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Part II

Banking Changes and the Liquidity Problem

The principal reason banks have a liquidity problem is that the amount of deposits is subject to constant, and sometimes unpredictable, change. Consequently any development that affects the stability of deposits directly involves the liquidity of banks.

CHARACTER OF BANKING ASSETS AND THE BEHAVIOR OF DEPOSITS

If a bank could be sure that the volume of deposits would not vary, the maintenance of liquidity would call for nothing more than providing till money for working purposes. The distribution of maturities of earning assets could be determined solely on the basis of safety and earnings. Moreover, if deposits, even though not constant in amount, were to change in a predictable manner, the problem of liquidity would be far simpler than at present. The maturities of bank assets could then be arranged according to foreseeable needs; the determination of bank liquidity would approach the nature of an exact science and there would be little excuse for having either too many or too few liquid assets.

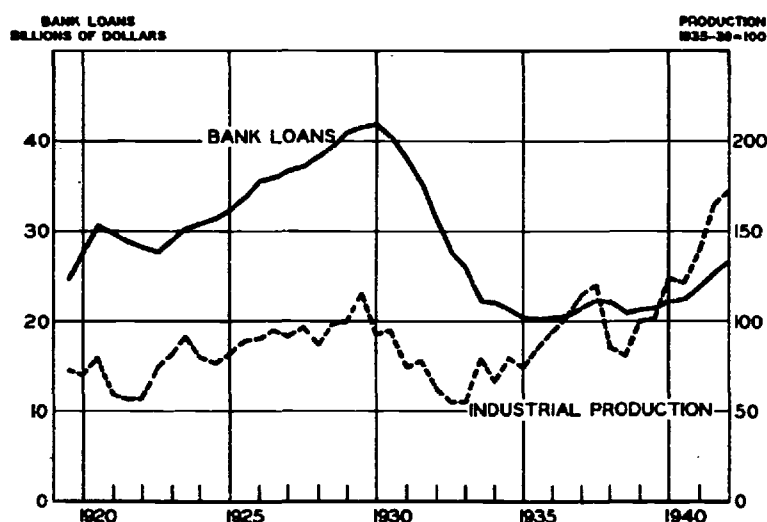
At the peak of deposit expansion after the last war, investments represented less than a third of the earning assets of national banks. Throughout the second half of the twenties they amounted to about two-fifths, but by 1934 they had risen to half and by the middle of 1944 to nearly four-fifths. Where formerly the dominating element in earning assets was loans, it is now investments in the form of government securities. Inasmuch as the volume of deposits is closely linked to the volume of earning assets, any difference in variability between loans and investments bears directly on the future stability of bank deposits.

The theory of commercial banking at one time rested, as the name "commercial" banking implies, on the presumption that banks would engage chiefly in the discounting of short-term paper for industry and trade. Assuming that changes in the volume of busi-

ness activity would lead to corresponding changes in the volume of such paper, the expansion or contraction of demand deposits through the discounting or retirement of this paper was expected to accommodate the supply of circulating medium to the volume of business transactions. These expectations were probably never fully realized in practice, for one reason because bank loans were not strictly short-term in character. Nevertheless there was a clearly recognizable tendency for the total of bank loans, including those of a noncommercial character, to vary more or less in harmony with the general course of business activity. This rough similarity is suggested by Chart 1, showing changes in the volume of bank loans from 1919 to 1941 plotted against the curve of industrial production.

There has been no corresponding tendency for changes in the volume of federal debt outstanding to be related to changes in economic activity. The growth of the national debt has been governed, in the present century at least, primarily by two factors, war and depression. The federal debt has behaved in a very different manner from short-term paper or bank loans. The volume of such debt increased greatly in time of war and business depression, decreased during the period of prosperity in the twenties and showed

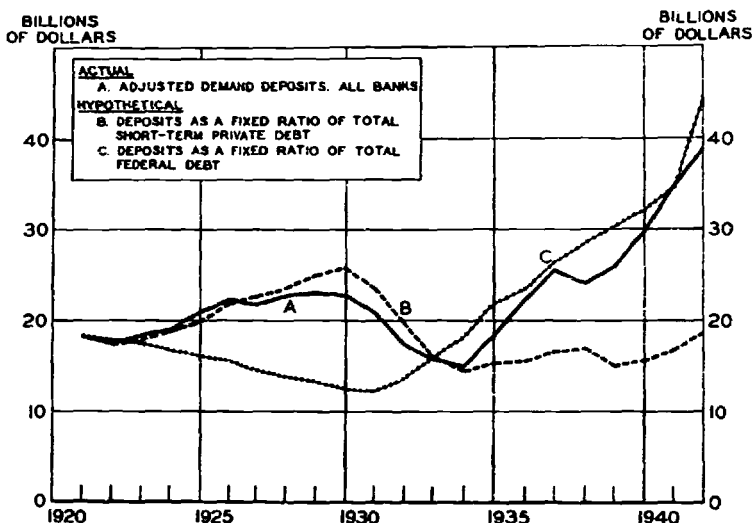
CHART 1—BANK LOANS AND INDUSTRIAL PRODUCTION, 1919-41



Source: *Banking and Monetary Statistics and Federal Reserve Bulletin*.

relatively few and small short-run fluctuations. The significance of these differences to the way deposits may be expected to behave is indicated by Chart 2. Curve A of this chart shows for the period 1920-41 the actual volume of adjusted demand deposits of all banks. Curve B shows what changes would have occurred in the volume of bank deposits if they had maintained a constant relationship to the volume of short-term private debt.⁹ If, on the other hand, deposits

CHART 2—DEMAND DEPOSITS, ACTUAL AND HYPOTHETICAL, ALL BANKS, 1920-41



Source: Data for short-term private debt from *Survey of Current Business* (May 1943) p. 24, and for deposits and federal debt from *Banking and Monetary Statistics*.

had maintained a constant relationship to the volume of federal debt, the trend would have corresponded to that shown in curve C. A combination of these two bases would have yielded a pattern of deposits somewhere between curves B and C.

While the foregoing comparisons are purely hypothetical they lead to the clear inference that a deposit structure tied primarily to government debt would behave differently from one tied primarily to short-term private debt. It would probably show a greater stability as to amount, and instead of contracting at a time of business decline it might exhibit the opposite tendency.

⁹ Assuming for the sake of the argument that the volume of loans would have been the same as it was under the conditions that actually prevailed.

As matters stand today, the only way a substantial decline in deposits could come about would be through a decrease in the volume of Treasury obligations held by banks. Such a decrease would presumably call for a net repayment of debt by the government or a transfer of federal obligations from the banks to other investors. It is not certain, however, that either of these developments would necessarily result in a contraction of bank deposits; the tendency for a decline in bank holdings of government debt to reduce deposits could be offset by an expansion of private loans and investments. However, such an expansion might occur even without a decrease in government obligations. In that case the reduction in government debt held by banks would at least have the effect of restricting the total of earning assets (and therefore the volume of deposits) as compared with what they otherwise would have been.

Furthermore, as long as earning assets consist overwhelmingly of government obligations, the volume of deposits is no longer subject to the same spontaneous tendency toward contraction in a period of falling business that exists when assets are of a commercial character. Since Treasury debt is neither proportional to business activity nor uniformly of short duration, a decline in business activity would not, automatically, reduce the volume of bank assets of this character. Moreover, changes in public confidence would be less likely to contribute to fluctuations in the amount of these assets. Greater stability of deposits in time of declining business is of considerable importance; its precise implications are to be judged, however, primarily on the basis of the significance attached to the volume of circulating medium as a determinant of prices and production.

Similar considerations apply to the probable effects of business expansion. While changes in the volume of circulating medium in exact response to the "needs of industry and trade" have never been entirely automatic, the recent displacement of private debt by government debt as the principal basis of demand deposits has rendered the probability of a perfect automatic adjustment still more remote.¹⁰

¹⁰ It is not suggested that the change is altogether complete. In the past, investments formed a part of earning assets; in the present, short-term paper has not entirely disappeared. The difference is one of degree, but the degree is so extreme that the line of argument is not altered by the fact that a residuum of the former basis of deposits still remains. Nor is it suggested here that such an automatic adjustment of the circulating medium would be desirable even if it could be counted upon.

This discussion of the stability of aggregate bank deposits still leaves untouched the problem of the stability of deposits which confronts the individual banker. For him liquidity and solvency are matters not so much of the absolute total as of the distribution of the total. He is likely to be more directly affected by the flow of funds from one part of the system to another. At one stage of war financing deposits were being shifted from New York and certain other centers to banks in defense areas where heavy disbursements were being made. If at some future time disbursements in defense areas should decrease relative to the payments these areas are called upon to make outside, a decline in deposits and a drain of reserves to other parts of the country may be expected to ensue. Banks in areas being deflated relative to the rest of the country will tend to lose deposits to banks more favorably situated. It is because of regional shifts that the possibility still remains of a liquidity crisis for individual banks or for banks in particular areas. The fear of this contingency helps to explain the reluctance of some bankers to act freely on the advice of Federal Reserve authorities to invest idle funds, even when they were given "assurance that banks will be provided with reserves, by one means or another, if additional reserves are needed."¹¹

Since the shifting about of banking funds within the banking system is determined by internal balances of payments and not by the type of security on which deposits are based, any difference in deposit behavior resulting from the change in character of security is likely to be indirect rather than direct. Under conditions that existed in the early thirties banks suffering as the result of a regional drain were frequently compelled to accommodate themselves to a smaller share of a dwindling total of deposits. It would appear that the total volume of deposits is less likely to decline in a period of falling business activity, now that they are so largely based upon government obligations. While this does not preclude the probability of serious strain for individual banks, the strain may be less than if the total volume of deposits were declining sharply. And the pressure on the system as a whole may be greatly lessened, for a condition of stringency in one area, arising out of a decline of bank deposits in that area, may have as its counterpart an expansion of deposits in another part of the system. Under such circumstances,

¹¹ Federal Reserve Bank of New York, Circular 2534 (October 30, 1942).

the condition of strain would be easier to cope with because it was less general, and, in addition, banks in certain areas would be in a position, because of expanded balances, to come to the assistance of banks in other areas where deposits were declining.

RELATIVE DEPOSIT GROWTH AND PROBABLE DEPOSIT CONTRACTION

The view is sometimes encountered that the recent increase in bank deposits, since it is so largely a product of wartime conditions, can be expected to disappear when the war is over. The question of the permanence of the deposit growth is of the utmost importance in the determination of policies for the acquisition of particular types and maturities of bank assets; if the conclusion is correct that the growth is only temporary, banks must prepare now for meeting the future contraction of deposits. The following analysis does not attempt to forecast changes in the volume of bank deposits. It is merely designed to disclose the basic assumptions inherent in any general conclusion that deposits, whether of the entire banking system or of any individual bank, are certain to decrease. In some instances the assumptions may be valid and in others not; the purpose here is to consider only what the assumptions are and not to pass upon their validity.

Since the growth in deposits is so directly attributable to the acquisition of government obligations, a material reduction in deposits would require a reversal of the process whereby they were created.¹² An expectation that the total of deposits in the country is likely to decline materially must rest on one or both of these assumptions:

- a. That the Treasury will retire a large part of the debt now held by banks;
- b. That government debt will be transferred from the banks to other holders without resort to private borrowing from banks.

A belief that the increase in an individual bank's deposits is only

¹² The initiative for a contraction of deposits might conceivably come from a variety of causes such as a withdrawal of foreign balances, a great increase in currency or a panic in the government security market. Whatever the cause, an extreme contraction of deposits would be impossible without an accompanying reduction in holdings of government securities.

temporary may reflect a conviction, not that all deposits will decline, but that a particular area or a particular bank is likely to lose deposits to other areas or banks. It is therefore necessary to examine the assumptions implicit in the view that there may be such regional or local shifts in deposit balances. But before specifying these assumptions it is necessary to indicate certain general facts and principles.

Between June 1940 and June 1944 bank deposits in reserve city and central reserve city banks increased by an average of 110 and 62 percent, respectively. At one extreme were Wichita and Seattle with increases of 226 and 220 percent, respectively, and at the other extreme Galveston and Pittsburgh with increases of 47 and 52 percent. If it could be assumed that 1940 represented the normal distribution of deposits, to which a return could be expected, it would follow that deviations of each city's position from the average for all banks in the country would measure the extent of probable future losses or gains of deposits. Since it is far from certain either that conditions were wholly normal in 1940 or that the relative long-run position of each city has remained unaltered since then, no such rigid deduction as this is permissible. Nevertheless, the year 1940 was perhaps more nearly "normal" than 1944, and deviations from the relative distribution of deposits prevailing in 1940 may therefore be a useful, even though tentative, guide to prospective liquidity requirements.

In analyzing the prospects of a particular city or bank with regard to the probable future movements of deposits, a starting point might be to determine what its deposits would be if they constituted the same share of total deposits as they did in 1940 (or any other base year regarded as most representative). The figure thus chosen might be taken as "normal." The practical problem would then be to attempt to determine the factors, peculiar to the area or the bank, that establish a probability that the future inward or outward movement of funds will be more or less than that suggested by the average or normal figure. This would call for a consideration of the permanence of recent industrial expansion in the territory served, the long-run movement of capital (e.g., to savings institutions such as life insurance companies), the type of financial operations carried on and changes that may have taken place either in the foregoing elements or in the character of the business carried on by the par-

ticular institutions (e.g., a shift from predominantly trust business to a greater dependence on general banking).

It is now possible to indicate the assumptions that seem to be implicit in the view that the increase in the deposits of any individual bank is only temporary even though total deposits for the country as a whole were to remain the same:

The expectation that the bank's deposits will decline assumes a shift in deposits away from that bank to other banks in the country.

Expectation of the loss of *any* deposits (i.e., a belief that *any part* of the increase is temporary) presumes:

- (a) That the increase in this bank's deposits has been greater than the average for the system, or
- (b) If no more than the average, that the long-run position of the bank has deteriorated so that its present share of deposits is greater, relative to the share of deposits held by other banks, than can be expected to be permanent.

Belief that *all* of the increase in the bank's deposits since some base period is temporary implies the assumption that

TABLE 1—GROWTH OF MEMBER BANK DEPOSITS BY FEDERAL RESERVE DISTRICTS, JUNE 1940 TO JUNE 1944
(dollar figures in millions)

District	Total Member Bank Deposits		Increase	
	June 1940	June 1944	Amount	Percentage
Boston	\$2,887	\$5,409	\$2,522	87.4%
New York	19,212	31,982	12,770	66.5
Philadelphia	3,248	5,256	2,008	61.8
Cleveland	3,975	8,027	4,052	101.9
Richmond	2,025	4,435	2,410	119.0
Atlanta	1,786	4,497	2,711	151.8
Chicago	7,341	15,550	8,209	111.8
St. Louis	1,701	3,542	1,841	108.2
Minneapolis	1,130	2,470	1,340	118.6
Kansas City	1,829	4,285	2,456	134.3
Dallas	1,571	3,866	2,295	146.1
San Francisco	5,024	11,957	6,933	138.0
ALL MEMBER BANKS	\$51,729	\$101,276	\$49,547	95.8%

Source: *Federal Reserve Bulletin*.

the long-run position of the bank has deteriorated relative to other banks in the system. The implied deterioration is exactly inverse to the difference between the amount of its deposits in that base period and the "normal" or average level of deposits as defined above.¹³

The preceding discussion may be illustrated by a series of comparisons. In Table 1 is shown the average rate of growth of member bank deposits from June 1940 to June 1944 for all Federal Reserve Districts and for each District individually. The deposit expansion in particular districts varied from a high of 151.8 and 146.1 percent in the Atlanta and Dallas Districts, respectively, to a low of 61.8 and 66.5 percent in the Philadelphia and New York Districts. The expansion for member banks as a whole was 95.8 percent.

Similar comparisons for reserve city and central reserve city banks in a selected group of cities throughout the country are presented in Table 2. This list includes the six cities showing the greatest, and the six cities showing the smallest, relative increase in deposits over the 4-year period. A slightly different comparison is afforded by Table 3. The actual growth in dollar volume of deposits from June 1940 to June 1944 is shown in column 1 for the group of cities listed in Table 2. Column 2 shows the growth that would have occurred if the rate of deposit expansion had been the same (95.8

¹³ A further implicit assumption that may be involved in an investment policy predicated upon the belief that the increase in deposits is only temporary may also be noted. The purchase of Treasury bills, *if this is based on the supposed temporary character of the expansion in deposits*, entails the assumption that the decrease in deposits will occur, not just sooner or later, but specifically within three months. Similarly a purchase of certificates would involve the assumption that a decrease in deposits may occur within one year.

As was mentioned at the start, the analysis presented above is solely designed to arrive at the underlying assumptions that are unavoidably implicit in the statement that the increase in deposits is temporary. For any institution the validity of the implied assumptions is a matter to be decided by the bank's officers. It must be remembered that these general comments do not afford a complete basis for judging the portfolio policy of a bank. Even though it were agreed that the present degree of liquidity of assets was not warranted by the prospects of a reduction in deposits, it might nevertheless be defended on such grounds as that:

- a. A decrease in liquidity would be interpreted by present and prospective customers as indicating the adoption of an incautious policy on the part of the management.
- b. Taxes are so high as to absorb most of the added earnings that would be obtained from a lengthening of maturities.
- c. Earnings are already sufficiently generous so that the possibility of obtaining somewhat larger profits does not justify the sacrifice of liquidity.

percent) as it was for member banks as a whole. These amounts, added to deposits in the base year, would yield totals corresponding to the "normal" figures described above. The differences between the hypothetical amounts shown in column 2 and the actual increase in deposits from June 1940 to June 1944 (column 1) are given in

TABLE 2—GROWTH OF MEMBER BANK DEPOSITS IN SELECTED RESERVE AND CENTRAL RESERVE CITIES, JUNE 1940 TO JUNE 1944*

(dollar figures in millions)

City	Total Member Bank Deposits		Increase	
	June 1940	June 1944	Amount	Percentage
(Cities showing greatest increase)				
Wichita	\$61	\$199	\$138	226.2%
Seattle	339	1,086	747	220.4
Omaha	124	359	235	189.5
Sioux City	27	78	51	188.9
Savannah	116	319	203	175.0
Detroit	883	2,378	1,495	169.3
(Cities showing least increase)				
Boston	\$1,395	\$2,368	\$973	69.7%
St. Louis	668	1,081	413	61.8
New York	16,063	25,794	9,731	60.6
Philadelphia	1,668	2,590	922	55.3
Pittsburgh	1,146	1,744	598	52.2
Galveston	45	66	21	46.7
ALL MEMBER BANKS	\$51,729	\$101,276	\$49,547	95.8%

Source: *Member Bank Call Reports*.

* Cities with less than four reserve city member banks were not included in the comparison.

column 3. The plus and minus quantities in column 3 represent the amounts by which, with no change in deposits of all member banks, deposits in the particular cities might have been expected to fall or rise after the present emergency — or rather after the emergency as it existed in June 1944 — if the distribution of deposits were to return to what it was in the base year.

The percentages in column 4 show changes in deposits, compared with June 1944, that would occur if total deposits for the country should remain constant and the relative distribution of deposits among banks should return to that which prevailed in 1940.

The direction of the percentage change is shown by the plus and minus signs. It is not intended to suggest that either of the implicit assumptions is rigidly tenable, i.e., that the total of deposits can be expected to be identical with that of 1944 or the distribution of deposits identical with that of 1940. The practical significance of columns 3 and 4 depends on the extent to which, first, relative business conditions of the base year are regarded as more typical than those prevailing in 1944 and, secondly, banks as a whole are expected to retain a volume of debt close to that held in 1944. Subject

TABLE 3—DEVIATIONS OF DEPOSIT GROWTH FROM AVERAGE FOR SYSTEM, SELECTED RESERVE, CITY AND CENTRAL RESERVE CITY BANKS, JUNE 1940 TO JUNE 1944
(dollar figures in millions)

<i>City</i>	<i>Actual Growth in Deposits</i>	<i>Deposit Growth at Average Rate for the System^a</i>	<i>Deviations of Deposit Growth from Average Growth for System</i>	<i>Percentage Change in Deposit Totals for June 1944 Which Would Result in a Distribution of Deposits Corresponding to the Average Growth for the System</i>
	(1)	(2)	(3)	(4)
(Cities showing greatest increase)				
Wichita	\$138	\$58	+\$80	-40.2%
Seattle	747	325	+422	-38.9
Omaha	235	119	+116	-32.3
Sioux City	51	26	+25	-32.1
Savannah	203	111	+92	-28.8
Detroit	1,495	846	+649	-27.3
(Cities showing least increase)				
Boston	\$973	\$1,336	\$-363	+15.3%
St. Louis	413	640	-227	+21.0
New York	9,731	15,388	-5,657	+21.9
Philadelphia	922	1,598	-676	+26.1
Pittsburgh	598	1,098	-500	+28.7
Galveston	21	43	-22	+33.3

Source: Based on data from *Member Bank Call Reports*.

^a Figures in this column represent the amount of deposit growth that would correspond to the hypothetical "normal" described in the text.

to these conditions, it follows that column 4 indicates, at a minimum, the relative direction of, and possibly something of the relative differences in, future changes of deposits.

Deposit growth for any individual bank could be compared on the same basis with the average for the country as a whole or with that of any particular group or category of banks. Subject to the reservations mentioned above, this comparison could then be used to indicate possible tendencies in the future behavior of its deposits.

RELATION OF PORTFOLIO POLICY TO DEPOSIT GROWTH

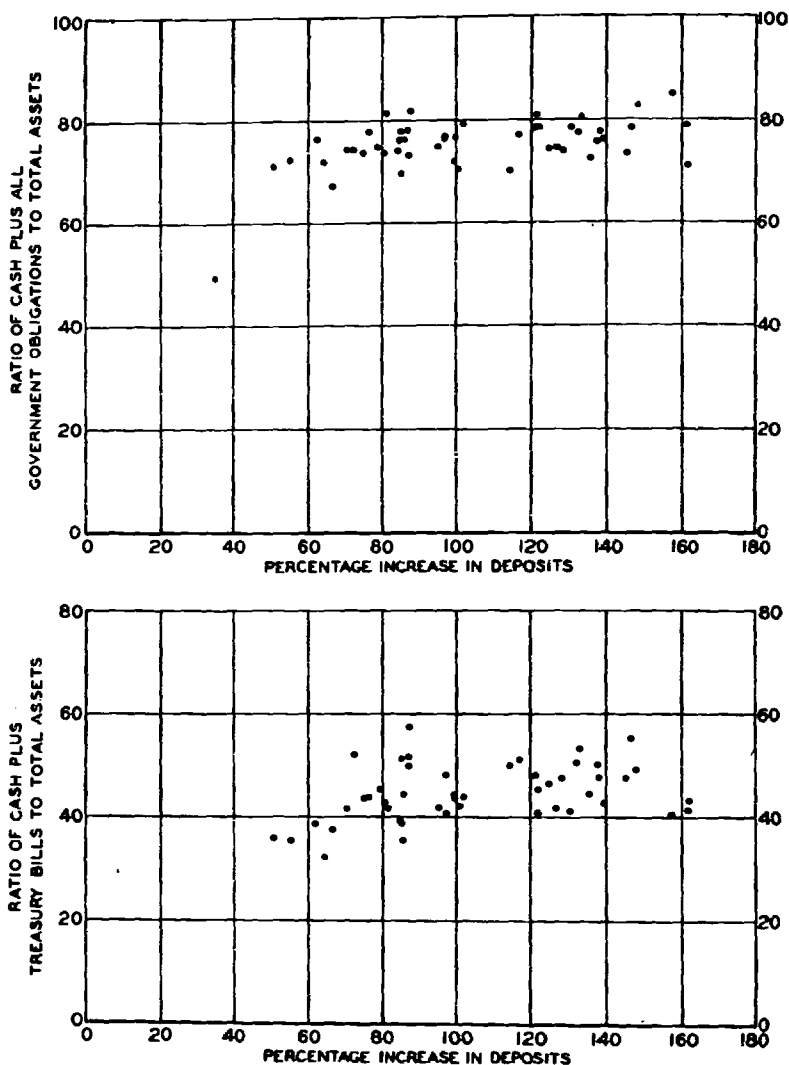
The suggestion that banks which have experienced the greatest relative growth of deposits may tend to undergo the greatest contraction in deposits at some time in the future raises the question whether any correlation is to be detected between relative differences in the rate of deposit growth and portfolio policy. Specifically, have banks showing the greatest relative growth in deposits tended to hold a greater proportion of their assets in the more liquid forms?

An attempt has been made to arrive at an answer to this question by an analysis of deposit growth and portfolio policy (a) among different reserve cities and (b) in the various states. A comparison of the portfolios of banks in the ten cities showing the greatest relative increase in deposits between June 1940 and June 1943 with the portfolios of banks in the ten cities which have shown the least increase yields rather inconclusive results. In general, the portfolio policies of the two groups appear to be very similar, and such differences as do exist are mixed in character. While the proportion of total Treasury obligations to total assets is almost identical in the two cases, on the average the group of banks with the greatest relative increase in deposits held a larger proportion of these securities in maturities of one year or less. This would seem to imply some correspondence between deposit expansion and liquidity of assets. On the other hand, this pattern of behavior is by no means uniform; thus banks in Wichita, the city with the greatest increase in deposits during the period, held a smaller share of government obligations in short-term maturities than banks in any other city except one in either group.

The evidence drawn from figures for all insured banks, classified by individual states, is likewise inconclusive. The relation between deposit growth and character of bank assets is shown in Chart 3 for

all states. The first of these diagrams indicates that the proportion of assets in the form of cash and Treasury obligations was closely concentrated between 70 and 80 percent of total assets. Such devia-

**CHART 3—INCREASE IN TOTAL DEPOSITS, JUNE 1939 - JUNE 1943,
AND RATIO BY STATES OF LIQUID ASSETS TO TOTAL ASSETS, 1943**



Source: Federal Deposit Insurance Corporation, *Assets and Liabilities of Operating Insured Banks*.

tion as occurred was not appreciably related to differences in deposit growth, except in the case of Vermont which stands out by itself. The second diagram is concerned only with the ratio of assets in the most liquid form, namely, cash and Treasury bills. Again there is pronounced, though not quite as extreme, concentration, this time in a range of between 40 and 50 percent of total assets. In the lower range there appears to be a tendency for liquidity of assets to be correlated with deposit growth. For the entire group, however, there is little if any significant correlation.¹⁴ The state showing the highest ratio of cash and bills is well in the lower half of states as classified by rate of deposit growth. Conversely, the three states with the largest growth in deposits fall in the lower group as judged by proportion of assets in the form of cash and Treasury bills.

The data were also analyzed on the basis of banks in the ten states showing the greatest, and the ten states showing the smallest, increase in deposits from 1939 to 1943. As in the case of individual cities, the proportion of total assets held in the form of Treasury obligations averaged almost the same for banks in both categories. The principal divergence is to be detected in connection with holdings of cash. The ten states with the smallest relative increase in deposits held a considerably lower proportion of total assets in the form of cash and due from banks. Included in the group with the smallest relative increase in deposits are several eastern states having many metropolitan banks whose excess reserves have fallen to a minimum. In the other group are a number of agricultural states, including a high proportion of country banks which have tended to retain a considerable amount of excess reserves. Whether differences in the proportion of cash holdings in the various states reflect differences in deposit growth or in the types of banks that predominate is not at all clear. At any rate the evidence fails to support the view that differences in relative deposit growth among groups of banks have exerted a major influence upon their portfolio policies.

DEPOSIT CONTRACTION AND SOLVENCY, A CASE HISTORY

The predominance of government securities in bank portfolios has simplified one important decision that the individual bank must

⁸ This principle is recognized in the procedure known as "valuation allowances," absolute and percentage changes in liquid assets and deposits over the period 1939-43.

make in case an increase in liquidity demands makes it necessary to convert earning assets into cash. This is the question of which assets to liquidate. Under circumstances prevailing in 1945, the choice of what to sell in case of a substantial increase in the demand for cash is pretty well restricted to Treasury obligations.

The possible importance of this change is suggested by the actual experience of a prominent western bank in the period after the first World War. This bank was one of the oldest, strongest and most conservative banks in the state. It was also one of the largest. During the war it experienced a considerable increase in deposits. Unfortunately for the bank, the most important account, that of a wartime government corporation, constituted more than a quarter of the bank's total deposits. After the conclusion of hostilities it was decided that these funds should be transferred to eastern banks preparatory to terminating the affairs of the corporation.

The problem this presented to the bank was made the subject of discussion between the bank's officers and the officials of the war agency. A plan was worked out through mutual agreement providing for the liquidation of the account by withdrawals of \$500,000 semi-annually until the total deposit, amounting to \$7,000,000, had been transferred. Since this meant allowing seven years to settle an account that had been built up in approximately two years, the agreement seemed to all parties not only reasonable but generous.

In tackling the problem of meeting the stipulated semi-annual payments, the administrative heads of the bank decided against undertaking to convert their most liquid loans. They reasoned that to follow such a policy would mean driving their most desirable customers to other banks. While the immediate problem could readily have been solved in this way, in the end the fruits of years of effort would have been lost, making it necessary to start all over again to build up a suitable clientele. Steps were accordingly taken to liquidate loans of the types regarded as least permanent or least desirable to retain in the future.

At the time the bank held a good many loans that had to be renewed, including cattle loans which were nominally of six months' duration but were used for financing breeding operations and therefore represented a somewhat longer use of the funds. These loans had expanded greatly under the pressure of the war but were not of a type that the bank, which was more of a city institution,

regarded as adapted to its long-run requirements. The bank worked out arrangements with one of the agricultural credit institutions to take over much of this paper. To do so, it was necessary for the bank to agree to some scaling down and to accept secondary loans for the balance. Because of the 1920 collapse in agricultural prices it became impossible to thaw out these secondary loans. The same decline in commodity prices led directly or indirectly to difficulties with other loans the bank had outstanding. Eventually the affairs of the bank reached a point where it could no longer be kept in operation. The institution was taken over by another bank at heavy loss to the stockholders, and its identity was lost. Whether or not the subsequent history of the bank would have been happier if it had made a different decision concerning the procedure of liquidation is perhaps debatable. In any case, the experience illustrates the dilemma of choosing among different types of assets.

With the present distribution of banking assets in this country, the situation is very different from what it was after the last war. It differs, first, in the possibility of choosing among types of assets, since the volume of nongovernmental obligations is today relatively so much smaller, and, secondly, in the volume of assets that are subject to deterioration in value as part of a general decline in commodity prices.¹⁵ Differences in the maturity of bank holdings of government securities may call for policy decisions in case of future liquidation, but the decision concerning what maturities to liquidate is considerably simpler than the choice formerly required among types of obligations and classes of obligors. This aspect of the liquidity problem has been perceptibly simplified.

The significance of the change that has occurred can readily be seen by inquiring what might be expected if a bank at the present time were to find itself confronted by the certain prospect of a reduction of one-fourth in the total of its deposits. Assuming that the bank stands somewhere near the average of all banks, it would hold government obligations equal to approximately three-quarters of its deposits, a substantial share of them in short maturities. It could sell government securities equal to the amount of the decline in deposits without disturbing the bank's relations with any of its other customers. With policies that are now in force, this opera-

¹⁵ On the other hand, it depends to a much greater extent on the market for Treasury obligations.

tion could be carried through without loss to the bank.¹⁶ Assuming a fairly typical distribution of maturities, it could be accomplished within a fairly short period of time by simply allowing assets to run off, whether or not the present support of the security market by the Federal Reserve Banks was maintained. Whether the bank could undergo this degree of shrinkage without jeopardizing its earnings position is perhaps another question, though even with a substantial decline in deposits many banks could expect to show profits as high as characterized the period before the wartime expansion in deposits. In any case, it is clear that most banks are equipped, through the type and liquidity of assets they hold, to meet a contraction of deposits in a way that was not approached in the past.¹⁷

THE RATIO OF CAPITAL TO ASSETS

For some time before the outbreak of the war in 1939 it had come to be widely accepted that capital accounts (capital, surplus, undivided profits and reserves for contingencies) should be equal to at least 10 percent of a bank's total assets.¹⁸ This ratio served as a convenient rule-of-thumb for bankers and was endorsed by the Federal Deposit Insurance Corporation.¹⁹ In June 1939 total capital accounts of all banks in the country stood at 11 percent of assets. Four years later, as a result chiefly of the great expansion in assets

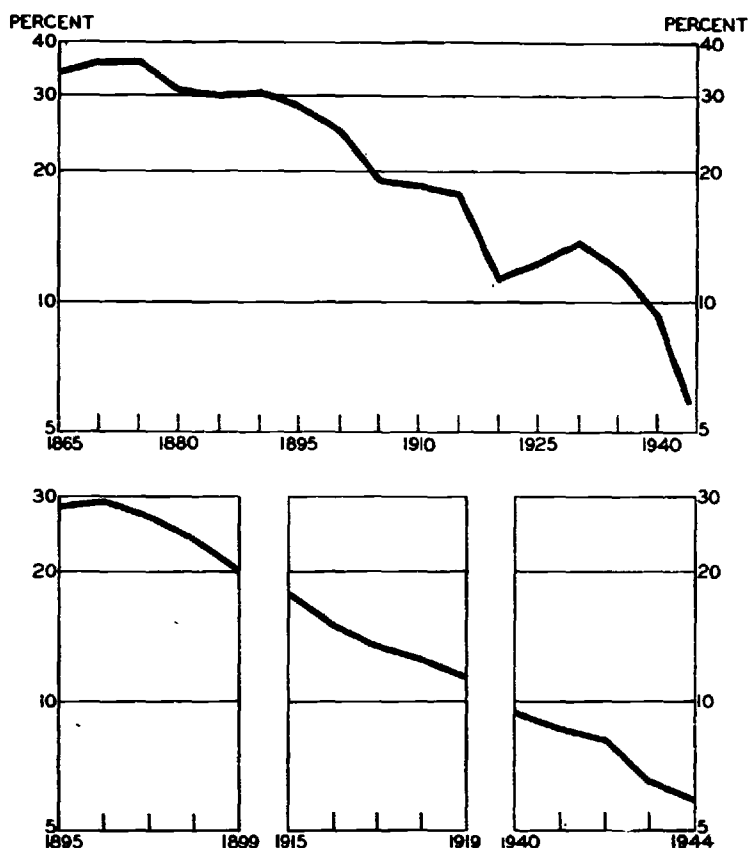
¹⁶ This analysis relates to the liquidity problem of an individual bank resulting from a transfer of deposits to other banks in the system. An attempt by all banks to liquidate long-term securities on a large scale would tend to defeat itself because of market reactions. However, the large holdings of short-term securities which could be allowed to mature would seem to preclude the necessity of such an attempt. The question of changes in aggregate deposits is considered above, pp. 14 ff.

¹⁷ Furthermore, even in the absence of excess reserves, the higher ratio of cash to deposits means that a greater proportion of cash would become available in case of a permanent contraction in deposits. Every decline in the volume of deposits would release reserves previously required to be held against these deposits. Since a higher reserve ratio is now required, a correspondingly greater amount of cash would be set free for every dollar of decrease in deposits. The principal courses open to a bank which was subjected to a heavy drain of deposits would include the sale of Treasury bills and the maturing of short-term assets, the reduction in holdings of cash and balances with correspondents, the sale of longer-term Treasury obligations and borrowing from the Reserve Banks. While some bankers are strongly opposed to borrowing, a certain amount of borrowing has already occurred and in case of necessity borrowing could be expected to become more general.

¹⁸ Cf. the detailed historical and analytical discussion in Roland I. Robinson, "The Capital-Deposit Ratio in Banking Supervision," *Journal of Political Economy* (February 1941).

¹⁹ See *Annual Reports* for 1936, 1937 and 1939, pp. 27, 15 and 12, respectively.

CHART 4—RATIO OF CAPITAL ACCOUNTS TO TOTAL ASSETS OF NATIONAL BANKS, 1865-1944



Source: Comptroller of the Currency, *Reports*; and Federal Deposit Insurance Corporation, *Reports*.

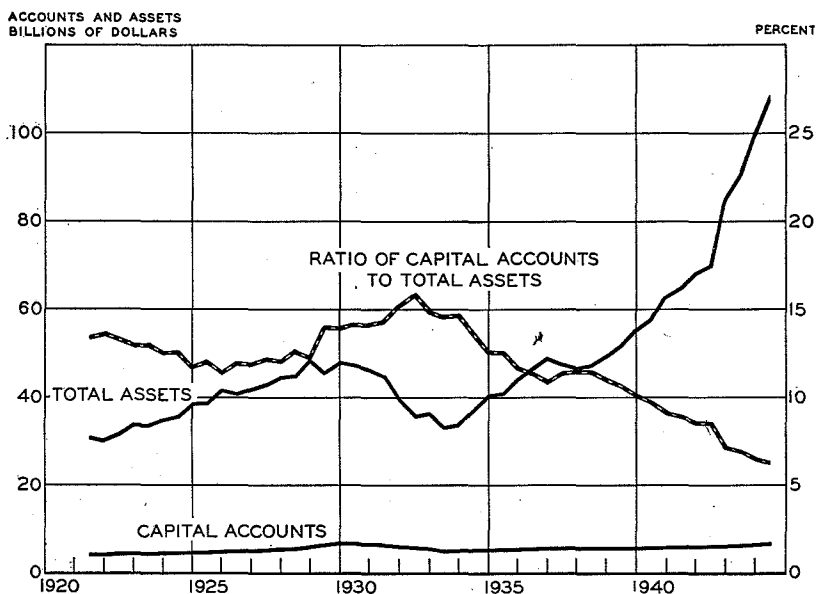
following the start of heavy war financing, the ratio for all banks had fallen to 7 percent.²⁰ While the ratio of capital to assets had declined almost without interruption from the start of banking in this country, the decrease from 1939 to 1944 was unprecedented in both magnitude and abruptness (see Charts 4 and 5).

The most striking feature in connection with the ratio of capital to assets is not so much that the ratio has changed as that the ratio

²⁰ A majority of banks increased the amount of capital during this period but the increase was not sufficient to keep pace with the growth in assets. In 1943, 63.5 percent of the net profits of national banks were added to capital accounts (Treasury Department, Press Release No. 41-49, April 13, 1944). A few banks sold additional stock.

varies so greatly among banks in different parts of the country. At the middle of 1943 the ratio of capital to assets for banks in different states ranged from a high of 13.5 percent in Vermont to a low of

CHART 5—CAPITAL ACCOUNTS AND TOTAL ASSETS OF MEMBER BANKS, 1921-44



Source: *Banking and Monetary Statistics and Member Bank Call Reports, 1942-44.*

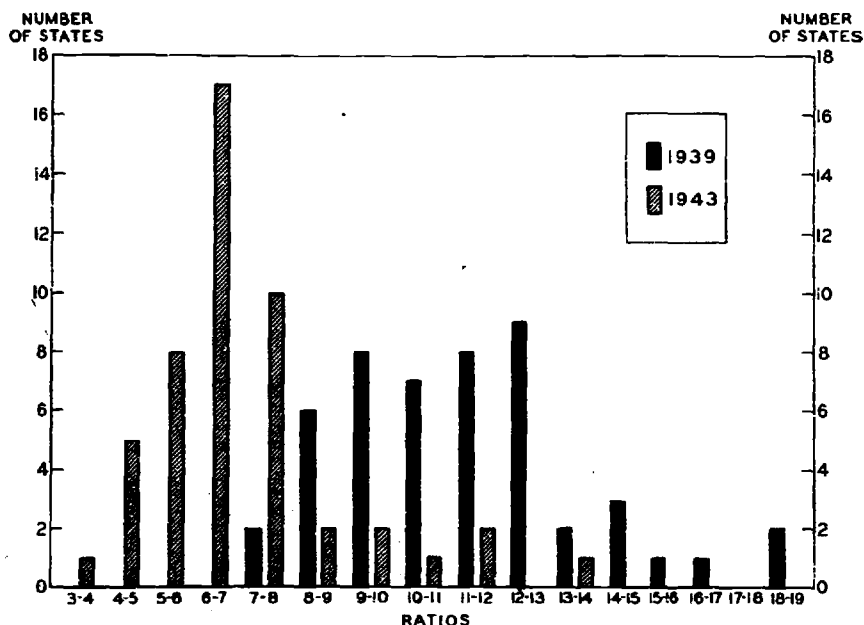
3.6 percent in Arizona. Differences of this character are not a new phenomenon. In 1939 as in 1943 the banks of Vermont had the highest ratio of capital to assets, though it was then 18.8 percent, while Arizona, with 7.8 percent, had next to the lowest. In both periods the highest ratios prevailed, generally speaking, in the eastern, and especially the New England, states and the lowest ratios in the western, and especially the far western, states.

The effect of changes in the relationship of capital to assets from 1939 to 1943 was to bring about a somewhat greater uniformity among banks with respect to the ratios maintained. This may be seen from Chart 6 showing by states the extent of concentration in different categories of capital-to-assets ratios. In 1939, the number was more or less evenly distributed among banks with capital

ratios ranging from 8 and 9 percent of assets to those with ratios between 12 and 13 percent. In 1943, there was a marked concentration in the group with capital ratios of from 6 to 7 percent of assets with a substantial number in each group above and below, and relatively few in any other category.

It is important to recognize that the recent decline in the capital ratio has come about almost wholly through an expansion in holdings of Treasury obligations. The ratio of the capital of commercial banks to so-called "depreciable assets" (total assets less cash and Treasury obligations), which is sometimes offered as a more significant comparison than the ratio of capital to all assets, remained relatively stable in the period from 1933 to 1944. The ratios for all insured commercial banks of capital to deposits, to total assets and to assets other than cash and government obligations are given in Table 4. During the period from the end of 1933 to the middle of 1944 the

CHART 6—RATIO OF CAPITAL ACCOUNTS TO TOTAL ASSETS OF INSURED COMMERCIAL BANKS, BY STATES, 1939 AND 1943



Source: Federal Deposit Insurance Corporation, *Assets and Liabilities of Operating Insured Banks*.

ratio of capital accounts to total deposits declined by 64 percent, and the ratio of capital accounts to total assets by 58 percent. The ratio of capital to "depreciable assets," on the other hand, showed an increase of 12 percent between 1933 and 1944.

Thus the falling ratio of capital to total assets in the last ten years, and more especially in the last three, reflects chiefly the rising volume of assets which are subject to little if any depreciation. Even though the immediate safety of banks is not in question, there is still objection to a permanent departure from an accepted ratio. In the past half century there have been three periods of sudden change in the ratio of capital to assets of national banks (Chart 4). From 1895 to 1900 the proportion of capital to assets of national

TABLE 4—CAPITAL RATIOS OF INSURED
COMMERCIAL BANKS, 1933-44

End of	Total Capital Accounts per \$100 of —		
	Total Deposits	Total Assets	Assets Other Than Cash and Government Obligations ^a
1933 ^b	\$18.70	\$14.94	\$24.29
1934	15.77	13.24	26.30
1935	14.07	12.19	26.09
1936	12.84	11.26	24.60
1937	13.56	11.81	25.00
1938	12.93	11.33	25.62
1939	11.63	10.33	25.38
1940	10.51	9.44	24.38
1941	9.86	8.91	22.82
1942	8.03	7.39	25.99
1943	7.16	6.64	28.28
1944, June	6.75	6.29	27.19

Source: Federal Deposit Insurance Corporation, *Assets and Liabilities of Operating Insured Banks*.

^a Includes total assets minus United States government obligations direct and guaranteed and cash and due from banks.

^b Data for December 30, 1933 include banks which became insured January 1, 1934.

banks fell from 28 percent to 20 percent, most of the change occurring between 1897 and 1899. From 1915 to 1920 the ratio went from 18 percent to 11 percent, most of the change occurring between 1915 and 1918. From 1940 to 1944 the ratio declined from 9.4 percent to 5.8, the largest decline taking place in 1943.

The decline in the ratio of capital to assets in the earlier periods

was not reversed. Moreover, after the last war it was followed by the most prolonged and devastating period of bank failures in the history of this country. Objection to the low ratio now prevailing is largely based on the possibility that the present, or some still lower, ratio may come to be regarded as adequate. The ratio is thought of as a signpost whose function is to warn that there is danger in continuing to reduce the share of ownership to total assets. If the present relatively riskless assets should be replaced, in the course of time, by an average cross-section of assets, so low a ratio would not, it is alleged, provide sufficient protection.

The FDIC has made the suggestion that without a fairly high proportion of capital to assets, commercial banks may be unable to discharge their traditional function of financing private enterprise. "Bankers must be in a position to bear successfully the reasonable risks of such financing without imposing an undue burden of risk upon the Government."²¹ If they are unable to do so business and agriculture will presumably be compelled to obtain credit elsewhere, either from competing credit institutions or from governmental agencies. In this case the preservation of a privately owned and operated banking system, it is said, would be rendered increasingly difficult.²²

The lowering of the ratio of capital to assets has helped to offset the effect on earnings of the decline in the rate of interest. If, for example, the return per hundred dollars of earning assets should drop to half what it was while the volume of earning assets doubled, earnings, *ceteris stantibus*, would be the same as before. The greater this pyramiding, the lower is the rate of yield on assets that is required in order to provide a given return on capital. To the extent that a greater pyramiding diminishes the incentive to seek the most profitable uses of a bank's resources, its effect might be to divert funds into relatively riskless investments and away from venture capital.

Both bank reserves and capital accounts may be regarded as contributing, in somewhat the same way, to the protection of depositors. Since reserves are not subject to depreciation in value, the safety of deposits is presumably greater with a high ratio of reserves to deposits. Under a system of 100 percent reserves, for example,

²¹ Federal Deposit Insurance Corporation, *Annual Report, 1942*, p. 5.

²² *Ibid.*

there would be no need, as far as the protection of depositors is concerned, for any particular ratio of capital to assets. At the present time banks hold a considerably higher reserve ratio than they formerly did. Over the period from 1935 to 1943 the increase in the ratio of member bank reserves corresponded closely to the decrease in the ratio of capital accounts to bank assets. This inverse movement of reserves constitutes another factor offsetting any tendency for the decline in the ratio of capital to assets to weaken the protection afforded depositors.²³

A further consideration reducing the apparent significance of the decline in capital ratios is the increasing resort by commercial

²³ With a higher ratio of reserves (and other cash items) to total assets a smaller percentage of total assets is subject to depreciation. The protection afforded to depositors by a relatively high reserve ratio is equal to that afforded by a relatively high capital ratio if the fact that a smaller share of assets may depreciate just compensates for the fact that less of a cushion exists to absorb the loss resulting from any depreciation that may occur. This may be illustrated by a series of examples. We may assume a bank having skeletonized balance sheet items as follows:

Reserves	10	Capital	10
Investment	90	Deposits	90

Let us then assume two situations, one a doubling of deposits accompanied by a corresponding increase in both reserves and capital, and the other a doubling of deposits accompanied by no increase in capital but with reserves rising from 10 to 40. The first position is represented in Model A and the second in Model B.

Model A:	Reserves	20	Capital	20
	Investment	180	Deposits	180
Model B:	Reserves	40	Capital	10
	Investment	150	Deposits	180

With varying rates of depreciation in the value of investments, losses will be incurred under conditions represented by Models A and B, respectively, as follows:

<i>Percentage Decline in Depreciable</i>	<i>Total Amount of Loss</i>		<i>Loss to Stockholders</i>		<i>Loss to Depositors</i>	
<i>Assets</i>	<i>A</i>	<i>B</i>	<i>A</i>	<i>B</i>	<i>A</i>	<i>B</i>
10.0%	18	15	18	10	0	5
20.0	36	30	20	10	16	20
33.3	60	50	20	10	40	40
40.0	72	60	20	10	52	50
50.0	90	75	20	10	70	65

It is seen that, with a depreciation of one-third, the loss to depositors under either set of conditions would be the same. With a depreciation of less than this amount depositors would lose more under conditions of a relatively high reserve ratio, and with depreciation in excess of one-third depositors would lose more under conditions of a relatively high capital ratio. Total loss, including loss to both depositors and stockholders, would in all cases be less with a high ratio of reserves to total assets. Obviously, the protection to depositors would be still greater if the ratio of capital as well as the ratio of cash were relatively high. The models are sufficient to establish the conclusion, however, that protection to depositors is afforded by either method, with the degree of protection attributable to each depending upon the amount of depreciation which is assumed to occur. The point of equal protection is governed by the magnitudes of capital and reserves relative to total assets.

banks to what is known as "valuation allowances."²⁴ Instead of setting up separate reserve accounts, the values at which assets are carried on the books of a bank are currently written down by charges against earnings. Even assets of the highest quality may be written down in this way, though at a slower rate than lower-grade assets. The policy of asset valuation has been encouraged by examiners. It avoids disadvantages which attach to building up capital, surplus or reserve accounts, namely, the rigidity on the one hand and the pressure to adopt a more liberal dividend policy on the other. It also assures that provision for losses will be made in good times as well as in bad. The quantitative importance of valuation allowances at the present time is not known. It is apparent, however, that because its effect is to create a cushion against future depreciation of assets, it helps to accomplish one of the purposes formerly served by a relatively high ratio of capital to assets.

A relatively high ratio of capital to assets is sometimes defended as a means of giving the owners a stake in the business sufficient to assure careful administration.²⁵ It presumes that the smaller the owner's share, the greater is the temptation to take unwarranted chances with the bank's funds. While this reasoning carries the invidious implication that bankers might otherwise become careless with the funds entrusted to them, the maintenance of a relatively high capital ratio accords with the prevailing view that under the private enterprise system the proprietors' stake in business should correspond with their responsibilities.²⁶

INCIDENTAL FACTORS INFLUENCING BANK LIQUIDITY

A number of minor factors bear upon the problem of bank liquidity by influencing, for example, the degree of liquidity that now exists or the ability of banks to meet possible demands for cash out

²⁴ Also referred to as "unallocated charge-offs," "valuation reserves," "depreciation and amortization allowances," "reserve accounting."

²⁵ In few businesses is the ratio of owners' equity to total assets as low as it is in banking. Requiring a high ratio of capital to assets in order to assure caution is somewhat similar to the practice of imposing margin requirements in connection with purchases on the stock market.

²⁶ The same observation has been advanced in England where a considerably lower ratio of capital to assets prevails. In the first two years of the war the ratio for a group of leading joint-stock banks fell from 5.6 percent to 4 percent. At the end of 1944 it was approximately 3.2 percent.

of their own resources. As is indicated later, a by-product of the war loan drives has been temporarily to increase bank liquidity. This occurs apart from, and frequently in the complete absence of, any expansion in cash or reduction in total deposits. It is a consequence of the technicality that legal reserves are not required against war loan accounts of the United States Treasury. The purchase of Treasury obligations by individuals and businesses involves the transfer of large amounts of deposits from the public to the government, with the result that the reserves previously required against these deposits become classified as excess reserves. The effect is to increase the liquidity of the bank for the time being, since excess reserves render a bank more liquid than an equal amount of required reserves. With the disbursement of funds by the Treasury and the transfer of deposits back to private holdings, the excess of reserves created in this way is gradually reduced.

The addition thus made to excess reserves is largely a function of the growth in size of Treasury balances with banks. The liquidity that arises in this manner can be seen to be transitory. Excess reserves of such temporary character afford relatively little inducement to credit expansion, although they may lead banks to increase their holdings of short-term assets such as Treasury bills.

The liquidity of particular banks may also be affected by taxation, especially with the high rates now in force. Certain of the larger banks of the country are today subject to excess profits taxation at or near the maximum level of rates. Out of the additional net return such banks might derive by purchasing securities of longer average maturity, the government would take up to 95 per cent. Although the bank may see no need for being as liquid as it now is, it may nevertheless feel that the net addition to profits after taxes would not be sufficient to justify holding less liquid assets. Indeed, if it were not for the patriotic incentive to lend as fully as possible to the government, the bank might prefer to hold cash rather than acquire any sort of available earning assets except, possibly, tax-exempt securities. Even before the passage of excess profits taxation the low net return obtainable on many types of assets discouraged banks from lending and investing and was partly responsible for the high level of excess reserves prevailing during the 1930's.

The earnings outlook may be influential in determining whether

a bank assumes a less liquid position, for example, by reducing its idle cash or shifting to higher yield securities. Aside from the effect on the volume of a bank's liquid assets, earnings may also affect the extent of the demand for liquidity. A satisfactory earnings record is an indication of a bank's success and by inspiring confidence in the strength of the bank it may lessen the danger of a serious increase in cash withdrawals. In addition, earnings in excess of dividends may aid in building up capital and in establishing reserves for contingencies, even though they are of little importance in meeting an emergency.

During the early years of wartime expansion the earnings of large, and particularly of metropolitan, banks increased more rapidly than those of outlying banks. For a time, in fact, the income of many of the smaller country banks showed a declining tendency. Banks in all size groups experienced a growth of deposits and of earning assets in the form of government obligations yielding a low rate of return. By and large, the expansion of income from these assets more than offset the decline in yield from other assets of the city banks, but for many country banks it failed to do so. An important reason for this difference was that in the past the yield on assets of country banks usually averaged considerably above that of city banks. In general, therefore, the disparity between accustomed yield and the yield currently obtainable was greater for country than for city banks. Consequently the profits of banks in the interior were not aided by the growth in total assets to the same extent as those of banks in the larger centers.

With the continued expansion in deposits smaller banks also experienced a substantial increase in earnings and the number of banks failing to share in the general prosperity diminished. Not only have net earnings continued to improve but, except where local conditions such as the liquidation of war industries or a decline in farm income may be expected to result in a shrinkage of deposits, the prospect for generous earnings in the future remains excellent.