BANK FAILURES—
AN HISTORICAL PERSPECTIVE

By Carl M. Gambs

Bank failures have been the subject of considerable public interest in recent years. The U.S. National Bank of San Diego, with more than $900 million in deposits, failed in 1973. An even more spectacular failure occurred in 1974 with the demise of what had once been the nation's twentieth largest bank, the Franklin National Bank of New York, with $1.4 billion in deposits.[1] There were 13 failures of commercial banks in 1975, and 18—including two noninsured banks—in 1976. Three of these failures involved banks with more than $100 million in deposits.

These recent failures contrast sharply with the experience of most of the post-World War II period. In the 30 years beginning in 1943, no bank with deposits as great as $100 million failed and there were never more than nine bank failures in a single year (Chart 1).[2]

The recent increase in bank failures is a cause for concern, especially because of the several large banks involved. It is important to recognize, however, that the number of recent failures was small relative to the total number of banks: the 18 bank failures in 1976

represented only about one-eighth of 1 per cent of all banks and one-ninth of 1 per cent of total bank deposits. Furthermore, because of the substantial assets of banks which failed and payments made by the Federal Deposit Insurance Corporation (FDIC), only a handful of bank depositors suffered a financial loss due to a bank failure. In 1975, 99.96 per cent of all depositors in insured banks which failed received their deposits in full and at least a portion of other deposits in the insured banks will be paid when the banks are eventually liquidated. Furthermore, the failure rate for banks is quite low relative to that for other businesses. The bank failure rates were 9 per 10,000 for 1975 and 12 per 10,000 for 1976. For all U.S. business, Dun and Bradstreet records the failure rate for 1975 as 45 per 10,000 firms. No other business category recorded as low a failure rate as did commercial banking.

While Chart 1 depicts the recent rise in bank failures, it also shows that failures are still somewhat below the levels of the early 1940's and well below the levels of the late 1930's. Chart 1 also shows the level of bank failures between 1900 and 1932. Not shown is 1933—when 3,840 bank failures occurred. Not only was there a large number of bank failures during the early 1930's, but during the prosperous years of the 1920's as well.

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[1] This deposit figure was down from more than $2.6 billion on June 30, 1973.

[2] A bank failure is defined as a bank which goes out of business because of financial difficulties. Included are banks which are liquidated or merged with another bank with assistance from the FDIC.

Chart 1
BANK FAILURES, 1900-76

Number of Banks

Number of Banks
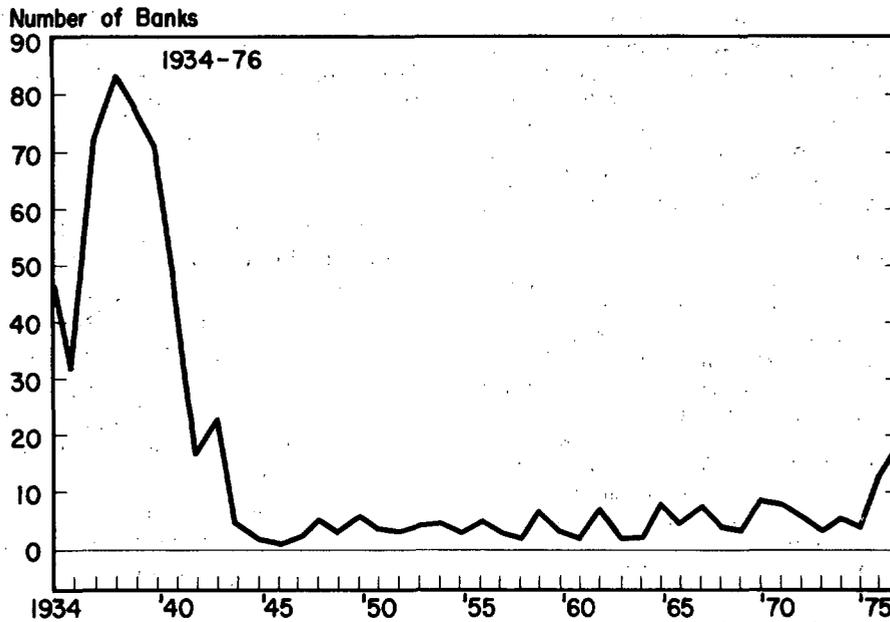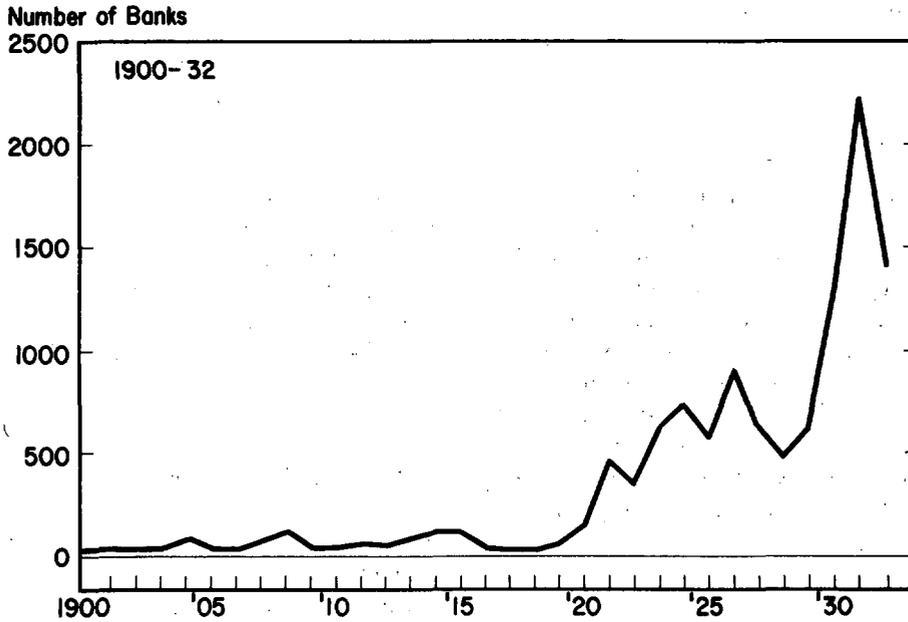
NOTE: Data for 1900-32 are for suspended banks—banks which ceased the redemption of their deposit liabilities with cash. Prior to the advent of FDIC, bank

This article attempts to ascertain what factors may be responsible for the bank failure rate being much lower since the late 1930's than in earlier periods. It is important to learn what changes have led to the decline in bank failures for two reasons. First, a better understanding of the factors associated with past bank failures may contribute to an understanding of why the failure rate has risen recently, and what, if anything, needs to be done to deal with it. Second, a number of the changes in regulations which occurred in the 1930's are currently being debated. Among other things, bank entry restrictions, branch banking laws, the need for bank capital, the role and nature of bank supervision, and the payment of interest on demand deposits are under consideration at either the Federal or state level. Proper evaluation of these proposed

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(Note to Chart 1, continued from page 11.)

failures and suspensions were synonymous, with the exception of the approximately 15 per cent of suspended institutions which reopened following a temporary suspension. Today, most banks which fail are merged into another bank without ever suspending deposit redemption. A bank failure is thus defined as a bank which has closed because of financial difficulties.

Prior to the existence of the FDIC, banks were frequently forced to close their doors because of illiquidity—the inability to redeem deposits with cash. An illiquid bank might or might not be insolvent and an insolvent bank might or might not be illiquid. Today, a bank failure occurs when the relevant supervisory authority declares the bank to be insolvent—that is, recognizes that the bank's liabilities exceed its assets. Since the valuation of bank assets is sometimes quite difficult, the decision to declare a bank insolvent is to some degree an arbitrary one. In the case of Franklin National, for example, the decision to declare the bank insolvent was delayed for a considerable period of time while a suitable merger partner was obtained. See Joseph F. Sinkey, Jr., "The Collapse of Franklin National Bank of New York," **Journal of Bank Research,** 7 (Summer 1976), pp. 113-22.

changes requires knowledge of the effect that they might have on the bank failure rate.

This article attempts to explain the decline in the failure rate by determining which of the many changes of the early 1930's involved factors which were determinants of the high failure rate in the 1920's and early 1930's. It may be inferred that the changes which caused the decline in the bank failure rate were changes in the factors which had contributed to bank failures in the earlier period. The article thus presents results of an empirical analysis designed to determine the factors that caused the high failure rates of the 1920's and early 1930's.

POSSIBLE CAUSES OF BANK FAILURES

A comparison of the failure rates for the period prior to 1933 and for the period after 1933 suggests that the banking system or its environment changed in some fundamental way during the 1933-34 period. A number of factors have been identified as partly responsible for the change. The most prominent change was the introduction of the FDIC. Some observers have suggested that the institution of deposit insurance was *the* reason for the decline in the failure rate. As Friedman and Schwartz put it:[3]

> The reduction in failures is not of course attributable to any correspondingly drastic improvement in the quality of bank officials or in the effectiveness of the supervisory authorities; nor is it attributable to the addition of still another examination agency, though the addition of the FDIC apparently meant closer supervision and examination of insured state banks. Rather, it reflects, in the main, two other factors. First, "bad" banks, though perhaps no less frequent than before, are seldom permitted to fail

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[3] Milton Friedman and Anna Jacobson Schwartz, *A Monetary History of the United States, 1867-1960* (Princeton: Princeton University Press, 1963), pp. 437 and 440.

if they are insured; instead, they are reorganized under new management or merged with a good bank, with the FDIC assuming responsibility for losses in connection with depreciated assets. Second, the knowledge on the part of small depositors that they will be able to realize on their deposits even if the bank should experience financial difficulties prevents the failure of one bank from producing "runs" on other banks that in turn may force "sound" banks to suspend. Deposit insurance is thus a form of insurance that tends to reduce the contingency insured against.

Friedman and Schwartz have provided a hypothesis for the decline in failures, but they make no attempt to test it. Although they use the phrase "of course" in the initial sentence quoted here, their conclusions are by no means obvious. The FDIC has undoubtedly contributed importantly to the low failure rates of recent decades, but other factors should not be ignored.

While there may be no reason to believe that there has been a drastic improvement in the quality of bank officials, it has been widely suggested that the events of 1929-33 produced a generation of U.S. bankers which was much more concerned with bank safety than its predecessors. It also seems at least a possibility that the extension of a Federal examining agency to state banks may have had an impact on bank behavior. In the 1920's, as today, most banks which failed were alleged to have been the victims of mismanagement or fraud. Since bank supervisory practices are aimed at preventing this sort of situation and since some state bank supervisors may have been somewhat lax, it seems possible that the extension of Federal supervision to state banks may have had an impact on bank behavior.

One FDIC-related change that may have reduced bank failures was a change in bank chartering policies. Prior to 1935, competition between state and national banking systems had acted to prevent the chartering agencies from restricting the number of new bank charters granted.[4] It was widely believed that the ease of obtaining a bank charter—and the resulting large number of banks—was one of the major causes of the large number of bank failures during the 1920's.[5] The establishment of the FDIC in the Banking Act of 1933 substantially restricted the freedom to enter banking. Since Federal deposit insurance was virtually a necessity, Federal approval of bank charters was required for the first time. One estimate is that tighter entry policies resulted in 2,200 fewer banks than would have been in existence with the earlier policies.[6] The reduction in competition resulting from more restrictive entry policies may have been a contributor to the decline in the failure rate.

A number of other major changes in banking laws and regulations aimed at reducing the number of bank failures were instituted at about the same time as the creation of the FDIC. The payment of interest on demand deposits was prohibited and interest ceilings were imposed on time deposits. These changes were supported by arguments that competition for deposits had led to banks paying high rates of interest and then acquiring risky assets in order to produce sufficient income to make the interest payments.[7] Similarly, investment

[4] See Sam Peltzman, *Entry in Commercial Banking*, unpublished Ph.D. dissertation, University of Chicago, 1965, pp. 3-9, for a discussion of this situation.

[5] For example, Federal Reserve Committee on Branch, Chain, and Group Banking, *The Dual Banking System in the United States*, 1933, pp. 96-101; Economic Policy Commission, American Bankers Association, *The Bank Chartering History and Policies of the United States*, New York, 1935, *passim.*

[6] Sam Peltzman, "Bank Entry Regulation: Its Impact and Purpose," in *Studies in Banking Competition and the Banking Structure* (Washington: Comptroller of the Currency, 1966), pp. 296-97.

[7] See Leonard L. Watkins, *Commercial Banking Reform in the United States* (Ann Arbor: University of Michigan, School of Business Administration, Bureau of Business Research, 1938), pp. 73-87.

banking and commercial banking were legally divorced because of the belief that commercial banks also engaging in investment banking had been induced to acquire low quality assets marketed by the investment banking affiliate.

The liberalization of branch banking laws in many states also occurred in the mid-1930's. Proponents of branch banking argued that branch banking systems were better able to withstand bank failures than were unit banking systems.[8] These claims seem to have been widely accepted, as substantial changes in state restrictions on branching occurred following the bank failures of the early 1930's. At the end of 1929, statewide branching was allowed in only 9 states and limited area branching in another 10.[9] By June 1, 1936, branching was widespread, with statewide branching legal in 18 states and limited area branching permissable in another 17.[10]

Perhaps the most important factor differentiating the past few decades from the 1920's and early 1930's is the extent to which the recent period has been characterized by economic stability. The most severe economic decline in U.S. history occurred in the 1929-33 period, and even the generally prosperous 1920's was a time of economic depression for one important segment of the U.S. economy—agriculture. While the relative prosperity of agriculture has varied over the post-World War II period, at no time has there been the sort of serious problems which existed in the 1920's. It seems possible that a substantial proportion of the decline in bank failures has been due to the increased stability of the economy.

It should be noted that these possible causes of bank failures are by no means mutually exclusive. A poorly managed bank may be

particularly vulnerable to fraud. Extremely bad management may not prove fatal to a bank until adverse economic conditions lead to unexpected deposit outflows or loan losses. Thus, even if every bank which fails is judged to have suffered from mismanagement or fraud, or operated in an overpopulated banking market, it may well be the case that adverse economic conditions will be the proximate cause of many bank failures. In addition, any of the factors noted earlier is more likely to lead to the failure of a bank with a low capital-deposit ratio than one which is well capitalized.

EMPIRICAL ANALYSIS

The preceding discussion suggested that certain changes in the early 1930's may have produced the low bank failure rates of recent decades. Also, the discussion implied that some of these factors may have been responsible for the high failure rates of the 1920's and early 1930's. This section presents results of an empirical examination designed to determine the factors that did contribute to bank failures in the pre-1933 period.

Factors Examined

The empirical examination focuses primarily on the factors cited earlier as possible causes of bank failures. It has been suggested that the high bank failure rate was due in part to "over banking"—too many banks relative to the demand for banking services—a situation due in part to liberal chartering policies. The impact of this factor is assessed by looking at the **ratio of bank offices to population.** But, since a given population could support more bank facilities when it had a higher demand for banking services as evidenced by a relatively large quantity of deposits, the **ratio of bank deposits to population** is also included.

Another factor considered is the type of bank supervisory agency. Between 1923 and 1932, the failure rate for state banks was more than twice as high as that for national banks. Since

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[8] The argument that unit banking was one of the contributing factors to bank failures in the 1920's and 1930's is still made. See George J. Benston, "How Can We Learn from Past Bank Failures?" *The Bankers Magazine* (Winter 1975), pp. 19-24.

[9] *Federal Reserve Bulletin,* 16 (April 1930), p. 258.

[10] *Federal Reserve Bulletin,* 22 (November 1936), p. 858.

the two classes of banks tended to have differences other than the type of supervisor, Federal supervision was not necessarily responsible for the lower failure rate, but this possibility should be examined.[11] The impact of the type of supervisory agency is measured by the **percentage of banks with a national charter.**

Since branching laws varied from one state to another in the period under consideration—as they do now—it is possible to test the argument discussed earlier that branch banking reduced failure rates. The **ratio of branches to banks** is used to measure the extent of branch banking in a state. Regulatory factors, other than branching laws, may lead to failure rates differing across states. The empirical analysis attempts to measure the impact of these differences with a statistical technique involving the use of **state "dummy" variables.**[12]

In measuring the impact of the rate of economic activity on bank failures, the analysis makes a distinction between agriculture and the rest of the economy. There are two reasons for doing this. First, the problems of agriculture in the 1920's are commonly believed to have been a major factor leading to bank failures. Second, pre-1929 data are available on the agricultural economy of individual states, but not for the nonagricultural economy. The variable used here to measure the agricultural economy is the **percentage change in gross income from corn, wheat, and cotton** weighted by the size of this income in 1929 relative to total personal income in 1929. Since there are no data on nonagricultural (or total) income annually by states for most of the period under consideration, **percentage changes in an index**

of the value of industrial production[13] for the whole nation were used, with allowance for differential effects across states.

In addition to the factors discussed earlier, it has been suggested that the **percentage of bank deposits in time and savings deposits** might affect the failure rate. The standard explanation for this is that a high ratio of these deposits would increase bank costs due to the interest paid on them.[14] It is also possible that these deposits would be more likely to decline—putting pressures on bank liquidity during periods of economic adversity. The roles of **bank size and capitalization** are also commonly suggested as important determinants of failure. Large and well capitalized banks are believed to be less likely to fail.

Factors Not Directly Examined

Three factors which are sometimes suggested as responsible for the decline in bank failures are not suitable for consideration with the techniques used here. The hypothesis that the separation of commercial and investment banking made the banking system safer seems to apply only to the very largest banks, not the small banks which constituted the majority of failures in this study. In any case, data do not exist for inclusion of this factor in the study. There is no way to statistically examine the hypothesis that a generation of bankers became more cautious as a result of the failure rate of the 1930's. The payment of interest on demand deposits is beyond the scope of the study,[15] and

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[11] Ideally, an examination of Federal supervision would also examine state chartered Federal Reserve member banks. Unfortunately, the data necessary to do this are unavailable.

[12] It must be remembered that any variable not otherwise included which varies among states will affect the coefficient on these dummy variables.

[13] The index was constructed by multiplying the Federal Reserve index of industrial production by the wholesale price index for all commodities other than farm products and foods.

[14] See, for example, Albert H. Cox, Jr., *Regulation of Interest Rates on Bank Deposits,* Vol. 17, No. 4 (Ann Arbor: Michigan Studies, 1966).

[15] The ratio of time and savings deposits to total deposits which is included here does, however, give a measure of the effect of the more important type of interest bearing deposits.

has been carefully examined by others,[16] who concluded that it was not an important determinant of bank failures.

Regression Analysis

Multiple regression analysis was used to examine the impact of the various factors on bank failures in the 1922-32 period. This period was selected because data for some of the variables to be examined were not available prior to 1922. The year 1933 was excluded because failures in 1933 were qualitatively different than failures in earlier years: all banks were closed when the national bank holiday was declared in March 1933 and only banks which met certain standards were allowed to reopen. The observations in the study are yearly data on the 48 states which existed during the period. This pooling of cross-section (state) and time series information makes it possible to examine the effect of the different geographical, structural, and regulatory factors, while at the same time measuring the effect of changes in local and national economic conditions.

In the regression analysis, the dependent variable is the variable used to measure the incidence of bank failures—the percentage of chartered banks in a state which suspended during the year. The independent variables are the variables used to measure the factors said to have caused bank failures. These variables include the ratio of bank offices (head offices plus branches) to population, the ratio of bank deposits to population, the percentage of banks with a national charter, and the ratio of branches to banks.[17] Also included among the independent variables are 48 state "dummy" variables to measure state effects.[18] These variables show the effects of factors specific to

individual states which are not otherwise included in the regressions—for example, differences in the regulatory climate. The weighted percentage change in agricultural income in both the current and previous year was included as an independent variable as well as the percentage change in the value of the industrial production index. There were actually 48 variables for the change in the value of industrial production—one for each state. In addition, the ratio of time and savings deposits to total deposits, the mean deposit size,[19] and the ratio of capital to total deposits were included.

Estimates of three equations are presented here. The first includes all the independent variables except average deposit size—which could not be included because it is so highly correlated with the ratio of offices to population and deposits to population. In the second equation, the deposits-population ratio was excluded and the average deposit size was included. The third equation includes only variables which are significantly different from zero in a statistical sense.[20]

Results of Regression Analysis

Table 1 provides the results for all variables except the value of industrial production and state dummy variables. Table 2 provides the results for these variables in regression 3. The coefficients for the value of industrial

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[16] See Cox; and Benston, "Interest Payments on Demand Deposits and Bank Investment Behavior," *Journal of Political Economy*, Vol. 72 (October 1964), pp. 431-49.

[17] Dummy variables for different types of branching laws were also tried—with similar results.

[18] The sum of the state dummy variable coefficients is constrained to equal 1.0.

[19] Average size could not be included with the ratio of bank offices to population and the ratio of bank deposits to population without creating an extreme situation of multicollinearity.

[20] The actual form of the equations estimated was

$$SB = aX + \sum_{i=1}^{48} \beta_i V_i + \sum_{i=1}^{48} \gamma_i S_i$$
$$\Sigma \gamma_i = 0,$$

where SB = the number of bank failures in the ith state at time t,

X = the variables listed in Table 1 in the ith state at time t,

V_i = the ith value of industrial production variable, and

S_i = the ith state dummy variable.

Table 1
ESTIMATES OF BANK SUSPENSION REGRESSIONS
(Dependent Variable is Per Cent of Banks Suspending)

INDEPENDENT VARIABLES	REGRESSIONS		
	1	2	3
Offices/Population	11.721 (2.47)†	6.857 (1.45)	7.094 (1.97)†
Deposits/Population	−0.021 (−4.15)†		−0.020 (−4.20)†
Per Cent National Banks	0.396 (0.12)	0.167 (1.36)	
Branches/Banks	1.019 (0.42)	2.101 (0.59)	
Per Cent Change in Agriculture	1.607 (−4.91)†	−1.414 (−4.28)†	−1.586 (−4.90)†
Per Cent Change in Agriculture (−1)	−0.636 (1.75)*	−0.741 (−2.00)†	−0.698 (−1.93)*
Time and Savings/Total Deposits	9.508 (1.26)	10.295 (1.32)	12.130 (1.72)*
Average Size		−0.641 (−0.96)	
Capital/Deposits	−18.346 (−1.34)	−7.698 (−0.56)	
Constant	3.581 (0.54)	−6.327 (−0.99)	1.759 (0.54)
R^2	.508	.489	.505
Adjusted R^2	.389	.365	.390

t-values in parentheses.
*Statistically significant at the 90 per cent level.
†Statistically significant at the 95 per cent level.
NOTE: For state dummy variables and value of industrial production, see Table 2.

Table 2
REGRESSION 3 STATE AND VALUE OF INDUSTRIAL PRODUCTION COEFFICIENTS

STATE	BANK SUSPENSION (PER CENT)	STATE DUMMY VARIABLES		VALUE OF INDUSTRIAL PRODUCTION	
		Coefficient	t-value	Coefficient	t-value
Alabama	3.5	− 2.470	− 1.63	− 0.104	− 1.50
Arizona	6.1	1.400	1.07	− 0.105	− 1.51
Arkansas	6.1	0.594	0.37	− 0.232	− 3.28†
California	1.7	3.182	1.53	− 0.057	− 0.82
Colorado	3.7	0.537	0.44	− 0.053	− 0.78
Connecticut	1.1	− 0.153	− 0.11	− 0.083	− 1.20
Delaware	0.5	0.611	0.41	− 0.056	− 0.81
Florida	8.1	5.629	4.31†	− 0.039	− 0.57
Georgia	6.2	0.246	0.17	− 0.054	− 0.79
Idaho	4.9	− 0.535	− 0.38	− 0.097	− 1.41
Illinois	3.8	4.746	2.97†	− 0.223	− 3.27†
Indiana	3.5	− 1.137	− 0.95	− 0.163	− 2.39†
Iowa	5.6	− 0.859	− 0.47	− 0.163	− 2.34†
Kansas	2.8	− 2.523	− 1.20	− 0.051	− 0.74
Kentucky	2.2	− 3.420	− 2.61†	− 0.080	− 1.17
Louisiana	2.6	− 0.322	− 0.21	− 0.010	− 0.15
Maine	0.4	− 4.861	− 2.28†	− 0.022	− 0.32
Maryland	1.0	− 0.599	− 0.47	− 0.059	− 0.85
Massachusetts	0.9	3.211	1.70*	− 0.058	− 0.84
Michigan	2.6	− 0.765	− 0.51	− 0.191	− 2.82†
Minnesota	4.4	− 0.308	− 0.21	− 0.091	− 1.32
Mississippi	5.1	− 1.215	− 0.82	− 0.121	− 1.64
Missouri	3.9	2.100	1.32	− 0.132	− 1.91*
Montana	6.0	0.994	0.74	0.063	0.88
Nebraska	5.4	− 0.335	− 0.17	− 0.085	− 1.18
Nevada	5.7	3.005	2.15†	− 0.351	− 5.10†
New Hampshire	0.4	− 5.387	− 3.42†	− 0.003	− 0.04
New Jersey	0.9	0.397	0.24	− 0.061	− 0.88
New Mexico	5.5	1.163	0.66	0.107	1.57
New York	0.7	13.682	3.51†	− 0.070	− 1.02
North Carolina	5.7	− 0.651	− 0.46	− 0.200	− 2.93†
North Dakota	8.4	− 1.240	− 0.48	− 0.171	− 1.94*
Ohio	1.9	− 0.394	− 0.29	− 0.091	− 1.32
Oklahoma	3.7	0.222	0.12	0.018	0.26
Oregon	3.0	− 0.218	− 0.18	− 0.076	− 1.08
Pennsylvania	1.3	1.625	1.07	− 0.083	− 1.21
Rhode Island	0.9	0.765	0.41	0.041	0.58
South Carolina	9.4	1.588	1.00	− 0.168	− 2.42†
South Dakota	9.8	1.757	0.88	− 0.212	− 2.75†
Tennessee	2.7	− 2.831	− 2.13†	− 0.079	− 1.15
Texas	2.0	− 0.417	− 0.20	0.002	0.03
Utah	3.3	− 1.362	− 1.04	− 0.153	− 2.25†
Vermont	0.2	− 5.972	− 2.22†	− 0.015	− 0.22
Virginia	2.0	− 3.728	− 2.76†	− 0.054	− 0.78
Washington	2.6	− 0.710	− 0.57	− 0.085	− 1.25
West Virginia	3.2	− 1.954	− 1.51	− 0.135	− 1.97†
Wisconsin	2.1	− 3.009	− 2.12†	− 0.087	− 1.28
Wyoming	4.3	− 0.078	−	− 0.002	− 0.02

*Statistically significant at the 90 per cent level.   †Statistically significant at the 95 per cent level.

production and state dummy variables are not reported for regressions 1 and 2, but are similar.

Results of the regressions indicate that, contrary to widespread belief, neither the type of supervisory agency nor the extent of branching seems to have had an effect on the bank failure rate in the 1922-32 period. This is shown by the finding that both the percentage of banks with national charters and the ratio of branches to banks were found to be statistically insignificant variables. The widespread belief that the supervisory agency and branching status affected the failure rate is probably due to the fact that these variables are correlated with other more important factors. There was also no evidence that the capital-deposit ratio was an important determinant of the failure rate. Surprisingly, the average size of bank did not have a statistically significant effect on the failure rate.[21]

The regression results in Table 1 indicate that the independent variables included in equation 3 (other than state and value of industrial production coefficients) were statistically significant and affected bank failures in the expected manner. Thus, these variables help to explain bank failures in the 1922-32 period. The results show that increases in the number of bank offices relative to the population increased the bank failure rate, while increases in the volume of bank deposits relative to population reduced it. Equation 3 implies that a reduction in the number of bank offices from the 2.8 per 10,000 population prevailing during the sample period to the 2.0 in existence today would have reduced the percentage of banks suspending from 3.6 per cent per year to 3.0 per cent. The results also show that an increase in the ratio of time deposits to total deposits increased the failure rate. It is impossible to determine whether this is due to higher interest costs or whether it

results from time deposits being more sensitive to changes in income.

As expected, declines in agricultural income led to an increase in the bank failure rate. Both the current and previous years' change in agricultural income affected the failure rate. When the change in agricultural income 2 years earlier was included in the equation, its coefficient was not statistically significant.

Changes in the value of industrial production had the expected effect. In 43 of the 48 states, the coefficient was negative—implying that reductions in the value of industrial production increased the bank failure rate. None of the five with the "wrong"—i.e., positive—sign had a statistically significant coefficient. There were, however, some surprises in the relative size of the coefficients across states. It was anticipated that changes in the value of industrial production would be most important in industrial states. While this did tend to be the case in the states along the Great Lakes, the coefficients for the northeastern states were not particularly large. And, certain nonindustrial states had high coefficients—for instance, Nevada, Utah, and South Dakota.

While some of the state dummy variables are statistically significant, they are relatively unimportant in the regression. This indicates that bank failures were not primarily a result of factors unique to individual states. The correlation between the rate of bank suspensions and the state dummy variables is relatively low. The very high positive coefficient for New York reflects the unique banking market in New York City.[22]

In summary, the regression results indicate that a substantial proportion of the bank suspensions in the period between 1922 and 1932 can be explained by different structural and economic conditions across states and over time. Increases in the number of bank offices

[21] However, equation 3, as estimated, includes both the number of banks and total deposits, so bank size is indirectly included.

[22] This occurs because the very high ratio of deposits to population in the state would, according to other variables in the equation, imply a much lower failure rate than actually occurred.

in a state and in the proportion of bank funds coming from time deposits were associated with higher failure rates, while increases in per capita deposits led to a lower failure rate. Reductions in agricultural income and the value of industrial production led to increases in bank failures. There was no evidence that differences in the extent of branch banking, in the importance of national banks, or in the ratio of capital to deposits had any effect on bank failures. Capital-deposit ratios and bank size did not seem to substantially affect the failure rate.

CONCLUSIONS

The analysis in this article indicates that much of the decline in the rate of bank failures since the 1930's can probably be attributed to the improved stability of the economy in the post-World War II period. The increased restrictions on bank entry which came into being during the 1930's have also apparently contributed to a lower failure rate. The decline in the failure rate cannot, however, be attributed to the increase in branch banking.

The analysis of this paper suggests that there is no reason for expecting an expansion of branch banking to reduce bank failures. Changes in bank entry regulations, if they increased the number of bank offices, could be expected to lead to higher failure rates. Of course, no policy change should be based solely on its effect on the bank failure rate. Other factors, including the effect on economic efficiency, may be more important.

Given the importance of variations in economic activity as determinants of bank failure in the period studied here, it seems likely that the increase in bank failures in 1975-76 was primarily due to the severe recession. This implies that the number of failures in 1977 is likely to be substantially less than in the two previous years. It would be a serious error to ignore the effects of the recession and conclude that the 1975-76 failure

rates indicate a serious weakening in the U.S. banking system.

APPENDIX
Data Sources

Agricultural income—the sum of wheat, corn, and cotton income—is from **Statistical Abstract of the United States,** various years. The changes in income are weighted by the ratio of this total in 1929 to state personal income for 1929 from U.S. Department of Commerce, **Personal Income by States Since 1929,** Washington, D.C., 1956.

Bank deposits, time deposits, and the number of banks are from Board of Governors of the Federal Reserve System, **All Bank Statistics,** Washington, D.C., 1959. Private banks are excluded.

Branch statistics are from U.S. Comptroller of the Currency, **Annual Report,** various years, and from unpublished reports of the U.S. Committee on Branch, Group, and Chain Banking.

Population is from U.S. Bureau of the Census, **Current Population Reports, Population Estimates,** series P-25, No. 139, "Estimates of the Population of States: 1900 to 1949," Washington, D.C., June 27, 1956.

Suspended banks are from Board of Governors of the Federal Reserve System, **Banking and Monetary Statistics,** Washington, D.C., 1943, Section 7. Private banks are not included.

The value of industrial production index is the product of the Federal Reserve industrial production index and the wholesale price index for all commodities other than farm products and foods. The price index is from U.S. Bureau of the Census, **Historical Statistics of the United States, Colonial Times to 1970,** Bicentennial Edition, Part I, Washington, D.C., 1975, p. 200.