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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 The preliminary figures were based on Treasury holdings of currency that were from one to five days out of date, and upon figures for gold coin that were not completely adjusted for all exports and imports.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.

derived from the Treasury Circulation Statement, and daily data on mintings and Treasury and Reserve Bank currency holdings.

In December 1927 the elements that enter into the totals of 'monetary gold stock' and 'currency outside the Treasury and the Reserve Banks' were revised and corresponding adjustments made in data for preceding years: (1) gold held abroad by the Reserve Banks was included in the monetary gold stock of the United States;² (2) gold coin earmarked by the Reserve Banks for foreign account was excluded from the gold stock (and also from gold outside the Treasury and the Reserve Banks); and (3) minor coin, i.e., nickels and cents, was included in currency outside the Treasury and the Reserve Banks.

Gold coin known to have been exported has always been excluded from the stock. Since January 31, 1934 gold coin outside the Treasury and the Reserve Banks has not been shown. A Treasury order of December 28, 1933 made private holdings of gold coin illegal. It was assumed that 'gold in circulation' on January 30, 1934, \$287 million, represented gold coin in private hands that had been lost or taken out of the country. Figures for gold coin outside the Treasury and the Reserve Banks as of January 31, 1934, and subsequent to 1913, were therefore revised to exclude this \$287 million of gold coin.

APPENDIX B

New Estimates of Vault Cash in All Banks

We describe here our basic vault cash data and their sources, any adjustments made in the figures preliminary to their use in our estimation, and finally the detailed computation. Monthly estimates December 1917-December 1944 are first discussed; then call date estimates December 1914-December 1917.

COMPTROLLER'S ALL BANK ANNUAL DATA

The Comptroller presents data from which two series of vault cash in all reporting banks may be derived: one, all banks in continental United States; the other, all banks, including those in island possessions. ('Reporting' banks submit statements of condition to the Comptroller, the Federal Reserve Board or some state agency.) In the amount that United States currency was part of the vault cash of banks in island possessions, these holdings should properly be included. The series we use is the sum of vault cash holdings of reporting banks including banks in island possessions, adjusted for

²This change did not, of course, affect currency outside the Treasury and the Reserve Banks.

errors in estimated non-national bank data, and an estimate of vault cash in non-reporting banks (Table B 1).

Three types of error in the Comptroller's figures may be illustrated by his data for Kentucky, Ohio, and Maryland (see the supplement to Table B 1, listing the ten states for which an adjustment was made in non-national bank vault cash figures presented by the Comptroller for each).

The Comptroller's series 1921-30 for Kentucky non-national bank vault cash, one of the asset items in the annual condition statements, shows a striking discontinuity in three years. For 1926-28 the

JUNE 30	(millions of dollars)	JUNE 30	(millions of dollars)
1921	7.1	1926	42.8
1922	6.9	1927	46.8
1923	6.3	1928	47.9
1924	5.9	1929	5.5
1925	5.9	1930	5.7

Comptroller presents no entries for assets: 'checks and other cash items', 'exchanges for clearing house', 'due from banks', 'lawful reserve with Federal Reserve Banks and reserve agents', 'banking house', 'furniture and fixtures', 'other real estate owned', and 'over-drafts'. Since the sum of the entries under these heads plus vault cash for 1921-25 and 1929-30 yields a series of the same order of magnitude as the Comptroller's 'vault cash' figures for 1926-28, the latter evidently include these extraneous data. To make the vault cash figures for Kentucky non-national banks continuous, we substituted \$5.7 million for the Comptroller's estimates for these three years.

For Ohio state (commercial) banks, the Comptroller presents estimates of vault cash, 1927-33, based on the percentage vault cash constitutes of the sum of vault cash and lawful reserve in 1926 (a year for which vault cash is known). For each year 1927-33 this 1926 percentage was applied to an aggregate including not only vault cash and lawful reserve but also checks and cash items and exchanges for the clearing house. This procedure obviously yields inflated estimates of vault cash. In our estimates we assumed that the ratio of vault cash to the aggregates for 1927-33 was the average ratio of vault cash to comparable data for 1922-26 for state (commercial) banks and mutual savings banks (Ohio state bank reports).

For Maryland mutual savings banks, 1918-19, the Comptroller reports no vault cash, checks and cash items, or exchanges for the clearing house, but includes them in his 'due from banks'. We made a graphic estimation of the missing vault cash figures.

All adjustments were for errors of these sorts. Other estimates in the Comptroller's non-national bank data cannot be improved upon. We do not believe any major discontinuities remain in the Comptroller's series.

One type of error in the all bank data, probably beyond rectification, is their occasional inclusion of non-national bank figures for a date other than the one for which the total figure purports to be. Since the data are rounded to millions of dollars, and small inac-

TABLE B 1
Estimated Vault Cash in All Banks, 1914-1944
(millions of dollars)

(1)	VAULT CASH ALL REPORTING BANKS, INCL. ISLAND POSSESSIONS (2)	SUM OF ADJUSTMENTS, COMPTROLLER'S NON-NATIONAL BANK DATA (3)	ESTIMATED VAULT CASH NON-REPORTING BANKS (4)	TOTAL VAULT CASH (5)
June 30, 1914	1,639	-3	22	1,658
June 23, 1915	1,458	-4	19	1,473
June 30, 1916	1,486	-4	19	1,501
June 20, 1917	1,503	-4	20	1,519
June 29, 1918	897	-2	16	911
June 30, 1919	997	-15	18	1,000
June 30, 1920	1,076	-18	7	1,065
June 30, 1921	947	-19	3	931
June 30, 1922	830	-14	3	819
June 30, 1923	797	-11	3	789
June 30, 1924	912	-16	3	899
June 30, 1925	951	-16	3	938
June 30, 1926	997	-39	2	960
June 30, 1927	1,008	-55	2	955
June 30, 1928	888	-56	2	834
June 29, 1929	820	-19	2	803
June 30, 1930	866	-16	1	851
June 30, 1931	884	-14	1	871
June 30, 1932	792	-10	1	783
June 30, 1933	673	-7	1	667
June 30, 1934	714	0	1	715
June 29, 1935	785	0	1	786
June 30, 1936	1,019	-2	0	1,017
Dec. 31, 1936	1,026	-3	0	1,023
June 30, 1937	958	0	0	958
Dec. 31, 1937	908	-3	0	905
June 30, 1938	1,044	0	0	1,044
June 30, 1939	1,042	0	0	1,042
Dec. 30, 1939	1,197	-4	0	1,193
June 29, 1940	1,149	-4	0	1,145
Dec. 31, 1940	1,407	-4	0	1,403
June 30, 1941	1,408	-4	0	1,404
Dec. 31, 1941	1,545	0	0	1,545
June 30, 1942	1,447	0	0	1,447
Dec. 31, 1942	1,464	0	0	1,464
June 30, 1943	1,607	0	0	1,607
Dec. 31, 1943	1,612	0	0	1,612
June 30, 1944	1,623	0	0	1,623
Dec. 30, 1944	1,801	0	0	1,801

COLUMN

- 2 Annual Reports of the Comptroller of the Currency.
- 3 For derivation of the adjustments, see this Appendix and the Supplement to this table.
- 4 1914-26, estimates of Y. S. Leong, Money in Circulation in the United States, *Journal of Political Economy* (XXXVIII), April 1930, p. 170; 1927-44, our own estimates. See this Appendix.
- 5 Sum of col. 2, 3 and 4.

SUPPLEMENT TO TABLE B 1
Adjustments of Comptroller's Vault Cash Figures
for Non-National Banks in Ten States
(millions of dollars)

	ARIZ. ^a	CONN. ^b	GA. ^c	IND. ^d	IOWA ^e	KANS. ^c	KY. ^a	MD. ^b	MINN. ^f	OHIO ^c
June 30, 1914					-4	+1				
June 23, 1915					-4					
June 30, 1916					-4					
June 20, 1917					-4					
June 29, 1918					-4			+2		
June 30, 1919		-10	-3		-4			+2		
June 30, 1920		-11			-4			-3		
June 30, 1921		-9			-4			-4	-2	
June 30, 1922	-2	-10			-4				+2	
June 30, 1923	-2	-10			-4				+1	
June 30, 1924		-10			-4				-2	
June 30, 1925		-10			-4				-2	
June 30, 1926							-37		-2	
June 30, 1927							-41		-2	-12
June 30, 1928							-42		-2	-12
June 29, 1929				-4					-2	-13
June 30, 1930				-4						-12
June 30, 1931				-3						-11
June 30, 1932				-3						-7
June 30, 1933				-2						-5
June 30, 1934										
June 29, 1935										
June 30, 1936					-2					
Dec. 31, 1936					-3					
June 30, 1937										
Dec. 31, 1937					-3					
June 30, 1938										
June 30, 1939										
Dec. 30, 1939					-4					
June 29, 1940					-4					
Dec. 31, 1940					-4					
June 30, 1941					-4					

^a Non-national banks.

^b Mutual savings banks.

^c State (commercial) banks.

^d State (commercial) banks, loan and trust companies.

^e State (commercial) banks, loan and trust companies, stock savings banks.

^f Loan and trust companies.

curacies may be offsetting, we present the annual (or semi-annual) series without misgivings concerning its fundamental reliability.

The Comptroller of the Currency reports an estimate of the number of non-reporting banks through 1925; for the next two years, only the number of non-reporting private banks in Texas, Michigan, and Iowa. For 1928 through 1933 no data on non-reporting banks have been compiled. In 1934 and 1935, under the Emergency Banking Act of 1933, all banks in the country had to report to the Comptroller on national bank call dates. The tabulated returns, showing which banks were usually non-reporting, indicate that non-reporting banks probably exceeded the Comptroller's estimates before 1926, and certainly exceeded the total for Texas, Michigan, and Iowa in 1926-27.

Y. S. Leong, following Professor Mitchell, used the Comptroller's

figures for the number of non-reporting banks, 1912-26.¹ He based his estimate of vault cash in non-reporting banks on average cash holdings in reporting private banks. The returns in 1934-35 for banks that usually did not report show their average vault cash to be approximately one-half that of regularly reporting private banks. Estimates of vault cash in non-reporting banks based on the Comptroller's figures for non-reporting banks and on average vault cash of reporting private banks may, therefore, be too large before 1926, since the understatement of the number of non-reporting banks may be more than offset by the overstatement of average vault cash. If so, the two errors may cancel, 1926-27.

Leong's estimates of vault cash in non-reporting banks decline very substantially from 1914 to 1926. By 1927 our estimate is less than \$2 million. In 1934 and 1935 the vault cash of banks that were usually non-reporting was less than \$1 million. Our figures for vault cash in non-reporting banks for 1914-26 are Leong's estimates; for 1927-33, straight line interpolations between estimates rounded to hundreds of thousands of dollars. We assume that vault cash in non-reporting banks has been negligible since 1936.

CALL DATE DATA

For the period before June 1919, for which monthly estimates were made, we used call date figures for national banks and a changing sample of non-national banks (Tables B 2 and 3). A non-member bank series could not be compiled for these early years because non-national member bank data, by states, are unavailable. The national and non-national bank vault cash data were obtained only for member bank call dates because 'central reserve and reserve city' data for member banks are better than national bank data for calculating the adjustment factors between call dates (there were three additional call dates for national banks from December 1917 to June 1919). The advantage of the extra national bank call dates seemed to be outweighed by the desirability of using a series for banks reporting at call dates most comparable with weekly reporting member banks (see below).

Twenty states and the District of Columbia obtained reports on vault cash held by non-national banks at two or more consecutive member bank call dates, June 1917-June 1919. For any one call

¹ *Op. cit.*, p. 170.

Wesley C. Mitchell accepted the Comptroller's estimates of the number of non-reporting banks, 1909-11 (*Business Cycles*; University of California, 1913; p. 313). His estimate of the vault cash in non-reporting banks was based on the average ratio of cash to individual deposits in reporting private banks. The ratio was applied to an estimate of aggregate individual deposits in non-reporting banks derived from the average of individual deposits in reporting private banks. Leong's method is essentially the same.

TABLE B 2

Vault Cash in All Non-National Banks Reporting at
Two or More Consecutive Member Bank Call Dates, by States, June 1917-June 1919
(thousands of dollars)

	1917		May 10	1918			1919	
	June 20	Dec. 31		June 29	Nov. 1	Dec. 31	Mar. 4	June 30
1 Colo.	3,445	3,611	3,737	3,443	3,401	3,650	3,265	3,306
2 Wisc.	9,971	10,073	10,547	8,268	9,115	10,147	9,130	10,151
3 N. J.	11,953	11,152	10,415	8,532	9,786	12,656	11,070	11,119
4 N. C.	3,718	5,937	4,694	3,600	5,926	7,568	5,658	5,171
5 Tex.	9,514	14,614	12,127	9,698	13,014	11,789	10,955	10,961
6 Mont.	6,107	4,831	5,040	4,250	4,210	5,222	5,711	4,419
7 Miss.	2,314	4,342	3,080	2,252	4,114	5,080	3,281	3,105
8 Conn.	3,987	4,096	4,263	3,511	3,923	4,406	4,132	4,057
9 Wash.			6,317	5,813	6,093		5,496	5,734
10 Mich.			24,390	22,311	21,990		23,138	25,302
11 Mass.			21,630	18,203	20,926		19,942	19,775
12 Ore.			4,929	4,655	4,741		4,468	4,228
13 S. Dak.			2,687	2,333	2,866		2,789	2,634
14 Va.	3,626	4,528	4,297	3,754	4,648	5,603	4,999	
15 Ohio	31,471	29,947				32,026	28,877	
16 Okla.			3,755	3,100	4,136	4,218	3,790	
17 Calif.				42,401	35,860	44,352	37,868	43,617
18 S. C.				1,470	3,509			
19 Ill.						36,823	32,899	41,338
20 La.	7,252	9,792						
21 D. C.	1,793	1,805	1,685	1,501				

For the 20 states listed, reports of state Banking Departments; for the District of Columbia, *Annual Reports of the Comptroller of the Currency.*

date two aggregates of the state data may be shown, one for the sample as constituted on the preceding call date, another for the sample as constituted on the following call date. These non-national bank figures were added to national bank figures (Table B 3, col. 4), to get the changing 'call date sample' of all bank vault cash (col. 5).

For June 1919-December 1944 call date figures for member and a sample of non-member banks were used (Tables B 4 and 5).

TABLE B 3

Link Relatives of Aggregate Vault Cash in All National Banks and a Changing Sample of Non-National Banks, Member Bank Call Dates, June 1917-June 1919

MEMBER BANK CALL DATE		V A U L T C A S H					LINK RELATIVES OF COL. 5
(1)	(2)	Non-National Bank Sample (3)	National Banks (4)	All Bank Sample (5)		(6)	
		(thousands of dollars)					(%)
1917	June 20	95,151	752,711	847,862			
	Dec. 31	104,728	64,989	532,126	636,854	597,115	75.11
1918	May 10	123,593	59,885	463,494	523,379	587,087	87.65
	June 29	147,594	105,224	382,701	530,295	487,925	83.11
	Nov. 1	158,258	98,133	443,828	602,086	541,961	113.54
	Dec. 31	114,691	183,540	522,063	636,754	705,603	117.49
1919	Mar. 4	216,008	161,635	435,839	651,847	597,474	84.68
	June 30	231,606		424,455	656,061		100.65

COLUMN

- 3 Sums of state data, Table B 2.
Totals of sample as constituted on consecutive call dates.
- 4 *Annual Reports of the Comptroller of the Currency.*
- 5 Col. 3 + col. 4.

TABLE B 5

Link Relatives of Aggregate Vault Cash in All Member Banks and a Changing Sample of Non-Member Banks, Member Bank Call Dates, June 1919-December 1944

MEMBER BANK CALL DATE		V A U L T C A S H					LINK RELATIVES OF COL. 5 (6)
(1)	(2)	Non-Member Bank Sample (3)		All Member Banks (4)	All Bank Sample (5)		(%)
(thousands of dollars)							
1919	June 30	112,959		559,433	672,392		
	Nov. 17	123,498	95,200	602,992	726,490	698,192	108,05
	Dec. 31		102,265	691,173		793,438	113,64
1920	May 4	122,644	103,230	620,897	743,541	717,189	90,28
	June 30	117,662	96,292	621,817	739,479	715,040	99,45
	Nov. 15		91,619	611,067		702,686	98,27
	Dec. 29	81,317	72,864	677,925	759,242	752,683	110,05
1921	Apr. 28	70,337	95,693	564,022	634,359	659,715	83,55
	June 30		92,098	529,764		621,862	94,26
	Dec. 31	107,663	128,083	478,416	586,079	606,499	91,84
1922	Mar. 10	101,382	133,779	468,974	570,356	602,753	97,32
	June 30		137,314	464,614		601,928	99,86
	Dec. 29	107,782	118,154	561,576	669,358	582,768	119,79
1923	Apr. 3	95,485	136,518	518,112	613,597	619,836	91,67
	June 30		93,592	518,112		522,503	84,30
	Sept. 14	147,411	121,963	428,911		550,874	120,21
	Dec. 31	160,646	138,782	523,407	670,818	662,189	107,64
1924	Mar. 31	141,674		561,433	722,079		88,06
	June 30	144,075		494,223	635,897		101,85
	Oct. 10		106,415	503,555	647,630	609,970	104,61
	Dec. 31		110,190	527,889		638,079	87,63
1925	Apr. 6		126,007	597,472		723,479	101,02
	June 30		110,709	523,297		718,275	100,23
	Sept. 28		116,122	524,343		640,465	109,27
	Dec. 31	123,168	138,419	524,592			93,59
1926	Apr. 12	112,743	151,293	574,532	697,700	725,825	99,47
	June 30	115,430	138,490	540,261	653,004		97,30
	Dec. 31		131,858	534,120	649,550	672,610	101,05
1927	Mar. 23		120,057	522,596		654,454	100,86
	June 30	92,298	111,114	538,305	630,154	642,653	100,52
	Oct. 10	94,319	117,167	537,856	633,456	649,419	98,07
	Dec. 31		91,393	539,137		655,023	95,07
1928	Feb. 28		95,006	523,370		618,376	99,43
	June 30	97,460	114,427	525,992		634,145	85,85
	Oct. 3	108,328	108,153	449,198	546,658	544,415	114,78
	Dec. 31		95,217	519,126	627,454	628,701	109,49
1929	Mar. 27		124,000	564,384		688,384	91,14
	June 29	93,291	92,442	516,742	526,782	609,184	86,00
	Oct. 4	101,654	90,436	433,491		523,927	113,68
	Dec. 31		94,408	497,212	598,866	591,620	111,00
1930	Mar. 27	117,464	122,470	558,450		656,683	89,08
	June 30	118,991	109,932	496,633	614,097	680,920	98,23
	Sept. 24		97,279	484,262	603,253	581,541	97,70
	Dec. 31	130,905	94,862	470,367		568,176	122,98
1931	Mar. 25	113,034	102,607	592,504	723,409	695,111	79,39
	June 30	118,411		461,267	574,301		111,01
	Sept. 29		85,994	519,135	637,546	605,129	105,33
	Dec. 31		83,233	554,150		637,383	95,57
1932	June 30	100,126	122,819	522,551		609,147	90,14
	Sept. 30	81,839	103,519	478,224	578,350	581,743	84,47
	Dec. 31	85,898		406,688	488,527		104,14
1933	June 30		89,297	422,838	508,736	512,135	92,73
	Oct. 25	24,823	70,415	404,502		474,917	110,07
	Dec. 30	26,897	26,837	446,983	471,806	474,763	105,53
1934	Mar. 5	22,256	27,780	471,006	497,903		102,10
	June 30	22,507		486,086	508,342		97,40
	Oct. 17		26,923	472,643	495,150	499,566	116,72
	Dec. 31	35,694	29,216	550,471	644,296	583,089	110,18
			30,108	608,602		579,687	
						638,710	

V A U I T C A S H

MEMBER BANK CALL DATE (1)	CALL DATE (2)	Non-Member Bank Sample (3)		All Member Banks (4)	All Bank Sample (5)		LINK RELATIVES OF COL. 5 (6)
		(thousands of dollars)					
1935	Mar. 4	31,161		534,293	565,454		87.76
	June 29	30,770	30,987	537,010	567,780	567,997	100.41
	Nov. 1		32,798	541,119		573,917	101.04
	Dec. 31	25,749		664,778	690,527	696,226	122.70
1936	Mar. 4	23,935		623,518	647,453		93.76
	June 30	25,321	63,188	713,421	738,742	776,609	114.10
	Dec. 31		63,524	697,380		760,904	97.98
1937	Mar. 31	61,803		662,310	724,113	723,113	96.68
	June 30	55,455	54,393	629,305	684,760	683,698	94.57
	Dec. 31		47,597	589,457		637,054	93.18
1938	Mar. 7			603,541		632,996	102.52
	June 30	40,314		712,030	752,344	943,091	117.39
	Sept. 28	40,049	32,040	774,887	814,936	806,927	108.32
	Dec. 31		32,215	745,650		777,865	96.40
1939	Mar. 29			776,978		796,120	104.25
	June 30	11,734		712,132	723,866	729,945	91.69
	Oct. 2	10,303		773,514	783,817		108.28
	Dec. 30	12,286	20,693	841,215	853,501	861,908	108.89
1940	Mar. 26		21,873	862,162		884,035	102.57
	June 29		20,446	788,691		809,137	91.53
	Dec. 31		24,109	991,146		1,015,255	125.47
1941	Apr. 4		20,983	837,055		858,038	84.51
	June 30		23,338	999,433		1,022,771	101,170+
	Sept. 24			12,941	1,061,442		1,074,383
	Dec. 31	26,719		1,086,752	1,113,471	1,099,684	102.35
1942	Apr. 4	22,499	21,556	884,262	906,761	905,818	81.44
	June 30		27,549	1,021,745		1,049,294	1,035,698
	Dec. 31	14,614		1,018,612	1,033,226	1,034,649	99.90
1943	June 30	13,442	1,446	1,141,751	1,155,193	1,143,197	111.80
	Oct. 18		1,728	1,150,202		1,151,930	100.76
	Dec. 31		1,749	1,132,172		1,133,921	1,133,930
1944	Apr. 13			1,785	1,265,179		1,266,964
	June 30			1,741	1,142,506		1,144,247
	Dec. 30				1,270,707		111.22

COLUMN

- 3 Sums of state data, Table B 4.
Totals of sample as constituted on consecutive call dates.
- 4 Member Bank Call Reports.
- 5 Col. 3 + col. 4.

Non-national bank data were obtained for 24 states and the District of Columbia. Non-national member bank data were subtracted from non-national bank data to get the non-member bank series.

Only banks licensed to reopen after the Banking Holiday in March 1933 are included 1933-35. California, Washington, Virginia, and Wisconsin did not, however, report vault cash in licensed and unlicensed non-national banks separately. The non-national member bank data, by states, on the other hand, are for licensed banks only. We utilized the Comptroller's June data, which cover licensed banks only, to adjust the non-national bank figures for the above-mentioned four states. Vault cash in unlicensed banks, by states, was estimated as the difference between state report data, at June dates, and vault cash as given in the Comptroller's reports, distributed along a straight line over the annual period, from one

call date to the next. The difference between the state report call date figures and the amounts of the corrections yielded call date statistics for licensed banks only.

WEEKLY REPORTING MEMBER BANK DATA

Whenever available, these data were obtained, for dates closest to the end of the month and to member bank call dates, rounded to thousands of dollars. Friday figures were reported until April 1921; Wednesday figures thereafter.

We used call date figures for all member banks in central reserve and reserve cities combined as a close approximation of the weekly reporting member bank series on call dates.

METHOD OF ESTIMATION

- 1) We express the 'call date sample' as link relatives to determine the proportionate changes in vault cash of all banks from one call date to the next (Tables B 3 and 5).
- 2) We correct for deviations in the percentage movement of weekly reporting member bank data from that of the 'call date sample', from one call date to the next. Because vault cash data are highly variable depending on the day of the week for which they are reported, weekly reporting member statistics, i.e., Friday (after April 1921, Wednesday) figures cannot be compared directly with call date figures, which may fall on any day of the week. We therefore use call date figures obtained for member banks in central reserve and reserve cities combined instead of the weekly reporting member bank series. The difference, from one call date to another, between the percentage change in the 'call date sample' and in the 'central reserve plus reserve city' member bank series represents the amount by which the slope of the weekly reporting member bank series must be corrected between call dates (Tables B 6 and 7).
- 3) Because the correction derived from call date figures must be made, weekly reporting member bank data, for dates closest to the end of the month, are expressed as relatives of the weekly reporting member bank figure closest to the preceding member bank call date. The correction factors, described above, distributed along a straight line between call dates, are added to the monthly relatives based on call dates (Tables B 8 and 9, col. 1-5).²

²Weekly reporting member bank data first became available in December 1917. The percentage the figure for December 1917 is of the figure closest to the preceding call date must therefore be estimated. We based the estimate on the movement of the national and non-national bank data between June 20 and December 31, 1917—the interval during which the final transfer of reserves from member bank to Reserve Bank vaults was effected. Since vault cash holdings of national and non-national banks move in opposite directions, the former declining 30 percent and the latter rising 10 percent, we computed a weighted average of the

TABLE B 6
Computation of Call Date Adjustment Factors, Member Bank Call Dates
December 1917-June 1919

MEMBER BANK CALL DATE (1)	VAULT CASH MEMBER BANKS IN CENTRAL RESERVE & RESERVE CITIES (\$000) (2)	LINK RELATIVES OF COL. 2 (3)	LINK RELATIVES ALL BANK SAMPLE (4)	ADJUST- MENT FACTORS (5)
			(p e r c e n t a g e s)	
1917				
Dec. 31	360,666			
1918				
May 10	330,466	91.63	87.65	-3.98
June 29	279,669	84.63	83.11	-1.52
Nov. 1	316,425	113.14	113.54	+0.40
Dec. 31	372,687	117.78	117.49	-0.29
1919				
Mar. 4	305,716	82.03	84.68	+2.65
June 30	302,133	98.83	100.65	+1.82

COLUMN

2 Member Bank Call Reports.
4 Table B 3, col. 6.
5 Col. 3 - col. 4.

4) To make a continuous series of relatives within each year the corrected monthly percentages are next shifted, for each year, to the base of the preceding June figure (in some recent years, for each half year, to the base of the preceding June or December figure) (Tables B 8 and 9, col. 6). The relatives between the June call date (which we shall designate call date I) and the next following call date (II) are obviously on a June base. The relatives between call dates II and III are on a call date II base. To shift to a call date I base, all the monthly relatives between call dates II and III must be multiplied by the call date II relative, which is already on a call date I base. Similarly, all the monthly relatives between call dates III and IV must be multiplied by the relative for call date III, which has been shifted to a call date I base.

The relatives on the base of the preceding June are then adjusted for differences between the June to June percentages of the monthly and the all bank series (Tables B 8 and 9, col. 7-10). The differences are distributed along a straight line between June dates and added to the monthly relatives. Vault cash in all banks, monthly, is computed by multiplying the June all bank figures by the final set of monthly relatives.

CALL DATE ESTIMATES, DECEMBER 1914-DECEMBER 1917

For this period, when reliable estimates of vault cash in all banks can be made only for call dates, non-national bank call date estimates alone are required. A changing sample of non-national bank

two December to June percentages, the weights being the vault cash in each class of bank on June 20, 1917.

TABLE B 7

Computation of Call Date Adjustment Factors, Member Bank Call Dates
June 1919-December 1944

MEMBER BANK CALL DATE (1)	VAULT CASH MEMBER BANKS IN CENTRAL RESERVE & RESERVE CITIES (2) (\$000)	LINK RELATIVES OF COL. 2 (3)	LINK RELATIVES ALL BANK SAMPLE (4)	ADJUST- MENT FACTORS (5)
(p e r c e n t a g e s)				
1919				
June 20	302,133			
Nov. 17	321,547	106.43	108.05	+1.62
Dec. 31	371,982	115.69	113.64	-2.05
1920				
May 4	322,879			
June 30	327,639	86.80	90.28	+3.48
Nov. 15	320,211	101.47	99.45	-2.02
Dec. 29	351,793	97.73	98.27	+0.54
1921				
Apr. 28	291,536	109.86	110.05	+0.19
June 30	272,335	82.87	83.55	+0.68
Dec. 31	234,648	93.41	94.26	+0.85
1922				
Mar. 10	228,402	86.16	91.84	+5.68
June 30	225,291	97.34	97.32	-0.02
Dec. 29	269,415	98.64	99.86	+1.22
1923				
Apr. 3	237,360	119.59	119.79	+0.20
June 30	203,595	88.10	91.67	+3.57
Sept. 14	241,810	85.77	84.30	-1.47
Dec. 31	251,264	118.77	120.21	+1.44
1924				
Mar. 31	223,169	103.91	107.64	+3.73
June 30	229,591	88.82	88.06	-0.76
Oct. 10	245,545	102.88	101.85	-1.03
Dec. 31	276,685	106.95	104.61	-2.34
1925				
Apr. 6	239,007	112.68	112.57	-0.11
June 30	233,698	86.38	87.63	+1.25
Sept. 28	230,261	97.78	101.02	+3.24
Dec. 31	257,963	98.53	100.23	+1.70
1926				
Apr. 12	242,397	112.03	109.27	-2.76
June 30	232,572	93.97	93.59	-0.38
Dec. 31	229,357	95.95	99.47	+3.52
1927				
Mar. 23	231,246	98.62	97.30	-1.32
June 30	240,957	100.82	101.05	+0.23
Oct. 10	234,657	104.20	100.86	-3.34
Dec. 31	229,583	97.39	100.52	+3.13
1928				
Feb. 28	222,518	97.84	98.07	+0.23
June 30	207,503	96.92	99.43	+2.51
Oct. 3	217,539	93.25	85.85	-7.40
Dec. 31	245,687	104.84	114.78	+9.94
1929				
Mar. 27	219,856	112.94	109.49	-3.45
June 29	192,143	89.49	91.14	+1.65
Oct. 4	213,535	87.39	86.00	-1.39
Dec. 31	237,377	111.13	113.68	+2.55
1930				
Mar. 27	210,362	111.17	111.00	-0.17
June 30	203,977	88.62	89.08	+0.46
Sept. 24	186,617	96.96	98.23	+1.27
Dec. 31	275,187	91.49	97.70	+6.21
1931				
Mar. 25	188,267	147.46	122.98	-24.48
June 30	222,370	68.41	79.39	+10.98
Sept. 29	244,820	118.11	111.01	-7.10
Dec. 31	220,445	110.10	105.33	-4.77
		90.04	95.57	+5.53

MEMBER BANK CALL DATE (1)	VAULT CASH MEMBER BANKS IN CENTRAL RESERVE & RESERVE CITIES (2) (\$000)	LINK RELATIVES OF COL. 2 (3)	LINK RELATIVES ALL BANK SAMPLE (4)	ADJUST- MENT FACTORS (5)
(percentages)				
1932				
June 30	225,323	102.21	90.14	-12.07
Sept. 30	176,652	78.40	84.47	+6.07
Dec. 31	190,846	108.04	104.14	-3.90
1933				
June 30	201,841	105.76	92.73	-13.03
Oct. 25	214,587	106.31	110.07	+3.76
Dec. 30	245,580	114.44	105.53	-8.91
1934				
Mar. 5	255,968	104.23	102.10	-2.13
June 30	257,291	100.52	97.40	-3.12
Oct. 17	292,836	113.82	116.72	+2.90
Dec. 31	333,252	113.80	110.18	-3.62
1935				
Mar. 4	288,400	86.54	87.76	+1.22
June 29	300,951	104.35	100.41	-3.94
Nov. 1	304,582	101.21	101.04	-0.17
Dec. 31	359,827	118.14	122.70	+4.56
1936				
Mar. 4	355,084	98.68	93.76	-4.92
June 30	391,822	110.35	114.10	+3.75
Dec. 31	377,984	96.47	97.98	+1.51
1937				
Mar. 31	340,882	90.18	96.68	+6.50
June 30	299,785	87.94	94.57	+6.63
Dec. 31	282,822	94.34	93.18	-1.16
1938				
Mar. 7	293,842	103.90	102.52	-1.38
June 30	395,596	134.63	117.39	-17.24
Sept. 23	424,140	107.22	108.32	+1.10
Dec. 31	423,372	99.82	96.40	-3.42
1939				
Mar. 29	427,110	100.88	104.25	+3.37
June 30	405,186	94.87	91.69	-3.18
Oct. 2	444,962	109.82	108.28	-1.54
Dec. 30	478,446	107.53	108.89	+1.36
1940				
Mar. 26	473,451	98.96	102.57	+3.61
June 29	460,405	97.24	91.53	-5.71
Dec. 31	539,529	117.19	125.47	+8.28
1941				
Apr. 4	465,549	86.29	84.51	-1.78
June 30	562,795	120.89	119.20	-1.69
Sept. 24	560,010	99.51	106.20	+6.69
Dec. 31	560,938	100.17	102.35	+2.18
1942				
Apr. 4	454,993	81.11	81.44	+0.33
June 30	488,272	107.31	115.84	+8.53
Dec. 31	476,986	97.69	99.90	+2.21
1943				
June 30	525,487	110.17	111.80	+1.63
Oct. 18	531,597	101.16	100.76	-0.40
Dec. 31	521,066	98.02	98.44	+0.42
1944				
Apr. 13	593,999	114.00	111.73	-2.27
June 30	524,951	88.38	90.31	+1.93
Dec. 30	586,495	111.72	111.22	-0.50

COLUMN

- 2 Member Bank Call Reports.
- 4 Table B 5, col. 6.
- 5 Col. 3 — col. 4.

TABLE B 8

Adjustment of Weekly Reporting Member Bank Relatives between Member Bank Call Dates and between All Bank Call Dates, Monthly, June 1917-June 1919

WEEKLY REPORTING MEMBER BANKS Report date (1)	Vault cash (2) (\$000)	COL. 2 ON BASE OF PRECEDING CALL DATE FIGURE (3)	CALL DATE ADJUST- MENT FACTORS (4)	COL. 3 ADJUSTED (5)	COL. 5 ON BASE OF PRECEDING JUNE FIGURE (6)	VAULT CASH ALL BANKS (7) (\$000,000)	COL. 7 ON BASE OF PRECEDING JUNE FIGURE (8)	ANNUAL ADJUST- MENT FACTORS (9)	COL. 6 ADJUSTED (10)	VAULT CASH ALL BANKS (11) (\$000,000)
			(percentages)				(percentages)			
1917										
June 20										
Dec. 28	412,739			90.55*	90.55	1,519			84.02	1,519
1918										
Feb. 1	360,262	87.29		86.24	78.09					1,069
Mar. 1	358,942	86.97		85.08	77.04				70.36	1,038
Mar. 29	365,756	88.62		85.90	77.78				68.35	1,035
May 3	375,646	91.01		87.24	79.00				68.13	1,035
May 10	379,413	91.23	-3.98	87.95	79.64				68.16	1,035
May 31	359,453	94.74		94.09	74.93					959
June 28	352,256	92.84	-1.52	91.32	72.73	911	59.97	-12.76	63.13	911
Aug. 2	347,563	98.67		98.78	98.78				59.97	911
Aug. 30	351,236	99.71		99.91	99.91				99.23	904
Sept. 27	355,075	100.80		101.09	101.09				100.73	918
Nov. 1	372,526	105.75	+0.40	106.15	106.15				102.27	932
Nov. 29	392,097	105.25		105.12	111.58				107.78	982
Jan. 3	428,791	115.10	-0.29	114.81	121.87				113.57	1,035
1919									124.32	1,133
Jan. 31	353,950	82.55		83.73	102.04					955
Feb. 28	337,698	78.76		81.12	98.86				104.85	929
Mar. 7	346,035	80.70	+2.65	83.35	101.58				102.03	971
Mar. 28	350,048	101.16		101.50	103.10				106.63	974
May 2	347,320	100.37		101.28	102.88				106.87	974
May 29	344,662	99.60		100.95	102.55				106.88	974
June 27	351,599	101.61	+1.82	103.43	105.06	1,000	109.77	+4.71	109.77	1,000

*Computed as follows:

- 1) Calculate ratio of December 1917 to June 1917 figure for national banks and the sample of non-national banks, respectively.
- 2) Weight each ratio by the amount of vault cash reported in all national and non-national banks, respectively, June 1917 (see Tables B 1 and B 3).

COLUMN

- 1 Friday closest to end of month and member bank call date; the Friday closest to the end of December occasionally falls on January 2 or 3 of the following year.

COLUMN

- 2 *Federal Reserve Bulletin.*
- 4 Table B 6, col. 5.
- 5 Col. 3 plus call date correction, col. 4, distributed along a straight line between call dates.
- 7 Table B 1, col. 5.
- 9 Col. 8 - col. 6.
- 10 Col. 6 plus annual correction, col. 9, distributed along a straight line between June dates.
- 11 Col. 7 x col. 10.

Italics in col. 1-5 indicate data closest to call dates; in col. 6, data closest to all bank report dates.

vault cash data, at national bank call dates, was compiled (Table B 10).³ Link relatives were computed (Table B 11), expressed as percentages of the preceding June, and adjusted for differences between the June to June percentages of the call date and the all non-national bank series (Table B 12, col. 1-7). The adjusted relatives,

³ For 1917-44 only non-national bank vault cash held on member bank call dates was included in our sample. If there was any deviation in the dating of the state bank reports from member bank call dates, the state bank data were omitted.

For 1914-17 we relaxed this rule by including in our sample Illinois non-national banks, which reported one day later than national banks ten times during the period. Illinois non-national bank vault cash makes a very substantial addition to our sample of non-national bank holdings, and since the proportions are not disturbed by using Illinois holdings dated consistently one day after consecutive call dates, their inclusion seems justifiable.

TABLE B 9

Adjustment of Weekly Reporting Member Bank Relatives between Member Bank Call Dates
and between All Bank Call Dates, Monthly, June 1919-December 1944

WEEKLY REPORTING MEMBER BANKS Report date (1)	Vault cash (2) (\$000)	COL. 2 ON BASE OF PRECEDING CALL DATE FIGURE (3)	CALL DATE ADJUST- MENT FACTORS (4) (percentages)	COL. 3 ADJUSTED (5)	COL. 5 ON BASE OF PRECEDING JUNE FIGURE (6)	Vault CASH ALL BANKS (7) (\$000,000)	COL. 7 ON BASE OF PRECEDING JUNE FIGURE (8) (percentages)	ANNUAL (OR SEMI- ANNUAL) ADJ. FACTORS (9)	COL. 6 ADJUSTED (10)	Vault CASH ALL BANKS (11) (\$000,000)
1919										
June 27	351,599					1,000				1,000
Aug. 1	338,966	96.41		96.81	96.81				97.10	971
Aug. 29	345,605	98.30		99.03	99.03				99.55	996
Oct. 3	353,950	100.67		101.80	101.80				102.62	1,026
Oct. 31	358,771	102.04		103.50	103.50				104.55	1,046
Nov. 14	381,503	108.51	+1.62	110.13	110.13					
Nov. 28	384,543	100.80		100.21	110.36				111.64	1,116
Jan. 2	431,436	113.09	-2.05	111.04	122.29				123.86	1,239
1920										
Jan. 30	357,509	82.86		83.63	102.27				104.08	1,041
Feb. 27	370,431	85.86		87.41	106.89				108.93	1,089
Apr. 2	360,002	83.44		85.95	105.11				107.44	1,074
Apr. 30	355,372	82.37		85.66	104.75				107.32	1,073
May 7	373,651	86.61	+3.48	90.09	110.17					
May 28	362,749	97.08		96.32	106.12				108.92	1,089
July 2	358,252	95.88	-2.02	93.86	103.41	1,065	106.50	+3.09	106.50	1,065
July 30	354,749	99.02		99.13	99.13				98.66	1,051
Sept. 3	349,505	97.56		97.82	97.82				96.76	1,030
Oct. 1	351,157	98.02		98.39	98.39				96.86	1,032
Oct. 29	366,997	102.44		102.92	102.92				100.91	1,075
Nov. 12	383,538	107.06	+0.54	107.60	107.60					
Dec. 3	375,887	98.01		98.09	105.54				102.94	1,096
Dec. 31	354,535	92.44	+0.19	92.63	99.67				96.60	1,029
1921										
Jan. 28	337,133	95.09		95.25	94.94				91.40	973
Feb. 25	327,399	92.35		92.68	92.37				88.36	941
Apr. 1	300,469	84.75		85.28	85.00				80.40	856
Apr. 27	330,015	93.08	+0.68	93.76	93.45				88.41	942
June 1	318,165	96.41		96.88	90.53				84.90	904
June 29	327,468	99.23	+0.85	100.08	93.52	931	87.42	-6.10	87.42	931
Aug. 3	304,778	93.07		94.16	94.16				93.89	974
Aug. 31	289,714	88.47		90.44	90.44				89.96	838
Sept. 28	304,912	93.11		95.95	95.95				95.25	887
Nov. 2	290,157	88.61		92.54	92.54				91.57	853
Nov. 30	296,053	90.41		95.22	95.22				94.04	876
Dec. 28	339,799	103.77	+5.68	109.45	109.45				108.05	1,006
1922										
Feb. 1	266,108	78.31		78.30	85.70				84.04	782
Mar. 1	263,092	77.43		77.41	84.73				82.85	771
Mar. 8	277,334	81.62	-0.02	81.60	89.31					
Mar. 29	276,028	99.53		99.76	89.10				87.01	810
May 3	277,202	99.95		100.56	89.81				87.45	814
May 31	279,827	100.90		101.82	90.94				88.36	823
June 28	278,457	100.40	+1.22	101.62	90.76	819	87.97	-2.79	87.97	819
Aug. 2	270,469	97.13		97.17	97.17				96.39	789
Aug. 30	274,189	98.47		98.54	98.54				97.13	795
Sept. 27	281,349	101.04		101.14	101.14				99.11	812
Nov. 1	278,181	99.90		100.04	100.04				97.23	796
Nov. 29	286,463	102.88		103.05	103.05				99.61	816
Dec. 27	358,449	128.73	+0.20	128.93	128.93					
Jan. 3	326,250	91.02		91.28	117.69				113.47	929
1923										
Jan. 31	274,952	76.71		77.99	100.55				95.71	784
Feb. 28	277,480	77.41		79.71	102.77				97.30	797
Mar. 28	282,544	78.82		82.14	105.90				99.81	817
Apr. 4	283,491	79.09	+3.57	82.66	106.57					
May 2	276,264	97.45		96.96	103.33				96.46	790
May 29	281,879	99.43		98.47	104.94				97.47	798
June 27	282,040	99.49	-1.47	98.02	104.46	789	96.34	-8.12	96.34	789
Aug. 1	271,835	96.38		97.03	97.03				97.73	771
Aug. 29	282,805	100.27		101.45	101.45				102.71	810
Sept. 12	292,752	103.80	+1.44	105.24	105.24					
Oct. 3	286,926	98.01		98.71	103.88				105.84	835
Oct. 31	283,104	96.70		98.33	103.48				106.00	836
Nov. 28	296,516	101.29		103.85	109.29				112.37	887
Jan. 2	322,404	110.13	+3.73	113.86	119.83				123.61	975

WEEKLY REPORTING MEMBER BANKS	COL. 2 ON BASE OF PRECEDING CALL DATE	CALL. DATE ADJUST- MENT	COL. 3 ADJUSTED	COL. 5 ON BASE OF PRECEDING JUNE FIGURE	VAULT CASH ALL BANKS	COL. 7 ON BASE OF PRECEDING JUNE FIGURE	ANNUAL (OR SEMI- ANNUAL) ADJ.	COL. 6 ADJUSTED	VAULT CASH ALL BANKS	
Report date (1)	Vault cash (2) (\$000)	FIGURE (3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)
		(percentages)				(\$000,000)	(percentages)		(\$000,000)	
1924										
Jan. 30	272,966	84.67		84.44	101.18					
Feb. 27	280,301	86.94		86.47	103.62			105.52	833	
Apr. 2	269,076	83.46	-0.76	82.70	99.10			108.52	856	
Apr. 30	268,509	99.79		99.47	98.57			104.70	826	
May 28	286,650	106.53		105.90	104.95			104.73	826	
July 2	292,001	108.52	-1.03	107.49	106.52	899	113.94	+7.42	111.67	881
July 30	284,753	97.52		96.85	96.85			113.94	899	
Sept. 3	280,512	96.07		94.57	94.57			97.38	875	
Oct. 1	272,789	93.42		91.25	91.25			95.77	861	
Oct. 8	291,142	99.71	-2.34	97.37	97.37			92.99	836	
Oct. 29	292,832	100.58		100.55	97.91					
Dec. 3	310,401	106.61		106.54	103.74			100.18	901	
Dec. 31	323,849	111.23	-0.11	111.12	108.20			106.66	959	
								111.67	1,004	
1925										
Jan. 28	279,486	86.30		86.66	93.77					
Feb. 25	294,501	90.94		91.65	99.17			97.77	879	
Apr. 1	268,172	82.81		83.97	90.86			103.71	932	
Apr. 8	288,502	89.09	+1.25	90.34	97.75			96.06	864	
Apr. 29	282,713	97.99		98.80	96.58					
June 3	277,619	96.23		98.39	96.18			102.32	920	
July 1	278,125	96.40	+3.24	99.64	97.40			102.59	922	
July 29	273,039	98.17		98.69	98.69	938	104.34	+6.94	104.34	938
Sept. 2	266,670	95.88		97.06	97.06			98.71	926	
Sept. 30	284,282	102.21	+1.70	103.91	103.91			97.10	911	
Oct. 28	284,521	100.08		99.23	103.11			103.97	975	
Dec. 2	293,534	103.25		101.34	105.30			103.18	968	
Dec. 30	338,031	118.91	-2.76	116.15	120.69			105.39	989	
								120.80	1,133	
1926										
Feb. 3	274,295	81.14		81.01	97.77					
Mar. 3	278,250	82.31		82.08	99.06			97.90	918	
Mar. 31	272,422	80.59		80.26	96.87			99.21	931	
Apr. 14	285,488	84.46	-0.38	84.08	101.48			97.03	910	
Apr. 28	276,149	96.73		97.37	98.81					
June 2	282,039	98.79		101.03	102.53			98.99	929	
June 30	277,274	97.12	+3.52	100.64	102.13			102.73	964	
July 28	276,062	99.56		99.36	99.36	960	102.35	+0.22	102.35	960
Sept. 1	267,951	96.64		96.18	96.18			99.9	959	
Sept. 29	285,362	102.92		102.26	102.26			97.3	934	
Nov. 3	301	108.7		107.8	107.8			103.9	997	
Dec. 1	287	103.6		102.5	102.5			110.0	1,056	
Dec. 29	321	115.9	-1.32	114.6	114.6			105.2	1,010	
								117.8	1,131	
1927										
Feb. 2	256,884	80.1		80.2	91.9					
Mar. 2	254,516	79.4		79.6	91.2			95.7	919	
Mar. 23	260,006	81.0	+0.2	81.2	93.1			95.4	916	
Mar. 30	262,879	101.10		100.86	93.9					
Apr. 27	263,123	101.20		100.01	93.1			98.6	947	
June 1	258,773	99.53		97.14	90.4			98.3	944	
June 29	268,858	103.40	-3.34	100.06	93.2			96.2	924	
Aug. 3	251,663	93.60		94.64	94.64	955	99.48	+6.3	99.48	955
Aug. 31	251,925	93.70		95.58	95.58			94.21	900	
Sept. 28	259,092	96.37		99.08	99.08			94.81	905	
Oct. 12	266,805	99.24	+3.13	102.37	102.37			97.97	936	
Nov. 2	257,439	96.49		96.55	98.84					
Nov. 30	275,701	103.33		103.48	105.93			97.30	929	
Dec. 28	315,886	118.40	+0.23	118.63	121.44			104.05	994	
								119.22	1,139	
1928										
Feb. 1	238,319	75.44		76.83	93.30					
Feb. 29	242,484	76.76	+2.53	79.27	96.27			90.65	866	
Mar. 28	242,424	99.98		98.24	94.58			93.27	891	
May 2	239,865	98.92		95.00	91.46			91.24	871	
May 29	245,558	101.27		95.67	92.10			87.69	837	
June 27	249,121	102.74	-7.40	95.34	91.78			88.00	840	
Aug. 1	234,161	93.99		97.54	97.54	834	87.33	-4.45	87.33	834
Aug. 29	245,548	98.57		104.96	104.96			97.1	810	
Oct. 3	248,237	99.65	+9.94	109.59	109.59			104.4	871	
Oct. 31	248,532	100.12		99.06	108.56			108.6	906	
Nov. 28	268,018	107.97		105.85	116.00			107.3	895	
	(\$000,000)							114.4	954	
Jan. 2	292	117.7	-3.45	114.3	125.3			123.4	1,029	

WEEKLY REPORTING MEMBER BANKS Report date (1)	Vault cash (2) (\$000,000)	COL. 2 ON BASE OF PRECEDING CALL DATE FIGURE (3)	CALL DATE ADJUST- MENT FACTORS (4) (percentages)	COL. 3 ADJUSTED (5)	COL. 5 ON BASE OF PRECEDING JUNE FIGURE (6)	Vault CASH ALL BANKS (7) (\$000,000)	COL. 7 ON BASE OF PRECEDING JUNE FIGURE (8) (percentages)	ANNUAL (OR SEMI- ANNUAL) ADJ. FACTORS (9)	COL. 6 ADJUSTED (10)	Vault CASH ALL BANKS (11) (\$000,000)
1929										
Jan. 30	244	83.6		84.1	105.4				103.2	861
Feb. 27	246	84.2		85.3	106.9				104.4	871
Mar. 27	243	83.2	+1.6	84.8	106.3					
Apr. 3	240	98.8		98.7	104.9				102.1	852
May 1	223	91.8		91.3	97.1				94.0	784
May 29	242	99.6		98.6	104.8				101.4	846
June 26	232	95.5	-1.4	94.1	100.0	803	96.28	-3.7	96.28	803
July 31	236	101.7		102.6	102.6				102.9	826
Aug. 28	238	102.6		104.3	104.3				104.8	842
Oct. 2	230	99.1	+2.6	101.7	101.7				102.4	822
Oct. 30	269	117.0		116.9	118.9				119.8	962
Nov. 27	265	115.2		115.1	117.1				118.2	949
Dec. 31	262	113.9	-0.2	113.7	115.6				117.0	940
1930										
Jan. 29	232	88.5		88.7	102.5				104.1	836
Feb. 26	221	84.4		84.7	97.9				99.7	801
Mar. 26	212	80.9	+0.5	81.4	94.1					
Apr. 2	207	97.6		97.7	91.9				93.9	754
Apr. 30	214	100.9		101.4	95.4				97.6	784
May 28	235	110.8		111.6	105.0				107.4	862
July 2	230	108.5	+1.3	109.8	103.3	851	106.0	+2.7	106.0	851
July 30	215	93.5		95.6	95.6				96.1	818
Sept. 3	207	90.0		94.6	94.6				95.7	814
Sept. 24	208	90.4	+6.2	96.6	96.6					
Oct. 1	201	96.6		94.8	91.6				93.1	792
Oct. 29	216	103.8		95.0	91.8				93.8	798
Dec. 3	230	110.6		93.1	89.9				92.5	787
Dec. 31	287	138.0	-24.5	113.5	109.6				112.6	958
1931										
Jan. 28	228	79.4		83.1	91.1				94.6	805
Feb. 25	224	78.0		85.3	93.5				97.5	830
Mar. 25	205	71.4	+11.0	82.4	90.3					
Apr. 1	203	99.0		98.5	88.9				93.5	796
Apr. 29	222	108.3		105.8	95.5				100.5	855
June 3	215	104.9		99.8	90.1				95.7	814
July 1	235	113.7	-7.1	106.6	96.3	871	102.4	+6.1	102.4	871
July 29	220	94.4		92.9	92.9				92.9	809
Sept. 2	227	97.4		94.1	94.1				94.2	820
Sept. 30	255	109.4	-4.8	104.6	104.6				104.7	912
Oct. 28	264	103.5		105.2	110.0				110.2	960
Dec. 2	236	92.5		96.3	100.7				100.9	879
Dec. 30	271	106.3	+5.5	111.8	116.9				117.1	1,020
1932										
Feb. 3	220	81.2		78.9	92.2				92.5	806
Mar. 2	206	76.0		71.8	83.9				84.2	733
Mar. 30	215	79.3		73.3	85.7				86.1	750
Apr. 27	207	76.4		68.5	80.1				80.5	701
June 1	202	74.5		64.3	75.2				75.7	659
June 29	240	88.6	-12.1	76.5	89.4	783	89.9	+0.5	89.9	783
Aug. 3	202	84.2		86.5	86.5				87.2	683
Aug. 31	204	85.0		89.2	89.2				90.4	708
Sept. 28	206	85.8	+6.1	91.9	91.9				93.6	733
Nov. 2	189	91.7		90.2	82.9				85.3	668
Nov. 30	209	101.5		98.8	90.8				93.7	734
Dec. 28	233	113.1	-3.9	109.2	100.4				103.8	813
1933										
Feb. 1	193	82.8		80.3	80.6				84.7	663
Mar. 1	389	167.0		162.5	163.2				167.8	1,314
Mar. 29	278	119.3		112.8	113.3				118.5	928
May 3	228	97.9		83.9	89.3				95.1	745
May 31	221	94.8		83.8	84.1				90.5	709
June 28	212	91.0	-13.0	78.0	78.3	667	85.2	+6.9	85.2	667
Aug. 2	195	92.0		93.1	93.1				92.2	615
Aug. 30	219	103.3		105.3	105.3				103.8	692
Sept. 27	224	105.7		108.6	108.6				106.4	710
Oct. 25	226	106.6	+3.8	110.4	110.4					
Nov. 1	218	96.5		95.5	105.4				102.3	682
Nov. 29	249	110.2		105.3	116.3				112.5	750
Dec. 27	283	125.2	-8.9	116.3	128.4					
Jan. 3	269	95.1		94.9	121.9				117.3	782

WEEKLY REPORTING MEMBER BANKS Report date (1)	Vault cash (2) (\$000,000)	COL. 2 ON BASE OF PRECEDING CALL DATE FIGURE (3)	CALL DATE ADJUST- MENT FACTORS (4)	COL. 3 ADJUSTED JUNE FIGURE (5)	COL. 5 ON BASE OF PRECEDING JUNE FIGURE (6)	VAULT CASH ALL BANKS (7)	COL. 7 ON BASE OF PRECEDING JUNE FIGURE (8)	ANNUAL (OR SEMI- ANNUAL) ADJ. FACTORS (9)	COL. 6 ADJUSTED (10)	VAULT CASH ALL BANKS (11) (\$000,000)
		(percentages)					(percentages)			
1934										
Jan. 31	236	83.4		82.4	105.8					
Feb. 28	245	86.6		84.7	108.8				100.5	670
Mar. 7	253	89.4	-2.1	87.3	112.1				102.8	686
Mar. 28	265	104.7		104.1	116.7					
May 2	252	99.6		98.0	109.9				110.0	734
May 30	268	105.9		103.6	116.1				102.4	683
June 27	270	106.7	-3.1	103.6	116.1				107.9	720
Aug. 1	243	90.0		90.9	90.9	715	107.2	-8.9	107.2	715
Aug. 29	265	98.1		99.7	99.7				90.1	644
Oct. 3	277	102.6		105.1	105.1				98.3	703
Oct. 17	285	105.6	+2.9	108.5	108.5				102.9	736
Oct. 31	288	101.1		100.4	108.9					
Nov. 28	307	107.7		105.7	114.7				106.1	759
Jan. 2	321	112.6	-3.6	109.0	118.3				111.2	795
									114.0	815
1935										
Jan. 30	303	94.4		94.9	112.3					
Feb. 27	314	97.8		98.9	117.0				107.4	768
Mar. 6	301	93.8	+1.2	95.0	112.4				111.5	797
Apr. 3	296	98.3		97.3	109.4					
May 1	287	95.3		93.3	104.9				103.1	737
May 29	314	104.3		101.4	114.0				98.0	701
June 26	328	109.0	-3.9	105.1	118.1				106.4	761
July 31	322	98.2		98.1	98.1	786	109.9	-8.2	109.9	786
Aug. 28	333	101.5		101.4	101.4				98.9	777
Oct. 2	325	99.1		98.9	98.9				102.8	808
Oct. 30	350	106.7	-0.2	106.5	106.5				101.1	795
Nov. 27	358	102.3		104.4	111.2				109.3	859
Dec. 31	369	105.4	+4.6	110.0	117.2				114.6	901
									121.4	954
1936										
Jan. 29	353	95.7		93.5	109.6					
Feb. 26	371	100.5		96.1	112.6				114.4	899
Mar. 4	360	97.6	-4.9	92.7	108.6				118.0	927
Apr. 1	356	98.9		99.8	108.4					
Apr. 29	382	106.1		107.9	117.2				114.6	901
June 3	369	102.5		105.4	114.5				124.0	975
July 1	388	107.6	+3.8	111.6	121.2				122.1	960
July 29	385	99.2		99.4	99.4	1,017	129.4	+8.2	129.4	1,017
Sept. 2	371	95.6		96.1	96.1				97.5	992
Sept. 30	378	97.4		98.2	98.2				91.8	934
Oct. 28	405	104.4		105.4	105.4				92.0	936
Dec. 2	401	103.4		104.7	104.7				97.2	989
Dec. 30	433	111.6	+1.5	113.1	113.1	1,023	100.6	-12.5	94.1	957
									100.6	1,023
1937										
Feb. 3	375	86.6		89.1	89.1					
Mar. 3	374	86.4		90.9	90.9				91.4	935
Mar. 31	346	79.9	+6.5	86.4	86.4				95.1	973
Apr. 28	354	102.3		104.3	90.1				92.5	946
June 2	329	95.1		99.7	86.1				98.1	1,004
June 30	303	87.6	+6.6	94.2	81.4				96.4	986
July 28	311	102.6		102.4	102.4	958	93.6	+12.2	93.6	958
Sept. 1	281	92.7		92.3	92.3				99.1	949
Sept. 29	323	106.6		106.0	106.0				84.9	813
Nov. 3	318	105.0		104.2	104.2				95.2	912
Dec. 1	304	100.3		99.3	99.3				89.3	855
Dec. 29	355	117.2	-1.2	116.0	116.0	905	94.5	-21.5	81.1	777
									94.5	905
1938										
Feb. 2	277	78.0		77.3	77.3					
Mar. 2	279	78.6		77.3	77.3				80.1	725
Mar. 9	304	85.6	-1.4	84.2	84.2				82.3	745
Mar. 30	330	108.6		105.4	88.7					
Apr. 27	372	122.4		114.9	96.7				95.9	868
June 1	390	128.3		115.4	97.2				106.1	960
June 29	417	137.2	-17.2	120.0	101.0				109.4	990
Aug. 3	378	90.6		91.0	91.0	1,044	115.4	+14.4	115.4	1,044
Aug. 31	386	92.6		93.4	93.4				90.2	942
Sept. 28	426	102.2	+1.1	103.3	103.3				92.0	960
Nov. 2	419	98.4		97.1	100.3				101.3	1,058
Nov. 30	443	104.0		101.6	105.0				97.5	1,018
Dec. 28	489	114.8	-3.4	111.4	115.1				101.5	1,060
									111.0	1,159

WEEKLY REPORTING MEMBER BANKS	COL. 2 ON BASE OF PRECEDING CALL DATE	CALL DATE ADJUST- MENT FACTORS	COL. 3 ADJUSTED	COL. 5 ON BASE OF PRECEDING JUNE FIGURE	VAULT CASH ALL BANKS	COL. 7 ON BASE OF PRECEDING JUNE FIGURE	ANNUAL (OR SEMI- ANNUAL) ADJ. FACTORS	COL. 6 ADJUSTED	VAULT CASH ALL BANKS	
Report date (1)	Vault cash (2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)
	(\$000,000)	(percentages)				(\$000,000)	(percentages)		(\$000,000)	
1939										
Feb. 1	394	80.6		81.9	94.3			89.4	933	
Mar. 1	389	79.6		82.0	94.4			88.9	928	
Mar. 29	424	86.7	+3.4	90.1	103.7			97.5	1,018	
May 3	410	96.7		95.5	99.0			92.1	962	
May 31	427	100.7		98.5	102.1			94.5	987	
June 28	455	107.3	-3.2	104.1	108.0	1,042	99.8	-8.2	99.8	1,042
Aug. 2	424	93.2		92.7	92.7			91.8	957	
Aug. 30	465	102.2		101.2	101.2			99.6	1,038	
Sept. 27	486	106.8		105.4	105.4			103.0	1,073	
Oct. 4	471	103.5	-1.5	102.0	102.0					
Nov. 1	458	97.2		97.7	99.7			96.4	1,004	
Nov. 29	504	107.0		107.9	110.1			106.1	1,106	
Dec. 27	544	115.5	+1.4	116.9	119.2	1,193	114.5	-4.7	114.5	1,193
1940										
Jan. 31	458	84.2		85.6	85.6			86.4	1,031	
Feb. 28	480	88.2		90.7	90.7			92.2	1,100	
Mar. 27	479	88.1	+3.6	91.7	91.7					
Apr. 3	452	94.4		94.0	86.2			88.6	1,057	
May 1	447	93.3		91.1	83.5			86.5	1,032	
May 29	488	101.9		98.0	89.9			93.6	1,117	
June 26	506	105.6	-5.7	99.9	91.6	1,145	96.0	+4.4	96.0	1,145
July 31	478	94.5		96.0	96.0			97.6	1,118	
Aug. 28	508	100.4		103.2	103.2			106.0	1,214	
Oct. 2	485	95.8		100.1	100.1			104.5	1,197	
Oct. 30	526	104.0		109.6	109.6			115.3	1,320	
Nov. 27	540	106.7		113.5	113.5			120.5	1,380	
Dec. 31	535	105.7	+8.3	114.0	114.0	1,403	122.5	+8.5	122.5	1,403
1941										
Jan. 29	527	98.5		97.9	97.9			97.4	1,367	
Feb. 26	530	99.1		98.0	98.0			97.1	1,362	
Apr. 2	491	91.8	-1.8	90.0	90.0			88.5	1,242	
Apr. 30	516	105.1		104.6	94.1			92.2	1,294	
May 25	563	114.7		113.7	102.3			100.0	1,403	
July 2	570	116.1	-1.7	114.4	103.0	1,404	100.1	-2.9	100.1	1,404
July 30	561	98.4		100.6	100.6			101.2	1,421	
Sept. 3	543	95.3		100.3	100.3			101.5	1,425	
Sept. 24	559	98.1	+6.7	104.8	104.8					
Oct. 1	537	96.1		96.2	100.8			102.6	1,441	
Oct. 29	568	101.6		102.4	107.3			109.7	1,540	
Dec. 3	554	99.1		100.7	105.5			108.5	1,523	
Dec. 31	555	99.3	+2.2	101.5	106.4	1,545	110.0	+3.6	110.0	1,545
1942										
Jan. 28	552	99.5		99.6	99.6			99.6	1,539	
Feb. 25	547	98.6		98.8	98.8			98.9	1,528	
Apr. 1	491	88.5	+0.3	88.8	88.8			89.0	1,375	
Apr. 29	535	109.0		111.6	99.1			99.3	1,534	
June 3	488	99.4		105.3	93.5			93.8	1,449	
July 1	475	96.7	+8.5	105.2	93.4	1,447	93.7	+0.3	93.7	1,447
July 29	509	107.2		107.5	107.5			104.6	1,514	
Sept. 2	473	99.6		100.4	100.4			93.9	1,359	
Sept. 30	496	104.4		105.5	105.5			96.1	1,391	
Oct. 28	524	110.3		111.7	111.7			99.5	1,440	
Dec. 2	516	108.6		110.5	110.5			94.7	1,370	
Dec. 30	559	117.7	+2.2	119.9	119.9	1,464	101.2	-18.7	101.2	1,464
1943										
Feb. 3	494	88.4		88.7	88.7			92.2	1,350	
Mar. 3	502	89.8		90.4	90.4			96.7	1,416	
Mar. 31	500	89.4		90.2	90.2			99.3	1,454	
Apr. 28	556	99.5		100.5	100.5			112.4	1,646	
June 2	504	90.2		91.6	91.6			107.0	1,566	
June 30	503	90.0	+1.6	91.6	91.6	1,607	1098	+18.2	109.8	1,607
July 28	539	107.2		107.1	107.1			104.1	1,673	
Sept. 1	503	100.0		99.8	99.8			93.2	1,498	
Sept. 29	582	115.7		115.4	115.4			105.8	1,700	
Oct. 20	541	107.6	-0.4	107.2	107.2					
Nov. 3	543	100.4		100.5	107.7			94.4	1,517	
Dec. 1	545	100.7		100.9	108.2			92.0	1,478	
Dec. 29	601	111.1	+0.4	111.5	119.5	1,612	100.3	-19.2	100.3	1,612

WEEKLY REPORTING MEMBER BANKS Report date (1)	Vault cash (\$000,000) (2)	COL. 2 ON BASE OF PRECEDING CALL DATE FIGURE (3)	CALL DATE ADJUSTMENT FACTORS (4)	COL. 3 ADJUSTED JUNE FIGURE (5)	COL. 5 ON BASE OF PRECEDING JUNE FIGURE (6)	VAULT CASH ALL BANKS (7)	COL. 7 ON BASE OF PRECEDING JUNE FIGURE (8)	ANNUAL (OR SEMI-ANNUAL) ADJ. FACTORS (9)	COL. 6 ADJUSTED (10)	VAULT CASH ALL BANKS (\$000,000) (11)
		(percentages)					(percentages)			
1944										
Feb. 2	536	89.2		88.4	88.4					
Mar. 1	506	84.2		82.8	82.8			88.9		1,433
Mar. 29	552	91.8		89.8	89.8			83.6		1,348
Apr. 12	561	93.3	-2.3	91.0	91.0			91.0		1,467
May 3	533	95.0		95.5	86.9					
May 31	526	93.8		95.0	86.4				88.6	1,428
June 28	595	106.1	+1.9	108.0	98.3	1,623	100.7	+2.4	100.7	1,425
Aug. 2	532	89.4		89.3	89.3				100.7	1,623
Aug. 30	574	96.5		96.3	96.3				89.5	1,453
Sept. 27	582	97.8		97.6	97.6				96.7	1,569
Nov. 1	565	95.0		94.7	94.7				98.2	1,594
Nov. 29	642	107.9		107.5	107.5				95.5	1,550
Dec. 27	657	110.4	-0.5	109.9	109.9	1,801	111.0	+1.1	111.0	1,759

COLUMN

- 1 Friday closest to end of month and member bank call date until April 1921; Wednesday thereafter. The Friday or Wednesday closest to the end of December occasionally falls on January 2 or 3 of the following year.
- 2 *Federal Reserve Bulletin*; reported in thousands of dollars, June 1919-Sept. 1926; Feb. 1927-Nov. 1928.
- 4 Table B 7, col. 5.
- 5 Col. 3 plus call date correction, col. 4, distributed along a straight line between call dates.

COLUMN

- 7 Table B 1, col. 5.
 - 9 Col. 8 - col. 6.
 - 10 Col. 6 plus annual (or semi-annual) correction, col. 9, distributed along a straight line between June dates (or between June and December, December and June).
 - 11 Col. 7 x col. 10.
- Italics in col. 1-5 indicate data closest to call dates; in col. 6, data closest to all bank report dates.

multiplied by the June all non-national bank data, yielded the call date series for all non-national banks, which was added to the national bank call date series to obtain all bank vault cash (Table B 13).⁴

Because of the intra-weekly fluctuations in vault cash we did not interpolate along a straight line between call dates. There are, it is true, weekly statistics for members of certain clearing houses,⁵ and for all banks as well as non-national banks in New York City. The movements of the New York City data, however, have wide amplitudes and are quite unlike the fluctuations in vault cash holdings of banks in the rest of the country. We know of no satisfactory

⁴Our December 31, 1917 call date estimate of vault cash in all banks is \$1,236 million, while our monthly (Friday) estimate for December 28, 1917 is \$1,276 million, a not unreasonable difference.

⁵Many clearing houses are supposed to have obtained weekly reports from their members (cf. H. W. Magee, *A Treatise on the Law of National and State Banks Including the Clearing House and Trust Companies*, Bender, Albany, N. Y., 2d ed., 1913, p. 685; also 3d ed., 1921, p. 710). Magee says referring to national banks, "monthly reports have been recommended by some authorities, but the necessity of such frequent reports does not seem to be apparent, except between banks having mutual accounts, or clearing-house banks which are required by the rules in most cities to make weekly reports which are furnished for the benefit of the members."

The only data we have been able to find are for New York, Philadelphia, and Boston. The condition statement issued by the Philadelphia clearing house, however, did not show vault cash as a separate item, 1914-17.

TABLE B 10
Vault Cash in All Non-National Banks Reporting at Two or More Consecutive
National Bank Call Dates, by States, June 1914-June 1918
(thousands of dollars)

	1914			1915			1916			1917			1918													
	June 30	Dec. 31	June 23	Sept. 2	Nov. 10	Dec. 31	Mar. 4	May 1	June 1	Sept. 12	Nov. 17	Dec. 27	Mar. 5	May 1	June 20	Sept. 11	Nov. 20	Dec. 31	June 29							
1 Wis.	9,617	10,271	8,814	8,759	9,266	9,631	9,497	8,886	8,814	8,759	9,266	9,631	9,199	9,155	9,325	9,573	9,774	10,416	9,976	10,136	9,971	9,409	9,168	10,073	8,268	
2 Col.	2,163	2,315	2,137	2,260	2,127	2,328	2,639	2,018	2,137	2,260	2,328	2,639	2,307	2,349	2,571	2,648	2,852	2,852	3,287	3,494	3,445	3,457	3,437	5,611	3,443	
3 Conn.	2,363	2,562	2,639	2,604	2,769	2,774	3,667	3,011	2,694	2,604	2,774	2,774	2,908	3,135	2,841	3,309	3,198	3,303	3,471	3,920	3,987	4,274	4,093	4,096	3,511	
4 Mont.	4,132	4,231	3,682	3,702	3,335	4,157	4,053	4,304	4,304	4,686	4,422	5,051	4,053	4,304	4,686	4,422	5,051	5,056	5,722	6,004	6,107	5,314	4,894	4,831	4,250	
5 N. J.	7,682	8,081	8,498	8,641	8,511	8,619	8,498	8,641	8,511	8,619	8,619	8,619	9,348	9,066	9,090	10,413	9,540	11,601	11,416	11,716	11,953	11,576	11,520	11,152	8,532	
6 N. D.	1,933	2,408	2,231	2,199	2,011	2,233	2,231	2,199	2,011	2,233	2,233	2,233	2,584	2,670	2,336	2,792	2,744	2,894	2,655	2,816	2,468	2,468	3,660	4,216	3,754	
7 Va.	2,740	2,931	2,872	2,679	2,758	2,878	2,671	2,377	2,679	2,758	2,878	2,878	3,148	2,826	2,898	3,110	3,191	3,662	3,371	3,419	3,626	3,660	4,216	4,328	3,754	
8 N. C.	2,863	3,060	2,671	2,479	3,173	3,497	2,671	2,377	2,679	2,758	2,878	2,878	3,148	2,826	2,898	3,110	3,191	3,662	3,371	3,419	3,626	3,660	4,216	4,328	3,754	
9 Tex.	7,740	6,490	6,624	6,356	6,342	7,476	7,477	7,370	7,351	9,136	11,381	11,783	7,477	7,370	7,351	9,136	11,381	11,783	10,582	9,773	9,514	10,904	14,036	14,614	9,698	
10 Mass.	23,024	22,888	22,888	24,832	23,154	25,714	23,024	22,888	22,888	24,832	23,154	25,714	23,024	22,888	22,888	24,832	23,154	25,714	23,024	22,888	22,888	24,832	23,154	25,714	23,024	
11 Mich.	22,737	22,174	22,737	22,174	24,215	25,797	22,737	22,174	22,174	24,215	25,797	25,797	22,737	22,174	22,174	24,215	25,797	25,797	22,737	22,174	22,174	24,215	25,797	25,797	22,737	
12 S. D.	2,393	2,197	2,393	2,197	2,343	2,804	2,393	2,197	2,197	2,343	2,804	2,804	2,393	2,197	2,197	2,343	2,804	2,804	2,393	2,197	2,197	2,343	2,804	2,804	2,393	
13 Miss.	2,238	2,525	2,088	1,899	1,782	2,294	2,088	1,792	1,899	1,782	2,294	2,294	2,088	1,792	1,956	2,025	2,122	2,683	2,121	1,956	2,025	2,122	2,683	3,220	2,252	
14 S. C.	1,247	899	1,247	899	1,169	1,606	1,247	899	899	1,169	1,606	1,606	1,247	899	899	1,169	1,606	1,606	1,247	899	899	1,169	1,606	1,606	1,247	
15 Okla.																										
16 La.	5,755	4,938																								
17 Ill.*	2,899	2,908	2,620	2,522	2,319	3,113	2,620	2,396	2,522	2,319	3,113	3,113	2,620	2,396	2,522	2,319	3,113	3,113	2,620	2,396	2,522	2,319	3,113	3,113	2,620	
18 Ark.																										
19 Minne.	6,728		6,182				6,182																			
20 Kan.																										
21 Ohio																										
22 Ore.																										
23 Wash.																										
24 N. M.	1,254	1,797	1,369	1,427	1,305	1,470	1,369	1,427	1,305	1,470	1,470	1,470	1,369	1,427	1,305	1,470	1,470	1,369	1,427	1,305	1,470	1,470	1,470	1,470	1,369	
25 D. C.																										

*Reports are dated one day later than call dates.
For the 24 states listed, reports of state Banking Departments; for the District of Columbia, Annual Reports of the Comptroller of the Currency.

TABLE B 11
Link Relatives of Vault Cash in a Changing Sample of Non-National Banks
National Bank Call Dates, June 1914-June 1918

NATIONAL BANK CALL DATE		VAULT CASH NON-NATIONAL BANKS		LINK RELATIVES OF COL. 3
(1)	(2)	(3)		(4)
		(thousands of dollars)		(%)
1914	June 30	55,715		
	Dec. 31	67,076	58,866	120.39
1915	Mar. 4		55,488	96.314
	May 1	89,678	90,577	94.04
	June 23	96,084	152,806	107.14
	Sept. 2		156,533	102.44
	Nov. 10	46,964	165,736	105.09
	Dec. 31	49,434	49,076	105.26
1916	Mar. 7		47,644	97.08
	May 1		116,513	101.18
	June 30	191,311	117,885	100.42
	Sept. 12	205,254	118,376	107.29
	Nov. 17		201,950	104.18
	Dec. 27	91,907	54,771	109.78
1917	Mar. 5	89,589	60,128	97.48
	May 1		144,958	103.52
	June 20	209,596	216,468	97.91
	Sept. 11	191,004	211,943	91.13
	Nov. 20		161,820	98.08
	Dec. 31	104,728	158,721	104.79
1918	June 29	80,916	64,989	77.26

COLUMN 3: Sums of state data, Table B 10.

Totals of sample as constituted on consecutive call dates.

method of estimating monthly vault cash in banks outside New York City.

The call date series is of interest because it reflects the different movements of vault cash in national and non-national banks during the initial years of the Federal Reserve System. Large gold inflows were then increasing all bank vault cash while member banks (preponderantly national banks) were shifting their reserves in instalments to the vaults of Reserve Banks (Chart B 1). No call date series for currency outside the Treasury and the Reserve Banks is available from which the vault cash data might be subtracted to give currency in public circulation.

TABLE B 12
Adjustment of Call Date Link Relatives of Non-National Bank Vault Cash
between All Bank June Call Dates, 1914-1918

NATIONAL BANK CALL DATE	LINK RELATIVES NON-NATIONAL BANK SAMPLE	COL. 2 ON BASE OF PRECEDING JUNE	VAULT CASH ALL NON-NATIONAL BANKS	COL. 4 ON BASE OF PRECEDING JUNE FIGURE	ADJUSTMENT FACTORS	COL. 3 ADJUSTED	VAULT CASH ALL NON-NATIONAL BANKS
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
(percentages)							
(\$000,000)							
(p e r c e n t a g e s)							
1914							
June 30			635				635
Dec. 31	120.39	120.39				111.40	707
1915							
Mar. 4	94.26	113.48				101.41	644
May 1	94.04	106.72				91.82	583
June 23	107.14	<i>114.34</i>	615	96.85	-17.49	<i>96.85</i>	615
Sept. 2	102.44	102.44				102.24	629
Nov. 10	105.09	107.65				107.26	660
Dec. 31	105.26	113.31				112.78	694
1916							
Mar. 7	97.08	110.00				109.28	672
May 1	101.18	111.30				110.43	679
June 30	100.42	<i>111.77</i>	681	110.73	-1.04	<i>110.73</i>	681
Sept. 12	107.29	107.29				105.47	718
Nov. 17	104.18	111.77				108.32	738
Dec. 27	109.78	122.70				118.26	805
1917							
Mar. 5	97.48	119.61				113.50	773
May 1	103.52	123.82				116.30	792
June 20	97.91	<i>121.23</i>	766	112.48	-8.75	<i>112.48</i>	766
Sept. 11	91.13	91.13				90.37	692
Nov. 20	98.08	89.38				87.98	674
Dec. 31	104.79	93.66				91.88	704
1918							
June 29	77.26	<i>72.36</i>	528	68.93	-3.43	<i>68.93</i>	528

COLUMN

- 2 Table B 11, col. 4.
- 4 Table B 1. col. 5, minus Table B 13, col. 2.
- 6 Col. 5 — col. 3.

COLUMN

- 7 Col. 3 plus annual correction, col. 6, distributed along a straight line between June dates.
- 8 Col. 4 x col. 7.

Italics in col. 3 and 7 indicate June data.

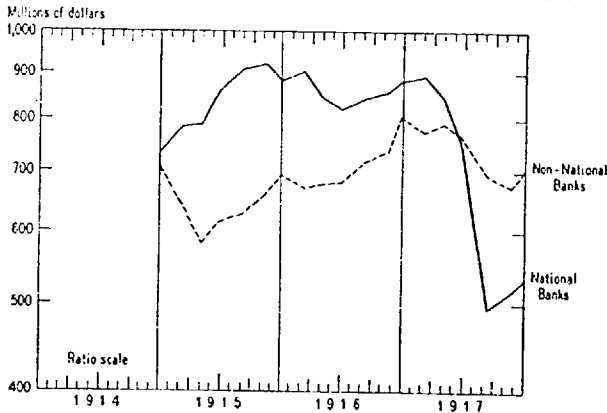
TABLE B 13
Vault Cash in All Banks at National Bank Call Dates
December 1914-December 1917
 (millions of dollars)

NATIONAL BANK CALL DATE (1)	NATIONAL BANKS (2)	NON-NATIONAL BANKS (3)	ALL BANKS (4)
1914			
June 30	1,023	635	1,658
Dec. 31	735	707	1,442
1915			
Mar. 4	784	644	1,428
May 1	790	583	1,373
June 23	858	615	1,473
Sept. 2	907	629	1,536
Nov. 10	920	660	1,580
Dec. 31	882	694	1,576
1916			
Mar. 7	904	672	1,576
May 1	846	679	1,525
June 30	820	681	1,501
Sept. 12	845	718	1,563
Nov. 17	858	738	1,596
Dec. 27	882	805	1,687
1917			
Mar. 5	894	773	1,667
May 1	844	792	1,636
June 20	753	766	1,519
Sept. 11	494	692	1,186
Nov. 20	516	674	1,190
Dec. 31	532	704	1,236

COLUMN

- 2 *Annual Reports of the Comptroller of the Currency.*
- 3 Table B 12, col. 8.
- 4 Col. 2 + col. 3.

CHART B1
Vault Cash Held by National and Non-National Banks
National Bank Call Dates, December 1914 - December 1917



APPENDIX C

Comparison with Other Estimates

MONTHLY, 1918-1934

The two attempts heretofore made to estimate bank vault cash, monthly, to obtain the residual data for currency in the hands of the public are Leong's first-of-month series, January 1914 through January 1927, and Angell's end-of-month series, January 1919 through December 1934.¹ Leong bases his monthly estimates on the movements of a single series, vault cash in weekly reporting member banks, while Angell makes separate interpolations for member banks, based on the end-of-month series of currency outside the Treasury and the Reserve Banks; and for non-member banks, along a straight line between June dates.

Leong's raw data are:

- 1) vault cash in all banks, on or about June 30, annually. An estimate of vault cash in non-reporting banks is included. The data for all reporting banks are for banks in continental United States only.
- 2) vault cash in all national banks, call dates
- 3) vault cash in weekly reporting member banks, monthly

From 1918 through 1926 Leong made two sets of interpolations, between the June dates of all reporting banks, on the basis of the vault cash of national banks at call dates, and between the call dates of the estimated all reporting bank series, on the basis of the vault cash in weekly reporting member banks, monthly.² From 1914 through 1917, when the second interpolation could not be made because weekly reporting member bank data do not exist, Leong connected the call date estimates for all reporting banks by a straight line to obtain monthly estimates.

We question the validity of Leong's method of interpolation mainly because it ignores differences in movement between the call date series and weekly reporting member bank data that are due to differences in dating. The call date interpolation before 1918 seems even more open to doubt, since national and non-national bank vault cash move independently from 1914 through 1917. With respect to straight-line interpolation between call dates, our position has just been stated.

Leong's choice of national bank figures was dictated by the greater frequency of their reports before 1923. The advisability of using them after 1922, when member bank reports have been equally fre-

¹See text, note 1, for sources; Professor Angell's monthly vault cash series has not been published.

²Leong's method of estimation, too complicated to describe here, approximates the 'ratio' method of stepping up a sample series but is more cumbersome.

quent, is, however, questionable. With the increasing participation of non-national banks in the Federal Reserve System, national bank vault cash has declined relative to all member bank. For this reason, member bank call date figures after 1922 are preferable. Finally, the failure to use non-member bank call date statistics seems a weakness.

Professor Angell's raw data include:

- 1) vault cash in all banks, on or about June 30, annually. Non-reporting banks are not included. The Comptroller's series of cash in all banks, including those in island possessions, is used.
- 2) vault cash in all member banks, call dates
- 3) currency outside the Treasury and the Reserve Banks, end-of-month
- 4) vault cash in all non-member banks, on or about June 30

The decision to interpolate by different methods between the dates for which cash was known for member and non-member banks was unfortunate. Non-member bank vault cash represents a considerable proportion of all bank vault cash. The movements of the member and non-member bank data, moreover, are not on the whole dissimilar between the June call dates in the period covered by Professor Angell's estimates. On these grounds alone, it would have been better to treat member and non-member bank vault cash alike.

All non-member bank vault cash is known (at least for Professor Angell's period) for June dates alone. By straight-line interpolation between the June figures, Professor Angell eliminated all intra-annual movement, which is not inconsiderable (see Chart 3). The treatment of non-member bank cash partly explains the short-term stability of his estimates.

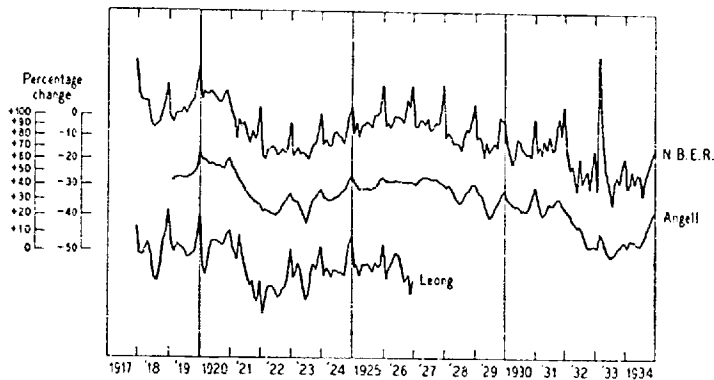
We are convinced, furthermore, that vault cash in all member banks is more closely correlated to cash in weekly reporting member banks than to currency outside the Treasury and the Reserve Banks. The latter series fluctuates with marked daily variability,³ not unlike that of vault cash, and since it is an end-of-month series, the dating problem is no more solved for Angell than it is for Leong.

The month-to-month movements of Leong's and our new monthly estimates are not wholly dissimilar: both reflect weekly reporting member bank monthly changes; although not shown on Chart C 1, there is a notable difference in level except at June dates.

The minor movements in Professor Angell's series are considerably different from those in ours. His estimates are much less erratic in behavior, particularly for 1919-27, and seasonality is less marked. Even the December peak, so prominent in Leong's and

³*Federal Reserve Bulletin*, Oct. 1928, pp. 684-5.

CHART C1
 Three Estimates of All Bank Vault Cash
 Monthly, December 1917 - December 1934



in our estimates, is damped or non-apparent in Angell's series. A striking difference is evident in February 1933, when our estimate is double the amount for the preceding month, but Angell's estimate is less than 10 percent greater than his January 1933 figure. In general, his series tends to be greater than ours except in the last quarter of the year. His June data omit cash in non-reporting banks, included in our data, but our downward adjustment of the Comptroller's non-national bank vault cash estimates yields us net figures for June which are lower than his.

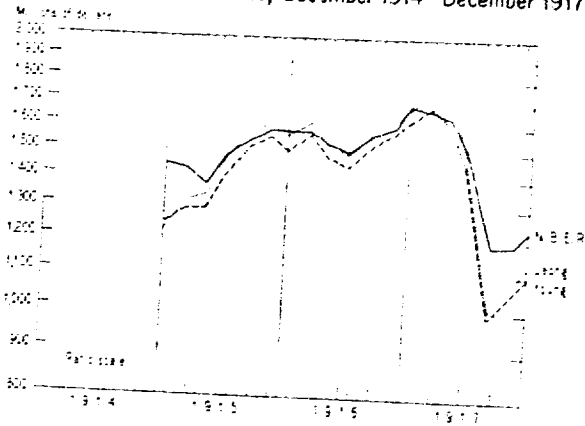
CALL DATE ESTIMATES, DECEMBER 1914-DECEMBER 1917

A comparison may also be made between our series, Leong's estimates before he made a straight-line interpolation between call dates, and call date estimates calculated by Allyn A. Young, 1914-17 (Chart C 2).⁴ Young added estimates of non-national bank vault cash to the reported call date figures for national banks, as we did. His estimates are, however, based on the call date movements of the national bank series, while ours are derived from our call date sample of non-national bank data. His June non-national bank data, furthermore, apparently exclude vault cash held by savings banks, except so far as it is included in the Comptroller's state (commercial) bank figures. Professor Young computed the ratio of the Comptroller's June data for non-national banks to the June national bank data; interpolated by straight-line between the June ratios; and multiplied national bank vault cash by these call date ratios to obtain an all non-national bank series.

Young's call date estimates nearly parallel Leong's series, at a lower level. Our figures for the first half of 1915 and the last half

⁴An Analysis of Bank Statistics for the United States, *Review of Economic Statistics* (IX) July 1927, pp. 135-6.

Three Estimates of All Bank Vault Cash
National Bank Call Dates, December 1914 - December 1917



of 1917 are higher than either; for the intervening period our figures tend to be between the two. Leong's series reaches a peak in May 1917; Young's in March 1917; ours in December 1916. Initially (December 1914-May 1915) our vault cash estimates and the other estimates move in opposite directions. Other smaller differences between the fluctuations in our figures and those of Young and Leong do not affect possible cyclical turning points.

FEDERAL RESERVE BULLETIN MONTHLY SERIES,
DECEMBER 1942-DECEMBER 1944

In February 1944 the *Federal Reserve Bulletin* began to publish an end-of-month series of currency outside banks, i.e., in public circulation, since December 1942.

The method of computation has changed from time to time. The synthetic monthly figure currently presented is based on the level of the weekly reporting figures, the rate of currency outflow, and the day of the week on which the month ends.

Discretionary figures may be valuable for purposes of forecasting. Our mechanical method of estimating monthly vault cash seems to us a more reliable way of compiling a time series.

APPENDIX D

Federal Reserve Bank Currency Holdings

For 1923-44 the currency holdings of the Reserve Banks, presented for Wednesdays closest to the end of the month, are the sum of:¹

Total reserves

Non-reserve cash (until May 1933; since May 12, 1933 all coins and currencies of the United States, except Federal Reserve notes, have been included in Reserve Bank reserves)

Federal Reserve notes held by issuing Reserve Banks

Federal Reserve notes and bank notes of other Reserve Banks

Gold held abroad

For the part of the period when figures on Federal Reserve notes held by issuing banks are not directly available, they are the difference between Federal Reserve notes received by the Reserve Banks from the Federal Reserve agents (data for which are regularly appended to their weekly condition statement) and Federal Reserve notes in circulation, i.e., outside the issuing Reserve Banks.

Figures on Federal Reserve notes of other Reserve Banks were published only at the end of the month before May 1929, when the item began to be reported separately in the weekly condition statement. For January 1927-April 1929 data were published in the *Federal Reserve Bulletin*; for January 1923-December 1926 they had to be computed. From the total in circulation outside the issuing Reserve Banks, the sum of the amount outside the Treasury and all Reserve Banks (*1927 Annual Report of the Federal Reserve Board*) and the amount in the Treasury (*Commercial and Financial Chronicle*) was subtracted.

For part of 1922 figures on non-reserve cash do not exist, and for the remainder of the year the end-of-month data, which could have been derived from the Treasury Circulation Statement, did not appear to be continuous with figures for the year following in the Reserve Bank weekly condition statement. (The difference in dating between the Circulation Statement and the condition statement makes exact comparison difficult.) It therefore seemed best to abandon this method of deriving monthly currency holdings of the Reserve Banks for 1922. Before 1922, in any event, we needed end-of-month data.

For December 1917-December 1922 we computed the end-of-month series by adding the redemption fund to revised data on

¹The weekly condition statements in the *Federal Reserve Bulletin* and the *Commercial and Financial Chronicle* were the chief sources.

holdings of currency by Reserve Banks and agents.² The redemption fund has always been included in Reserve Bank reserves. Until January 1934, however, when it was transferred to the category 'Held for Federal Reserve Banks and Agents' in the Circulation Statement, the compilers of the Statement considered it part of the assets of the Treasury, including it under 'All other Money' (held by the Treasury).

As the amount of the redemption fund is stated, from June 1922 on, in a note to each Circulation Statement, its transfer from that date to December 1922 presented no problem. For the period before June 1922, however, the amount of the redemption fund could be determined only less directly. A table in the *Federal Reserve Bulletin* (April 1933, p. 259) gives figures in units of \$1 million for the gold reserves of Reserve Banks, including the redemption fund, and information from which gold in the Treasury, excluding the redemption fund, can be derived. It shows, among other items, total monetary gold, gold in Reserve Banks, and gold outside the Reserve Banks and the Treasury. Gold assets of the Treasury, including the redemption fund, are given in the Circulation Statements. The difference between the two series of Treasury gold assets is the redemption fund, in millions of dollars.

No adjustment was made, December 1917-December 1922, for the early disregard in the Circulation Statement of Reserve Bank holdings of minor coin, because adequate information was lacking.³ The amounts were, however, small, as is shown by figures on minor coin in both the Treasury and the Reserve Banks, June 30, 1917-22 (derived from data on the stock of minor coin and amounts outside the Treasury and the Reserve Banks in the *Annual Report of the Secretary of the Treasury, 1928*, pp. 552-5).

1917	1918	1919	1920	1921	1922
1.3	3.2	(millions of dollars) 1.1	1.5	7.1	9.4

² Figures from December 1917 through May 1922, corrected from latest reports, were published in the *Federal Reserve Bulletin*. The discussion preceding the first of this series of tables (June 1, 1918, p. 506) contains the following statement: "Some changes from the figures printed in the Treasury's Circulation Statement are due to the revision of the items by the banks themselves following the dispatch of telegraphic data which are used in the compilation of the Treasury Statement."

For the rest of 1922 we used the Circulation Statement, compiled from the latest reports, though some may have been several days out of date.

³ Monthly data on the minor coin assets of the Treasury prior to December 1927 are published in the Reports of the Treasurer of the United States. No similar monthly data exist for the minor coin in the Reserve Banks.