,218 | 3,673 | 217 |
| Mar. | 3,477 | 754 | 4,231 | 3,618 | 209 |
| Apr. | 3,405 | 784 | 4,189 | 3,655 | 211 |
| May | 3,341 | 862 | 4,203 | 3,627 | 209 |
| June | 3,415 | 851 | 4,266 | 3,539 | 215 |
| July | 3,292 | 818 | 4,110 | 3,635 | 212 |
| Aug. | 3,410 | 814 | 4,224 | 3,535 | 216 |
| Sept. | 3,413 | 792 | 4,205 | 3,613 | 208 |
| Oct. | 3,341 | 798 | 4,139 | 3,706 | 209 |
| Nov. | 3,541 | 787 | 4,328 | 3,645 | 214 |
| Dec. | 3,645 | 958 | 4,603 | 3,614 | 211 |
| 1931 | | | | | |
| Jan. | 3,452 | 805 | 4,257 | 3,896 | 208 |
| Feb. | 3,452 | 830 | 4,282 | 3,760 | 217 |
| Mar. | 3,537 | 796 | 4,333 | 3,780 | 219 |
| Apr. | 3,479 | 855 | 4,334 | 3,843 | 215 |
| May | 3,572 | 814 | 4,386 | 3,891 | 215 |
| June | 3,683 | 871 | 4,554 | 4,033 | 216 |
| July | 3,684 | 809 | 4,493 | 4,160 | 218 |
| Aug. | 3,929 | 820 | 4,749 | 4,118 | 225 |
| Sept. | 4,047 | 912 | 4,959 | 3,812 | 227 |
| Oct. | 4,234 | 960 | 5,194 | 3,328 | 224 |
| Nov. | 4,345 | 879 | 5,224 | 3,483 | 225 |
| Dec. | 4,325 | 1,020 | 5,345 | 3,546 | 223 |
| 1932 | | | | | |
| Jan. | 4,538 | 806 | 5,344 | 3,513 | 226 |
| Feb. | 4,563 | 733 | 5,296 | 3,483 | 228 |
| Mar. | 4,402 | 750 | 5,152 | 3,571 | 227 |
| Apr. | 4,410 | 701 | 5,111 | 3,564 | 229 |
| May | 4,521 | 659 | 5,180 | 3,235 | 230 |
| June | 4,579 | 783 | 5,362 | 3,101 | 218 |
| July | 4,758 | 683 | 5,441 | 3,152 | 245 |
| Aug. | 4,697 | 708 | 5,405 | 3,308 | 247 |
| Sept. | 4,585 | 733 | 5,318 | 3,436 | 270 |
| Oct. | 4,661 | 668 | 5,329 | 3,506 | 248 |
| Nov. | 4,627 | 734 | 5,361 | 3,553 | 251 |
| Dec. | 4,587 | 813 | 5,400 | 3,758 | 264 |
| 1933 | | | | | |
| Jan. | 4,702 | 663 | 5,365 | 3,760 | 282 |
| Feb. | 5,118 | 1,314 | 6,432 | 3,431 | 275 |
| Mar. | 5,138 | 928 | 6,066 | 3,962 | 356 |

| (1) | CURRENCY IN PUBLIC CIRCULATION (2) | VAULT CASH IN ALL BANKS (3) | CURRENCY OUTSIDE TREASURY & F. R. BANKS (4) | CURRENCY ASSETS F. R. Banks (5) | U. S. Treasury (6) |
|---|---|---|---|---|---|
| Apr. | 4,922 | 745 | 5,667 | 4,065 | 343 |
| May | 4,816 | 709 | 5,525 | 4,082 | 273 |
| June | 4,721 | 667 | 5,388 | 4,135 | 262 |
| July | 4,716 | 615 | 5,331 | 4,116 | 277 |
| Aug. | 4,613 | 692 | 5,305 | 4,135 | 271 |
| Sept. | 4,598 | 710 | 5,308 | 4,150 | 275 |
| Oct. | 4,671 | 682 | 5,353 | 4,124 | 272 |
| Nov. | 4,705 | 750 | 5,455 | 4,048 | 287 |
| Dec. | 4,722 | 782 | 5,504 | 4,113 | 288 |
| 1934 | | | | | |
| Jan. | 4,619 | 670 | 5,289 | 4,085 | 355 |
| Feb. | 4,668 | 686 | 5,354 | 4,422 | 3,395 |
| Mar. | 4,602 | 734 | 5,336 | 4,822 | 3,262 |
| Apr. | 4,676 | 683 | 5,359 | 5,146 | 2,934 |
| May | 4,618 | 720 | 5,338 | 5,209 | 2,999 |
| June | 4,586 | 715 | 5,301 | 5,304 | 2,943 |
| July | 4,671 | 644 | 5,315 | 5,473 | 2,914 |
| Aug. | 4,642 | 703 | 5,345 | 5,558 | 2,914 |
| Sept. | 4,732 | 736 | 5,468 | 5,495 | 2,912 |
| Oct. | 4,694 | 759 | 5,453 | 5,526 | 2,939 |
| Nov. | 4,721 | 795 | 5,516 | 5,635 | 2,931 |
| Dec. | 4,719 | 815 | 5,534 | 5,738 | 3,038 |
| 1935 | | | | | |
| Jan. | 4,590 | 768 | 5,358 | 5,975 | 2,950 |
| Feb. | 4,645 | 797 | 5,442 | 6,129 | 2,907 |
| Mar. | 4,760 | 737 | 5,497 | 6,122 | 2,930 |
| Apr. | 4,788 | 701 | 5,489 | 6,297 | 2,902 |
| May | 4,750 | 761 | 5,511 | 6,384 | 2,896 |
| June | 4,833 | 786 | 5,619 | 6,721 | 2,820 |
| July | 4,741 | 777 | 5,518 | 6,803 | 2,865 |
| Aug. | 4,765 | 808 | 5,573 | 7,030 | 2,633 |
| Sept. | 4,893 | 795 | 5,688 | 7,160 | 2,723 |
| Oct. | 4,827 | 859 | 5,686 | 7,608 | 2,605 |
| Nov. | 4,919 | 901 | 5,820 | 7,802 | 2,571 |
| Dec. | 4,928 | 954 | 5,882 | 8,201 | 2,566 |
| 1936 | | | | | |
| Jan. | 4,794 | 899 | 5,693 | 8,380 | 2,553 |
| Feb. | 4,848 | 927 | 5,775 | 8,340 | 2,516 |
| Mar. | 4,983 | 901 | 5,884 | 8,305 | 2,528 |
| Apr. | 4,884 | 975 | 5,859 | 8,347 | 2,529 |
| May | 4,993 | 960 | 5,953 | 8,420 | 2,579 |
| June | 5,233 | 1,017 | 6,250 | 8,664 | 2,501 |
| July | 5,131 | 992 | 6,123 | 8,865 | 2,441 |
| Aug. | 5,291 | 934 | 6,225 | 8,919 | 2,375 |
| Sept. | 5,331 | 936 | 6,267 | 8,979 | 2,458 |
| Oct. | 5,313 | 989 | 6,302 | 9,241 | 2,390 |
| Nov. | 5,509 | 957 | 6,466 | 9,388 | 2,353 |
| Dec. | 5,527 | 1,023 | 6,550 | 9,501 | 2,368 |
| 1937 | | | | | |
| Jan. | 5,413 | 935 | 6,348 | 9,492 | 2,529 |
| Feb. | 5,434 | 973 | 6,407 | 9,428 | 2,620 |
| Mar. | 5,431 | 946 | 6,377 | 9,467 | 2,753 |
| Apr. | 5,377 | 1,004 | 6,381 | 9,480 | 2,956 |
| May | 5,501 | 986 | 6,487 | 9,411 | 3,182 |
| June | 5,489 | 958 | 6,447 | 9,485 | 3,445 |
| July | 5,475 | 949 | 6,424 | 9,530 | 3,576 |
| Aug. | 5,719 | 813 | 6,532 | 9,465 | 3,719 |
| Sept. | 5,608 | 912 | 6,520 | 9,837 | 3,575 |
| Oct. | 5,710 | 855 | 6,565 | 9,790 | 3,662 |
| Nov. | 5,791 | 777 | 6,568 | 9,824 | 3,627 |
| Dec. | 5,666 | 905 | 6,571 | 9,886 | 3,620 |
| 1938 | | | | | |
| Jan. | 5,598 | 725 | 6,323 | 9,916 | 3,648 |
| Feb. | 5,598 | 745 | 6,343 | 9,972 | 3,579 |
| Mar. | 5,461 | 868 | 6,329 | 10,031 | 3,551 |
| Apr. | 5,395 | 960 | 6,355 | 11,438 | 2,192 |
| May | 5,479 | 990 | 6,469 | 11,324 | 2,254 |
| June | 5,384 | 1,044 | 6,428 | 11,365 | 2,299 |
| July | 5,523 | 942 | 6,465 | 11,355 | 2,357 |

| (1) | CURRENCY IN PUBLIC CIRCULATION (2) | VAULT CASH IN ALL BANKS (3) | CURRENCY OUTSIDE TREASURY & F. R. BANKS (4) | CURRENCY ASSETS F. R. Banks (5) | U. S. Treasury (6) |
|---|---|---|---|---|---|
| Aug. | 5,544 | 960 | 6,504 | 11,331 | 2,480 |
| Sept. | 5,516 | 1,058 | 6,574 | 11,578 | 2,816 |
| Oct. | 5,688 | 1,018 | 6,706 | 11,945 | 2,751 |
| Nov. | 5,727 | 1,060 | 6,787 | 12,296 | 2,689 |
| Dec. | 5,753 | 1,159 | 6,912 | 12,479 | 2,707 |
| 1939 | | | | | |
| Jan. | 5,730 | 933 | 6,663 | 12,756 | 2,770 |
| Feb. | 5,811 | 928 | 6,739 | 12,897 | 2,716 |
| Mar. | 5,747 | 1,018 | 6,765 | 13,142 | 2,722 |
| Apr. | 5,953 | 962 | 6,915 | 13,785 | 2,691 |
| May | 5,980 | 987 | 6,967 | 13,955 | 2,636 |
| June | 5,920 | 1,042 | 6,962 | 14,193 | 2,559 |
| July | 6,097 | 957 | 7,054 | 14,534 | 2,370 |
| Aug. | 6,103 | 1,038 | 7,141 | 14,967 | 2,327 |
| Sept. | 6,165 | 1,073 | 7,238 | 15,331 | 2,260 |
| Oct. | 6,348 | 1,004 | 7,352 | 15,498 | 2,250 |
| Nov. | 6,356 | 1,106 | 7,462 | 15,595 | 2,359 |
| Dec. | 6,388 | 1,193 | 7,581 | 15,980 | 2,367 |
| 1940 | | | | | |
| Jan. | 6,345 | 1,031 | 7,376 | 16,332 | 2,359 |
| Feb. | 6,339 | 1,100 | 7,439 | 16,514 | 2,374 |
| Mar. | 6,464 | 1,057 | 7,521 | 16,820 | 2,372 |
| Apr. | 6,538 | 1,032 | 7,570 | 17,156 | 2,293 |
| May | 6,568 | 1,117 | 7,685 | 17,634 | 2,200 |
| June | 6,779 | 1,145 | 7,924 | 18,496 | 2,190 |
| July | 6,765 | 1,118 | 7,883 | 18,906 | 2,250 |
| Aug. | 6,792 | 1,214 | 8,006 | 19,232 | 2,291 |
| Sept. | 6,975 | 1,197 | 8,172 | 19,584 | 2,294 |
| Oct. | 6,945 | 1,320 | 8,265 | 19,940 | 2,187 |
| Nov. | 7,085 | 1,380 | 8,465 | 20,173 | 2,182 |
| Dec. | 7,329 | 1,403 | 8,732 | 20,393 | 2,213 |
| 1941 | | | | | |
| Jan. | 7,181 | 1,367 | 8,548 | 20,637 | 2,200 |
| Feb. | 7,363 | 1,362 | 8,725 | 20,611 | 2,204 |
| Mar. | 7,702 | 1,242 | 8,944 | 20,743 | 2,251 |
| Apr. | 7,777 | 1,294 | 9,071 | 20,848 | 2,283 |
| May | 7,891 | 1,403 | 9,294 | 20,959 | 2,221 |
| June | 8,300 | 1,404 | 9,704 | 20,865 | 2,276 |
| July | 8,276 | 1,421 | 9,697 | 20,989 | 2,330 |
| Aug. | 8,609 | 1,425 | 10,034 | 20,912 | 2,400 |
| Sept. | 8,742 | 1,441 | 10,183 | 21,121 | 2,259 |
| Oct. | 8,767 | 1,540 | 10,307 | 21,260 | 2,209 |
| Nov. | 9,194 | 1,523 | 10,717 | 21,196 | 2,180 |
| Dec. | 9,615 | 1,545 | 11,160 | 21,220 | 2,215 |
| 1942 | | | | | |
| Jan. | 9,558 | 1,539 | 11,097 | 21,379 | 2,196 |
| Feb. | 9,894 | 1,528 | 11,422 | 21,256 | 2,189 |
| Mar. | 10,218 | 1,375 | 11,593 | 21,230 | 2,187 |
| Apr. | 10,189 | 1,534 | 11,723 | 21,299 | 2,186 |
| May | 10,692 | 1,449 | 12,141 | 21,201 | 2,188 |
| June | 10,969 | 1,447 | 12,416 | 21,266 | 2,195 |
| July | 11,133 | 1,514 | 12,647 | 21,318 | 2,224 |
| Aug. | 11,891 | 1,359 | 13,250 | 21,244 | 2,216 |
| Sept. | 12,312 | 1,391 | 13,703 | 21,303 | 2,222 |
| Oct. | 12,642 | 1,440 | 14,082 | 21,350 | 2,249 |
| Nov. | 13,478 | 1,370 | 14,848 | 21,300 | 2,243 |
| Dec. | 13,943 | 1,464 | 15,407 | 21,412 | 2,194 |
| 1943 | | | | | |
| Jan. | 14,316 | 1,350 | 15,666 | 21,423 | 2,200 |
| Feb. | 14,738 | 1,416 | 16,154 | 21,349 | 2,212 |
| Mar. | 14,796 | 1,454 | 16,250 | 21,406 | 2,224 |
| Apr. | 14,947 | 1,646 | 16,593 | 21,257 | 2,234 |
| May | 15,630 | 1,566 | 17,196 | 21,088 | 2,272 |
| June | 15,814 | 1,607 | 17,421 | 21,179 | 2,268 |
| July | 16,126 | 1,673 | 17,799 | 21,154 | 2,272 |
| Aug. | 17,073 | 1,498 | 18,571 | 20,901 | 2,279 |
| Sept. | 17,118 | 1,700 | 18,818 | 21,026 | 2,274 |
| Oct. | 17,837 | 1,517 | 19,354 | 20,837 | 2,298 |
| Nov. | 18,462 | 1,478 | 19,940 | 20,772 | 2,299 |
| Dec. | 18,816 | 1,612 | 20,428 | 20,854 | 2,316 |

| (1) | CURRENCY IN PUBLIC CIRCULATION (2) | VAULT CASH IN ALL BANKS (3) | CURRENCY OUTSIDE TREASURY & F. R. BANKS (4) | CURRENCY ASSETS F. R. Banks (5) | U. S. Treasury (6) |
|---|---|---|---|---|---|
| 1944 | | | | | |
| Jan. | 19,101 | 1,433 | 20,534 | 20,809 | 2,322 |
| Feb. | 19,475 | 1,348 | 20,823 | 20,475 | 2,350 |
| Mar. | 19,570 | 1,467 | 21,037 | 20,469 | 2,329 |
| Apr. | 20,186 | 1,428 | 21,614 | 20,105 | 2,334 |
| May | 20,735 | 1,425 | 22,160 | 19,974 | 2,310 |
| June | 20,798 | 1,623 | 22,421 | 20,067 | 2,314 |
| July | 21,281 | 1,453 | 22,734 | 19,790 | 2,339 |
| Aug. | 21,652 | 1,569 | 23,221 | 19,708 | 2,407 |
| Sept. | 22,064 | 1,594 | 23,658 | 19,643 | 2,373 |
| Oct. | 22,859 | 1,550 | 24,409 | 19,472 | 2,372 |
| Nov. | 23,238 | 1,759 | 24,997 | 19,505 | 2,334 |
| Dec. | 23,525 | 1,801 | 25,326 | 19,556 | 2,368 |

No summation of col. 2-3 and 5-6 is presented because the variations in the total stock of currency lack significance.

COLUMN

1 Last day of month, December 1917-December 1921, for col. 4-6; for col. 3, Friday closest to end of month through April 1921, Wednesday thereafter. Wednesday closest to end of month, January 1922-December 1944, for all data with exceptions noted in App. B and D.

2 Col. 4 — col. 3.

3 Estimated; see Tables B 1-9.

4 & 6 *Banking and Monetary Statistics*, pp. 373-4; 378-94; and *Federal Reserve Bulletin;* for col. 4 see App. A.

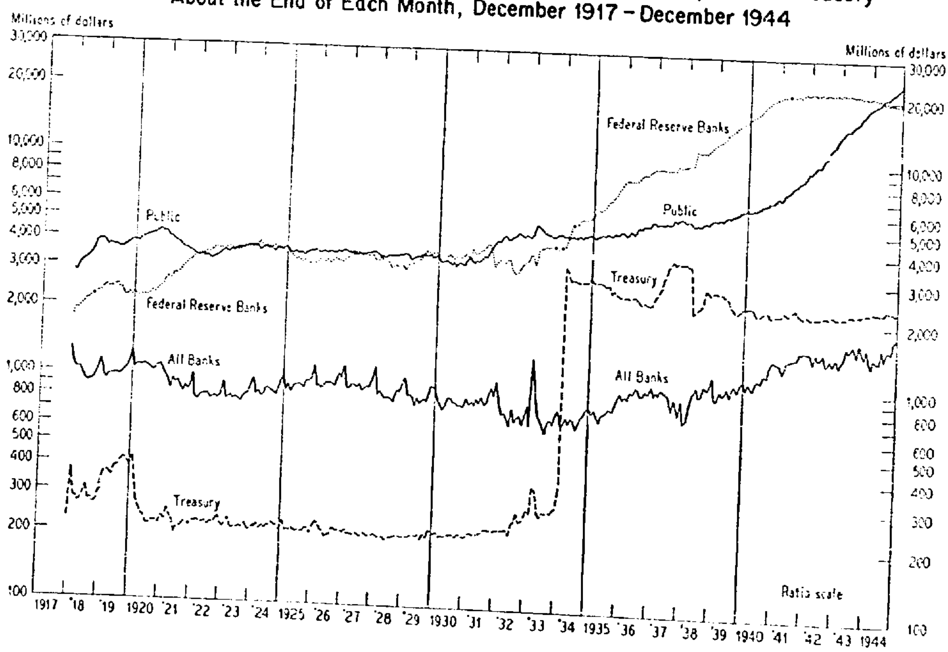
5 Compiled from official sources; see App. D.

World War I, the series rose more than 50 percent above its initial level in 1918 to a peak in the last quarter of 1920, a high point not surpassed until 1931. The nadir of the trough in July 1922 is above the initial level of the series.

2) *1923 to mid-1930.* It changed little.

CHART 5

**Currency Held by the Public, All Banks, Federal Reserve Banks, and the Treasury About the End of Each Month, December 1917 – December 1944**



3) *Mid-1930 to March 1933.* It increased markedly, especially during the second half of 1931 and the first half of 1932, reaching a peak in March 1933.
4) *March 1933 to mid-1938.* It tended to rise slowly.
5) *Mid-1938 to 1944.* During the final six and one-half years it increased at an accelerated pace; the December 1944 figure is 425 percent above the July 1938 figure. The former figure is about eight times as large as the December 1917 figure.

Daily withdrawals from and deposits in banks, and, to a small extent, transfers to the Treasury in Washington, D. C. cause fluctuations in currency holdings by the public. Business concerns, in preparation for the payment of wages and salaries, make weekly, semimonthly, or monthly withdrawals, depending on the payroll period. Farmers withdraw currency most heavily in spring and autumn, to pay hired workers. During wartime payments to members of the armed forces in this country and its possessions account for an increase in withdrawals by Government paymasters.[11] Individuals cash checks or withdraw currency to pay retail bills. Concurrently with withdrawals, deposits reducing the amount of currency in public circulation are being made by retailers and other business concerns, by individuals, and by Government agencies outside both the Treasury in Washington, D. C. and the mints and assay offices.

The currency held by the public at any given time therefore consists of holdings to be paid to others or to be deposited in banks within short periods, or holdings not to be used immediately. Holdings of currency to be paid to wage earners tend to reflect changes in employment, wage rates, and the number of working hours per week, if we assume no change in the disposition to use currency for wage payments. Holdings of currency to be used for household expenses tend to vary positively with (a) the level of retail prices, (b) the level and coverage of sales taxes and excise impositions, and (c) the quantities of goods and services sold, if we assume no change in

[11] Military operations and civil affairs administration of areas under Allied control have been financed by special issues of currency, made legal tender by military proclamation. Three types of currency have been issued by United States military finance officers since December 7, 1941:

a) 'Brown' and 'yellow' seal dollars, as distinguished from ordinary 'blue' seal dollars. The former were issued in Hawaii after the attack on Pearl Harbor; the latter, upon the invasion of North Africa. Both are part of the stock of United States currency.
b) Allied military currency, in the units of account of the area of military operations, e.g., lira in Italy; yen in Okinawa.
c) Currency like that in circulation in a given country, either printed in advance of military operations with the consent of the Government in Exile or on hand (at the Bank of England, for example).

Members of the armed forces abroad are required to declare their holdings of standard United States currency to military finance officers, and exchange them for local currencies, at fixed exchange rates.

the disposition to use currency for retail transactions. Holdings to be deposited in banks, mainly receipts accumulated by retail business concerns, are doubtless larger in prosperity than in depression.

The public's disposition to settle transactions by means of currency rather than by check is molded by various considerations, among which the following may be mentioned:

a) the cost and availability of banking services;

b) the relative proportions of durable and nondurable consumer goods in total sales; the former tend to be paid for by check, the latter in currency;

c) the volume of types of consumer credit that tend to be settled in currency rather than by check;

d) the proportion of national income paid to wage earners, who, in the main, do not carry checking accounts.

Availability was a factor of some importance affecting the use of checking accounts before 1934 when, either through failures or closings, communities were deprived of banking facilities. The cost of banking services has been higher during the last twelve to fifteen years than it was during the 'twenties. Most banks now require minimum balances and impose service charges on checking accounts. These practices, when first introduced, probably led many individuals to make more payments in currency. On the other hand, persons who formerly seldom, if ever, paid by check, are taking advantage of the recent innovation, special checking accounts, for the use of which the charge is five or ten cents per deposit and per withdrawal.

Shifts of population (e.g., during the post-1929 depression, and during World War II) have increased the use of currency, since a community does not readily accept checks signed by newcomers.

In wartime the decline in the proportion of durable consumer goods for sale and in the volume of consumer credit favors the use of currency. In recent years there has probably also been some preference for currency as a means of concealing illegal transactions (see below).

United States currency is held for business uses outside as well as inside the country.[12] For example, it was used for current transac-

[12]There is no adequate record of holdings of American currency abroad, but the movement to other countries appears to be unimportant in comparison with changes in demand in the United States. Hal B. Lary, *The United States in the World Economy* (U.S. Government Printing Office, Washington, 1943), presents, in Table III facing p. 216, Department of Commerce estimates of annual net changes in United States currency held abroad 1923-39. Clark Warburton of the Federal Deposit Insurance Corporation has estimated that American currency outside the country in 1919 was perhaps $100 million, rising to $200 million in 1922. The largest net outflow recorded by the Department of Commerce was $131 million in 1931, the smallest, $5 million in 1930. The largest net inflow was $25 million in 1934, the smallest, $1 million in 1935.

tions in Europe when currency was depreciated there after the first World War. When international travel was unrestricted, United States currency was carried to foreign countries by tourists and workmen living across borders. There was probably a considerable return flow.

Holdings of currency not to be used immediately may be considered hoards. Hoarding and dishoarding are not necessarily related to business conditions. Hoards of United States currency, here and also abroad, include currency held because of distrust of various sorts—of banks, governments, etc.; also currency held because there is no strong incentive to deposit it.[13] An increase in hoarding motivated by distrust of banks occurred when bank failures in this country were widespread—from the end of 1930 until the Bank Holiday, March 4, 1933. Since 1935 individuals and business firms have apparently held currency in excess of their business needs. The elimination of interest on demand deposits, under the Banking Act of 1935, and the reduction of interest on savings and time accounts probably made for an attitude of indifference with respect to excessive currency holdings. The Treasury believes that part of the large wartime increase in currency holdings reflects black-market operations and tax-dodging. On May 31, 1945 it issued a directive requiring all financial institutions to report any transaction in amounts or denominations of currency which, "in the judgment of the financial institutions, exceed those commensurate with the legitimate and customary conduct of the business, industry or profession of the person or organization concerned."[14]

Hoarding of United States currency in Europe increased prior to 1924 when currency was depreciated there; from the end of 1930 to October 1931, as a result of the banking crises on the Continent and in England; and from 1933 through 1941.[15] The rumblings of political upheaval in Europe led wealthy foreigners to invest part of their capital in United States bank notes. After 1940, and especially after the first half of 1941 with the tightening of the Treasury 'freezing' regulations, it became increasingly difficult for foreigners to get United States currency. On the other hand, our armed forces abroad may be spending United States currency, contrary to military regulations, thereby swelling foreign hoards.

EFFECTS OF CHANGES IN PUBLIC HOLDINGS ON BANK RESERVES

Currency deposits or withdrawals by the public tend to increase or decrease bank reserves, unless offset by Federal Reserve Bank action

13 A reliable measure of these hoards does not exist.

14 Treasury Department Press Service 46-37.

15 *Federal Reserve Bulletin*, Sept. 1924, p. 683.

or by some other factor, such as a disbursement of Treasury funds or an increase in the monetary gold stock.

From 1921 through 1930 public holdings fluctuated little except in response to seasonal needs. Withdrawals tended to carry reserves, which were not materially above legal requirements, below this level. The Federal Reserve Banks, by lending to member banks or by open market operations, offset the effect of changes in the demand for currency on the money market. Banks could forecast their reserve position, so far as it would be affected by the movements of currency to and from the public.

From 1917 through 1920 and from 1931 through March 1933 the increase in currency in public circulation was so great that member banks were compelled to borrow heavily for long periods from the Reserve Banks to protect their reserves. During 1934-40, when the commercial banks held large excess reserves, the withdrawal of currency into circulation was not serious for them.

Excess reserves of member banks declined from close to $7 billion in 1940 to less than $1 billion at the beginning of 1944, owing to the continued withdrawal of currency into public circulation and the increase in reserves required against mounting deposits. Reserve requirements were reduced for central reserve city banks in August, September, and October 1942; and in April 1943, in an effort to relieve the pressure on member banks, Treasury war loan deposits were exempted from reserve requirements.[16] Although required reserves have continued to grow, excess reserves have changed little since 1944 for all member banks combined as Federal Reserve Bank credit has expanded. The problem of maintaining effective central banking control against the possibility of inflation, considered so acute during 1935-41, has altered; then there was little or no occasion for the individual member bank to seek a discount from its Federal Reserve Bank; and the sale of all the securities in the portfolios of the Reserve Banks, barring indirect effects, would not have wiped out excess reserves. Now the possibility of central banking control via increases in the rediscount rate and open market sales is circumscribed by member banks' large holdings of Treasury obligations, and the Reserve authorities' reluctance to alter the present low level of interest rates.

The Reserve Banks have also been subject to strain during periods of unusual increase in currency in public circulation. From August 1917 to May 1920 the percentage the reserves of all Reserve Banks

[16]Banks paid for Government securities purchased for their own account and for the account of their customers by giving the Treasury credit in war loan accounts. As the Treasury disbursed the funds to its credit in war loan accounts, however, individual deposits, requiring reserves, were increased.

constituted of their combined note circulation and deposit liabilities declined steadily from 82.2 to 42.6. It also dropped precipitously between May 1931 and March 1933—from 84.4 to 51.3. By the end of 1945, principally because of the continued increase in the public's currency holdings, it had declined to less than 42 percent.[17]

The tremendous volume of currency holdings by the public is a problem for the future. Presumably a time will come when currency will begin to return to the banks. Monetary policy may, in that event, call for contraction rather than expansion of lending, but reserves, replenished by transfers of currency from member to Reserve Banks, will be growing counter to the desired objective. The ability of the Federal Reserve authorities to control this situation may severely test the adequacy of their present powers.

HISTORICAL DEVELOPMENTS AFFECTING ALL BANK VAULT CASH

Changes in bank vault cash have occurred for different reasons during two sub-periods into which the period December 1914-December 1944 may be divided:[18]

I November 1914-May 1917, the period of transition under the Federal Reserve System, when member banks were permitted to hold a designated proportion of their reserves as vault cash;

II June 1917-December 1944 when vault cash no longer figured as a reserve item for member banks.

I On November 16, 1914 the twelve Federal Reserve Banks opened for business. The Federal Reserve Act of 1913 required member banks to hold a specified part of their reserves with the Federal Reserve Banks, another part in their vaults, and the remainder either in their own vaults or at the Reserve Banks. It authorized reserve city and country member banks until November 1917 to keep this remainder, at their option, also with national banks in central reserve and reserve cities, but provided that after November 1917 balances with other bankers would no longer count as reserves. Provision was made for the transfer of the reserves required to be held in the Reserve Banks in a series of five instalments at six month intervals.[19] Both total reserve requirements and the percentages required to be held in vault were smaller under the Act of 1913 than under the national banking system.

17 The reserve percentages were computed from data on reserves and liabilities, treated in accordance with their legal status at the time of the report. The 1917-20 data are monthly averages of weekly figures; those for 1931-33 are monthly averages of daily figures.

18 See the call date estimates of vault cash holdings by all banks, December 1914-December 1917 (App. B.).

19 A revision of the Act, approved September 7, 1916, permitted member banks to transfer to the Federal Reserve Banks, immediately, any part of reserves formerly required to be held in their own vaults.

The successive transfers of cash from member banks to Reserve Banks were made without difficulty because of the continued accretions to the banks' gold holdings due to heavy European imports. Large gold inflows into the United States starting in December 1914 created, in fact, excess reserves for the banking system.

With the transfer of the fifth and final reserve instalment to the Reserve Banks in November 1916, the Reserve Board became seriously concerned over the large excess reserves of the member banks. There was fear of an immediate over-extension of loans and of a deflation when gold flowed out.[20] Efforts were therefore made, first, to concentrate the country's gold supply in the vaults of the Reserve Banks, where it could be used in the public interest; second, to raise reserve requirements. Our entry into the war and the needs of war finance led to the amendment of the Federal Reserve Act of June 21, 1917 providing that legal reserves henceforth consist only of balances with Reserve Banks, and eliminating any requirements as to vault cash. Although total reserve requirements were reduced, the amounts required to be kept with the Federal Reserve Banks were raised. The change in the reserve requirements in June 1917 necessitated "the transfer of a large amount of actual money to the Federal Reserve Banks", about $250 million in all.[21]

II By the end of June 1917 the Federal Reserve System had changed the location of the country's bank reserve. Cash was physically transferred from the vaults of member banks to the vaults of Reserve Banks. Bank reserves became 'balances with the Federal Reserve Bank', and cash in vault lost its legal reserve character. Each member bank could decide how much currency it would keep in its vault.

Vault cash in all banks, 1918-44, is characterized by choppy fluctuations, partly of a seasonal nature. The series rose somewhat between 1918 and 1920, but by 1923 dropped to a point about one-quarter below its initial level in December 1917. Peaks in 1927 and 1931 were successively lower. The trough in 1929 was higher than that in 1923, but the trough in 1933 is the low point of the series. After 1933 vault cash moved upward except for a period of decline in the second half of 1937. The rate of increase slackened after 1941. By December 1944 all bank vault cash was about 40 percent higher than in December 1917.

Changes in the amount of vault cash since June 1917 may be associated with the following influences:

1) The size of deposit liabilities. A certain percentage of deposit

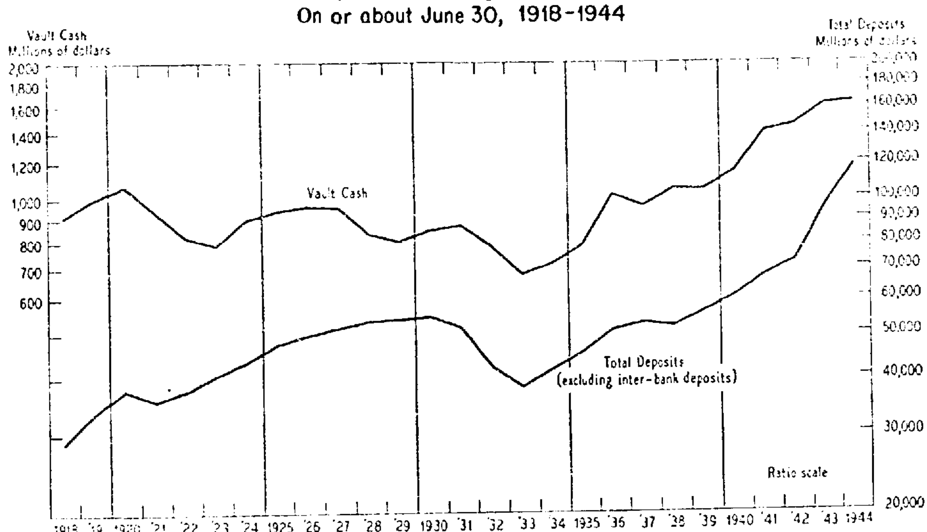
[20] Federal Reserve Board, *Third Annual Report, 1916*, pp. 2-3, 23-5.

[21] *Ibid., Fourth Annual Report, 1917*, p. 12.

liabilities, arrived at by rule of thumb, seems to afford bankers a measure of their cash needs. Other things being equal, the larger the deposits the larger the vault cash needs (see Chart 6).

CHART 6

Vault Cash and Total Deposits (excluding Inter-Bank Deposits) in All Banks
On or about June 30, 1918-1944




Data for deposits in all banks, 1918-41, were taken from *Banking and Monetary Statistics* (Board of Governors of the Federal Reserve System, 1943), p. 18; thereafter from the *Federal Reserve Bulletin*. The deposit data exclude non-reporting banks (except for three large private banks which have been included since 1928) and banks in United States possessions (except for one national bank in Alaska, which is included before 1921). The vault cash series includes banks in United States possessions and an estimate of non-reporting banks (see Table B 1). Although figures on deposits in all banks for December dates are available since 1923, only June figures were plotted, because the marked December seasonal peak in vault cash would be a distracting factor for this comparison.

2) The relative use of checks and currency by the public. If the demand for currency is relatively small (large), the banks may reduce (increase) the amount of till money they keep for each dollar of deposits. A notable decline in vault cash relative to deposits occurred during the 'twenties.

3) Hoarding. Banks must keep more cash on hand if the community is increasing its hoarding of currency.

4) The location of banking institutions. A study fifteen years ago of daily vault cash holdings showed that member banks near a Federal Reserve Bank or branch maintained vault cash equal on the average to only 1.38 percent of their net demand deposits; other member banks held vault cash equal to 4.64 percent.[22] Since non-member banks procure currency through member banks, the vault cash of the former would also presumably be influenced by proximity to a Federal Reserve Bank or branch.[23] Faster transportation

[22] *Member Bank Reserves*, Report of the Committee on Bank Reserves of the Federal Reserve System, 1931, p. 13.

[23] Expenses for shipping currency, except to non-member banks, are borne by the Federal Reserve Banks.

of currency and more efficient administration of requests for currency since the establishment of the Reserve Banks have, no doubt, also affected the size of vault cash holdings.

5) The cost of holding a dead asset. Cash in vault earns no income. When a bank's reserve balance is ample, the bank is not in debt to the Reserve Bank and its loans are sluggish, the cost of holding vault cash is negligible and there will be no pressure on the bank to return unneeded currency promptly to the Reserve Banks. When a bank's reserves are declining, its indebtedness growing, and it can lend profitably, the cost of holding vault cash is substantial and the bank will economize in its use. Presumably, increases in the ratios of reserves required to be held by member banks against their liabilities, in August 1936, March 1937, May 1937, and November 1941, and decreases in April 1938 and August-October 1942 incidentally changed the cost of holding vault cash.

Since member banks have the option of keeping currency in their vaults or depositing it to the credit of their reserve balances, changes in vault cash influence their reserve position. And since the banks, at their discretion, can adjust the ratio of their currency holdings to their deposit liabilities, changes in either aggregate vault cash or in the ratio of vault cash to deposits may affect the supply of demand deposits subject to check. In short, the latter is limited not only by legal reserve requirements but also by the size of customary holdings of vault cash.

GOLD MOVEMENTS AND FEDERAL RESERVE BANK CURRENCY HOLDINGS

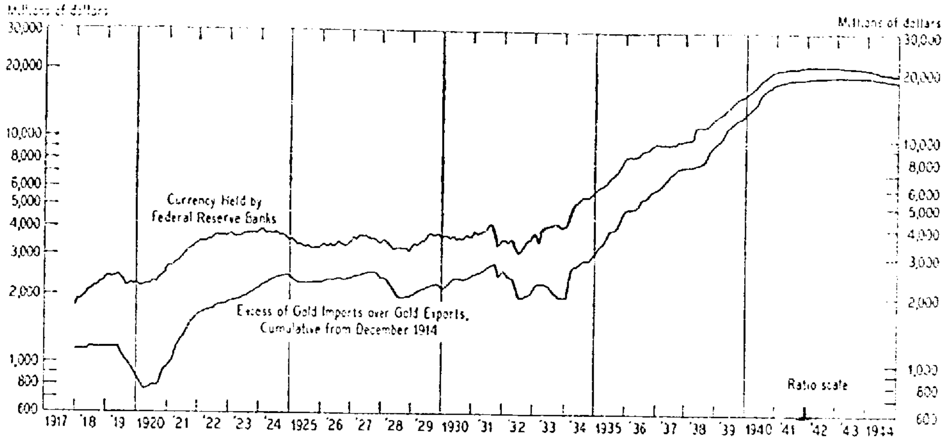
When Federal Reserve Banks began operations in November 1914, their holdings of currency were even smaller than Treasury currency assets, but they increased rapidly until, by the beginning of 1918, they exceeded all bank vault cash. Before 1919 Reserve Bank currency holdings were built up by transfers of cash from the vaults of member banks, made in response to changes in reserve requirements and the attempts of the Reserve authorities to concentrate gold in the vaults of the Reserve Banks.

Between 1919 and 1934 changes in the currency holdings of the Reserve Banks were due chiefly to gold imports and exports and gold deposits and withdrawals for domestic use as money or in the arts (see Chart 7). (Changes in Reserve Bank holdings of currency other than gold are negligible relative to the total.) During 1924-25, however, the central banks' holdings declined as a result of the Reserve policy of putting gold into circulation in place of Federal Reserve notes.[24] Except during the year beginning June

[24] The aim was to reduce excess reserves of the Reserve Banks. Gold imports were not 'sterilized' by this action, as they were by the Treasury program during 1936-38. Upon receipt,

CHART 7

Currency Held by the Federal Reserve Banks, and Excess of Gold Imports over Gold Exports Cumulative from December 1914, End of Month, December 1917 – December 1944




Data on net gold imports were taken, 1914-41, from *Banking and Monetary Statistics*, pp. 536-8; thereafter, when available, from the *Federal Reserve Bulletin*. Monthly figures have not been released for 1942-43 and June-November 1944.

1919, Reserve Bank currency holdings increased markedly 1918-23. The level at the beginning of 1934 was substantially the same as ten years earlier, with intervening declines in 1924-25, 1927-28, and 1931-32.

Since 1934 no gold has been withdrawn for domestic monetary use. The most important influence on Reserve Bank currency holdings since that date has been gold imports and exports. Gold produced in this country or imported has been sold to the Treasury which pays for it by a check drawn on a Federal Reserve Bank. The deposit of the check reduces the Treasury's balance with Federal Reserve Banks. The Treasury usually replenishes its deposit balances by crediting the Reserve Banks with gold certificates, which increases their currency holdings. If the Treasury releases gold for export by a bank or individual, or for use in the arts, in exchange for gold certificate credits returned to it by the Federal Reserve Banks, the Banks' gold holdings are reduced. A member bank's reserve account is debited for the amount of the gold withdrawn.

In June 1938 Federal Reserve Bank currency holdings were more than two and a half times those in February 1934. They continued to increase thereafter but at a diminishing rate until 1942; during the last eighteen months of our series they decline somewhat. The series is about eleven times as large in December 1944 as in December 1917.

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gold imports still increased member bank reserves. But by releasing gold for circulation, the Reserve Banks somewhat limited the possibility of the further expansion of member bank reserves on the basis of their own reserve position.

Federal Reserve Bank currency holdings represent the ultimate reserve on which our monetary system rests.[25] Reserve Banks must hold reserves of gold certificates (formerly gold) or lawful money equal to at least 35 percent of their deposits, and of gold certificates (formerly gold) equal to at least 40 percent of their Federal Reserve notes in circulation.[26] Except during 1920-21, 1932-33, and 1944-45, Reserve Bank reserves have usually been almost, or more than, double the legal requirements.[27] The wartime increase in their note liabilities has caused a progressive decline in their reserve percentage. From May 1942, when the percentage was just under 90, more than double the legal minimum, it fell to less than 50 by 1945.

It might have been expected, on the basis of pre-1914 gold standard practice by central banks, that with the centralization of the gold holdings of the banking system in Reserve Bank vaults, changes in their currency holdings and in their reserve ratio would indicate when loans to member banks should be contracted or expanded. Their credit policy has not, however, in general, been designed to correct gold movements. That changes in Reserve Bank currency holdings and their reserve ratio could not be relied upon to guide central banking administration, in the absence of an effective international gold standard since 1914, has been the prevailing opinion of Federal Reserve authorities.

### FACTORS AFFECTING TREASURY CURRENCY HOLDINGS

For the most part, variations in the amount of currency the Treasury holds do not reflect a formulated policy. Divers factors affecting each type of currency in the Treasury's possession produce the net change observable in movements of Treasury currency holdings from time to time. The net change is usually explicable only in terms of the interaction of half a dozen factors.

The production costs of gold and silver, the international balance of payments, and silver purchase requirements under the law are among the factors influencing the increase in Treasury holdings of gold and silver.[28] Offsetting decreases by sales of gold and silver, or by deposits of coin or certificates to the Treasury's account in

[25] Only since May 1933 (during the period covered by our series) has all non-gold currency (excluding Federal Reserve notes) in the Reserve Banks been eligible for use as a reserve against deposits. Until then, in addition to Federal Reserve notes, there was a small amount of non-reserve cash in Reserve Bank holdings of currency other than gold. (Gold or gold certificates alone constitute legal cover for Federal Reserve notes.)

[26] An Act of June 12, 1945 provided for a reduction in required reserves of Federal Reserve Banks to a uniform minimum of 25 percent (in gold certificates only) of their deposits and notes in circulation.

[27] Changes in members banks' and the public's demand for currency need not affect the size of Reserve Bank currency holdings. They may affect only the note liabilities against which the Reserve Banks must keep gold reserves.

the Reserve Banks, depend, among other things, upon a shift in the balance of payments, non-monetary demand for gold, and administrative procedure with respect to the time permitted to elapse between an accession of gold and silver bullion and the deposit (or credit) of certificates in the Reserve Banks.[29] For silver bullion purchased, the Treasury coins silver dollars and issues silver certificates, and it usually deposits them promptly in the Reserve Banks. Less regularity of timing attends its deposit of gold certificate credits following additions to its gold holdings and the drawing down of its balances with the Reserve Banks: it deposits whenever it considers its balances too low.[30]

How many notes in the process of retirement the Treasury holds depends on how rapidly Treasury personnel takes care of the inflow.[31] The amount of worn and mutilated currency returned to the Treasury for reissue fluctuates with the rate of wear and tear and with administrative policy. Treasury currency issues that in peacetime would have been withdrawn quickly were during the war permitted to remain in circulation, mainly to save paper. There may be lags between increases in Treasury holdings of worn and mutilated currency and offsetting decreases, depending upon administrative efficiency in destroying worn paper currency and melting down mutilated coin, and upon the time when the reissues are deposited in the Reserve Banks. Toward the close of World War I, for example, relatively large holdings of paper currency accumulated in Treasury offices. Of inferior paper, they had deteriorated quickly in use, and a shortage of Treasury personnel prevented the prompt sorting for destruction of the unusually large number.

Some kinds of currency held by the Treasury may therefore be increasing while others are decreasing as a result of a host of independent circumstances. Usually no generalization accounting for the net change in Treasury holdings between two dates is possible unless the conditions affecting some eight or nine kinds of currency comprising them are examined.

During the 'thirties, however, devaluation and 'gold sterilization'

28 Before February 1, 1934 the banks and the public as well as the Treasury could acquire gold. Some gold movements therefore did not affect Treasury holdings. Since then the Treasury alone may acquire gold inflows or newly mined gold.

29 Since February 1, 1934, gold and gold certificates have not been moved physically from the Treasury to Reserve Banks. The Treasury has replenished its balances by gold certificate credits issued against additions to its gold holdings.

30 See below the discussion of the 'gold sterilization' program, December 1936-April 1938.

31 National bank notes have been in process of retirement since 1935, and certain Federal Reserve bank notes since 1924. In December 1942 emergency Federal Reserve bank notes, printed in 1933, which may be issued on the deposit with the Treasurer of the United States of either direct Government obligations or specified kinds of commercial paper, were put into circulation to avoid issuing new currency. They have not yet been retired.

so increased the value of the Treasury's gold holdings that the influence of changes in other types of its holdings became relatively negligible. The reduction in the gold content of the dollar increased Treasury currency holdings $2,800 million after the close of business on January 31, 1934. From that date to the end 1936 Treasury currency holdings declined about $1,000 million, as part of the profit from the devaluation of the dollar was spent by the Treasury in exchange stabilization proceedings and under the terms of the Banking Act of 1935.[32]

In December 1936 the Treasury adopted a program of 'gold sterilization', i.e., it set aside gold imports in an inactive fund to be available for export without reducing bank reserves, or for other uses by the Treasury.[33] Instead of depositing gold certificates with the Reserve Banks to replenish its balances after purchasing new gold, the Treasury sold Government securities, thereby reducing reserves of member banks in the amount that they were built up by the Treasury's purchase of gold. The program thus had the effect of preventing gold imports from expanding bank reserves.

Between December 1936 and September 1937, as a result of the 'gold sterilization', Treasury currency holdings increased about $1,400 million. In September 1937, as a counter-deflationary move during the business contraction then in progress, the Secretary of the Treasury, at the request of the Board of Governors of the Federal Reserve System, released $300 million of gold from its inactive fund. In April 1938 the Treasury discontinued the inactive gold account, depositing with the Reserve Banks $1,392 million gold certificates previously held in that account and in the Treasury's working balance.

Though Treasury currency holdings do not reflect changes in general business conditions, in combination with Treasury deposits in Reserve Banks, they do influence, usually merely temporarily, the size of member bank reserves. An increase in Treasury currency holdings through purchases of gold and silver puts reserve funds at the disposal of member banks, though the increases in reserve balances may be offset by sales of Government securities, as was the case between December 1936 and April 1938. Treasury sales of gold and silver reduce member bank reserve balances. A change in Treasury currency holdings through a transfer of gold certificates or gold certificate credits to its Reserve Bank account

[32] Section 13b authorizes the Secretary of the Treasury to transfer to each Reserve Bank an amount not to exceed a specified sum out of the increment resulting from the reduction of the weight of the gold dollar. This fund is to be lent by the Reserve Bank to established business concerns in its district that are unable to obtain requisite financial assistance from usual sources.
[33] *Federal Reserve Bulletin*, May 1938, p. 344.

does not, however, affect member bank reserves. When aggregate Treasury funds increase because of payments by the public, member bank reserves usually decline, and vice versa. Reserve Bank credit has been utilized since 1918 to offset the influence changes in aggregate Treasury currency holdings and its deposits with Reserve Banks have on the money market.

## Appendix A

### *The Treasury Circulation Statement*

The Circulation Statement presents figures on the stock of all kinds of United States currency and on amounts held (a) in the Treasury, (b) in Federal Reserve Banks, and (c) outside the Treasury and the Federal Reserve Banks.[1] Currency outside the Treasury and the Federal Reserve Banks includes, therefore, not only currency held by the public, whether in active use or in hoards, but also vault cash held by all banks, and such United States currency as may have been carried abroad (other than gold coin known to have been exported), as well as money lost or destroyed, etc.

Before July 1, 1922 the Circulation Statement did not give definitive figures for currency outside the Treasury and the Federal Reserve Banks. The part of the currency belonging to the Reserve Banks and not so tabulated in the Statement must be subtracted from 'Money in Circulation' to get the revised series (published in the *Federal Reserve Bulletin*).

Table 2, column 4, shows the currency outside the Treasury and the Federal Reserve Banks on a 'final basis'; that is, all transactions at customs houses and assay offices are reflected as of the last day of the month until December 1921; thereafter as of the Wednesday closest to the end of the month. Until December 1927 the Circulation Statements presented preliminary figures because the Treasury was not informed of transactions up to the last day of the month, when the Circulation Statement was compiled. The preliminary figures were based on Treasury holdings of currency that were from one to five days out of date, and upon figures for gold coin that were not completely adjusted for all exports and imports. Arrangements for telegraphic instead of mailed reports from customs houses and assay offices gave the Treasury up-to-date figures, so that since December 1927 it has released the Circulation Statement monthly on a 'revised basis'. The data from 1914 through November 1927 were also revised. Since 1922 the Board of Governors of the Federal Reserve System has presented revised data for Wednesdays,

[1] Prior to November 1914, outside the Treasury only.