

Division of Research  
Graduate School of Business Administration  
The University of Michigan

October, 1979

IMPACT OF BANK FAILURES ON LOCAL ECONOMIES

Working Paper No. 192

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This paper presents the results of a study of the impact of bank failures in the United States on local economic conditions. The study was designed as an initial examination of some of the cost-benefit relationships of certain traditional public policy constraints in commercial banking.

Present regulations over entry and exit, portfolio, and capital clearly impose costs through distortion of credit allocation and alteration of price relationships from the competitive norm. Unless there are definable benefits which can be measured, there is reason to question the need and the necessity for present regulations over private decision-making by bank management.

The methodology used in this study consists of comparisons of seven measures of economic activity in counties which experienced bank failures with those measures in counties which did not experience failures. It is expected that the results of these tests will provide some indication of whether or not bank failures significantly affect economic growth and stability. If no significant difference is found between measures of economic activity in the experimental counties and similar measures in the control counties, then prevention of bank failures is not necessarily synonymous with the public interest in maintaining our basic system of payments and intermediation by avoiding widespread bank runs and attendant credit cancellations. Such a finding would raise serious questions concerning regulatory restrictions or requirements which heretofore derived legitimacy from the assumed necessity of the prevention of the failure of banks.

The commercial banking industry is widely recognized as one of the most highly regulated industries at both the federal and the state levels. These

regulations take the form of restrictions on the loan portfolio, prohibitions on stock ownership, and pressures for the maintenance of "adequate" capital. Extensive bank regulation is a direct consequence of the economic pandemonium of the late 1920s and early 1930s contemporaneous with a reduction of more than one-third in the number of banks in operation and resulting in the cessation of bank services known as the Bank Holiday of 1933. It is generally acknowledged, however, even by many proponents of varying degrees of portfolio controls, that the nature of bank regulation has contributed to a reduction in bank competition which has resulted in industry performance inferior to that which would otherwise exist. It is argued that bank regulatory practices may in fact contribute to artificially high barriers of entry, various forms of inefficiency, and other monopolistic characteristics such as lower output, higher prices, less innovation and, by implication, less adherence to consumer preferences than would otherwise be observed.<sup>1</sup> To the extent that regulatory statutes or examiners' pressures inhibit the ability of management to display its own judgment, the ability of the market to recognize and reward good management and to recognize and penalize bad management is inhibited. Given the not inconsequential costs of some forms of regulation, portfolio controls, and capital requirements, the question of why the regulations continue to be imposed must be raised.

The maze of regulation by various federal and state agencies, often in combination if not always in agreement, is considered justified by the presumed necessity for the public interest of preventing bank failures.<sup>2</sup> Proponents of restrictive bank regulation maintain that such regulations

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<sup>1</sup>Kaufman, Money and the Financial System: Fundamentals, p. 97; Tussing, "The Case for Bank Failure," p. 130, Journal of Law and Economics (1967).

<sup>2</sup>Gilbert, "Bank Failure and Public Policy," Federal Reserve Bank of St. Louis Review (November 1975), p. 7.

are necessary to prevent the failure of a bank because failure (1) generates a loss of confidence in the banking system, presumably attributable to actual and/or potential deposit losses, which may lead to bank runs and the unwarranted failures of other banks; (2) leads to a deterioration of the local financial infrastructure; and (3) spawns a spiraling contraction in production, employment, and income.<sup>3</sup> Such proponents of restrictive regulatory policies insist that the failure of a commercial bank frequently has consequences "much more serious than the failure of any other business; bank failures adversely affect many people and may jeopardize the community's continued economic vitality."<sup>4</sup> The clear inference is that the prevention of individual bank failures is in this sense uniquely related to the protection of the public interest (as distinct from individual failures occurring in other industries).

Nevertheless, there exist those who contend that the prevention of individual bank failures is not synonymous with the protection of the public interest. Proponents of this view maintain that in fact, restrictive regulatory policies serve merely to reduce the downside risks for established bank management and existing shareholders.<sup>5</sup> More fundamentally it is asserted that, given the existence of some reliable policy of deposit insurance, the failure of an individual bank does not necessarily result in a loss of confidence in the banking industry, widespread bank failures, or the resultant deterioration in the financial infrastructure.

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<sup>3</sup> Kaufman, Money, p. 91.

<sup>4</sup> Scott and Rose, "The Bank Failure Problem Re-examined," Michigan State University Business Topics, p. 5.

<sup>5</sup> Robinson and Wrightsman, Financial Markets: The Accumulation and Allocation of Wealth, p. 412.

Knowledge of and confidence in the available deposit insurance serves to prevent runs on otherwise sound banks, thus reducing the contingency insured against. Furthermore it is generally acknowledged, even among some proponents of restrictive regulatory controls for the banking industry, (1) that bank failures in recent decades have induced neither loss of confidence in banks in general nor additional failures, (2) that the pressures which cause an individual bank to fail during epidemics of bank failures are generally independent of that bank's prior investment policies,<sup>6</sup> and (3) that the failure of a few banks, even very large banks, is unlikely to precipitate widespread bank runs unless the Federal Reserve permits a severe decline in the money supply over a relatively short time.<sup>7</sup>

Proponents of less restrictive regulatory practices argue that,

... the extensive regulation of banking in the United States was not ostensibly designed to prevent bank failure, but rather to protect the economy and the depositor. Over the years protection of the public interest and prevention of bank failure have become so linked in the minds of legislators, supervisory personnel and bankers, that they are used interchangeably.<sup>8</sup>

The term "bank failure" has been used to mean two things, the closing of a particular business firm (bank), and the effects of that closing on the local economy. To the extent that the latter meaning is insignificant, the former meaning is divested of any sense of unique social importance.

In a consumer-oriented economy, the preservation of individual business units per se has never been the aim of public policy. The establishment

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<sup>6</sup> Gilbert, "Bank Failure," pp. 10, 12.

<sup>7</sup> Benston, G.J., "How We Can Learn From Past Bank Failures," Bankers Magazine, Vol. 158, 1975, pp. 21, 22.

<sup>8</sup> Tussing, "Meaningful Bank Failure: A Proposal," Journal of Industrial Economics, Vol. 18, 1970, p. 242.

of safeguards for banks and bank operations has explicitly been rationalized as a risk-reduction policy for the user of bank services, rather than for the investor in bank stock. Moreover, it is asserted that there exist, and can be developed further, a variety of procedures for mitigating the potential interruption of services to bank customers (depositors and borrowers), and that in this way business and economic repercussions may be avoided.<sup>9</sup> In addition, substantial changes in the banking environment, independent of the imposition of extensive regulation, serve to limit and constrain any effects of the failure of an individual bank on the public interest. These changes include better-educated and better-trained bank managers and employees, structural changes such as expansion of branch banking and the acquisition and management of several independent banks by a single enterprise, more efficient money and capital markets, and the expansion of monetary and fiscal policy alternatives.

As noted previously, federal deposit insurance for "small" deposits has essentially eliminated the potential for the money supply contractions precipitated in the past by bank runs. The prospect of runs on the banking system by large depositors is unlikely because of the potentially large opportunity costs involved.

All of the foregoing, however, does not eliminate the possibility for drains on the local banking community. The essential question, therefore, regarding the possible adverse effects of failure of a bank on the economic activity of a community remains.

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<sup>9</sup>Tussing, "Meaningful Bank Failure," pp. 247-251.

Evidence to support either the pro- or anti-regulation position is virtually nonexistent. The serious implications of this void are obvious: we need to know more about the cause-and-effect relationships between banks and their customers insofar as growth and development (positive and negative) are interrelated. To assert either that adverse local economic conditions precipitate bank failure or that bank failures and consequent worsening of local business conditions justify stringent portfolio controls, capital requirements, among others, rests upon assumptions that may or may not be true.<sup>10</sup>

This study represents an attempt to determine empirically the relationship, if any, between bank failures and the public interest. For the purpose of this study we have defined public interest as protection against the precipitation of adverse economic conditions or the interruption of that economic growth which might reasonably be expected in the absence of bank failure.

This study explores the general proposition that failure of a bank leads to adverse and depressed conditions in the economy of the markets formerly serviced by the bank. This general proposition is embodied in the hypotheses that a bank failure leads to (1) a decrease in population growth; (2) a decrease in personal income; (3) a reduction in employment; and (4) a reduction in bank deposits. However, for purposes of statistical analysis, the following hypothesis was tested: economic growth in counties which experience bank failures is the same as economic growth in counties which do not experience bank failures. The hypothesis as stated implies that a bank failure does not result in serious economic disruptions or threaten the

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<sup>10</sup>See Scott and Rose, and, to some extent, Gilbert.

vitality of the community.<sup>11</sup> Should the available evidence not support this hypothesis, then it may be inferred that communities which experience bank failures will, as a result of those failures, display economic characteristics different from the communities which do not experience bank failures. While a statistically exhaustive investigation would require the alternative hypothesis that communities which experience bank failures assume "stronger" economic characteristics, these authors consider only the remaining alternative, that communities which experience bank failures assume less desirable economic characteristics, the relevant one for the problem at hand. Consequently, should the evidence not support the null hypothesis, one implication must be that individual bank failures, distinct from widespread, epidemic occurrences, do in fact so detrimentally affect economic activity in a locale that economic policy objectives should properly include the prevention of bank failures. A finding of this nature would aid in justifying the use of strong regulatory restrictions, such as portfolio controls, for the purpose of preventing bank failures in contrast to the lack of analogous restrictions for the express purpose of preventing the failure of other kinds of businesses.

If economic growth is impaired by incidents of bank failure, then we would expect to find that two counties with similar characteristics and growth rates over a period of time would show marked differences if a bank--

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<sup>11</sup>This does not imply that particular individuals (owners, employees or some customers), may not suffer detrimental effects from the failure of a particular bank. Individuals are penalized for making wrong decisions in a free market economy. Further, in general, the insulation of individuals from all instances of economic hardship is not an objective of bank regulation. Any such insulation (for example, unemployment benefits), is generally considered to be the province of income or welfare policies.



or, as occurred in some counties, several banks--failed. In this case we would expect economic growth in the counties which did not experience bank failures to be higher than in the counties which did experience bank failures. We have attempted to provide some answer to this question by subjecting the data to tests designed to establish whether or not there is any difference between two population parameters.

The following variables were employed as measures of economic activity: (1) population, (2) retail sales, (3) median household income, (4) number of employees, (5) total reporting business units, (6) dollar amount of taxable payroll, and (7) total bank deposits. Other variables were considered which may be equally valid measures of economic activity; however, sufficient data were available only for those variables listed above.

A county was identified as a bank failure county if it was the home office of a bank closed because of financial difficulties or merged with other banks with the financial aid of the Federal Deposit Insurance Corporation (FDIC). Data were obtained, where possible, for each county in which a bank failed during the period 1960-74 for five years prior to the year in which the failure occurred.<sup>12</sup> Sixty-two of the eighty-five counties identified are included in the sample of failure counties. We chose the period 1960-74 to include the longest post-world war period during which federal deposit insurance was in effect and for which county economic data are available.

An attempt was made to match each failure country with a control county which exhibited no more than a 10 percent deviation from the failure

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<sup>12</sup>We originally attempted to obtain data for twenty measures of economic activity for counties experiencing bank failures since 1950; however, much of the data proved to be unobtainable.

county in more than one variable in any of the five years prior to the year of the bank failure. The search for a control county is first made in the same state. Available data were obtained for each county, for each of four years including and subsequent to the year of the bank failure.<sup>13</sup> Then the percentage change in each variable was calculated for one-, two-, and three-year periods beginning with the year in which the bank(s) failed, for each bank failure county and for each control county. The percentage changes in the economic variables for communities in which bank failures have occurred were tested against the percentage changes for the control counties to provide comparisons of performance as measured by growth in the relevant economic variables and comparisons of variability. The results of this study are based on an assortment of statistical procedures. This eclectic approach stems from the lack of knowledge about the distributional properties of the relevant populations and from the anticipated small samples for tests concerning any one year. We consider this approach particularly appropriate in view of the absence of any real theories of the relationship between bank failures and economic activity that might suggest other statistical procedures. We employ various methods of testing the equality of parameters ostensibly from two different populations. The degree of agreement in the results of the various tests will, we hope, allow some conclusions concerning the hypothesized relationship.

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<sup>13</sup> Population, retail sales, and median household income data were obtained from various issues of Sales Managements annual "Survey of Buying Power." The number of employees and the total reporting business' units were obtained from various issues of County Business Patterns. Bank deposit data were obtained from various issues of the County and City Data Book, The Distribution of Bank Deposits by Counties, and Standard Metropolitan Areas.

We formed a sample consisting of all failure groups and obtained the percentage changes for each economic variable for each failure county. We formed a similar sample consisting of control counties. Basically, the test procedures involve comparisons of growth as measured by percentage changes in the economic variables. For computing percentage changes the base year in each case is taken as the year in which the bank failed.

We performed the F-test to compare the degree of stability in the failure group with that in the control group.<sup>14</sup> The F-test is a test of the hypothesis that two populations have the same variances. Results for the F-test hypothesis that the two samples are drawn from populations having equal variances for the same variables (Table I) generally support the hypothesis at the conventional levels of significance.<sup>15</sup> The notable exceptions are for the percentage change in the total number of employees and for the percentage change in taxable payrolls.

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<sup>14</sup> While strict usage of the F-test requires normal populations, independently drawn, our two samples of 62 counties each are large enough so that distributions are approximately normal. Moreover, although the samples were matched for the period prior to the failure it is not clear that the relationship continues to hold during the period after the failures; it is for evidence of a continued relationship that we are testing. It is not clear that the test is sufficiently sensitive to be seriously affected.

<sup>15</sup> The attained significance for the usual two-sided test is twice the output value. Twice the output value is the value to compare to the chosen significance level in performing a two-tail test.

Table I  
 F-TEST: DIFFERENCES IN PERCENTAGE CHANGES FROM YEAR OF  
 BANK FAILURE

Variable	One Year		Two Years		Three Years	
	F-Statistic	Signif. Level	F-Statistic	Signif. Level	F-Statistic	Signif. Level
Population	1.276	.3542	2.275	.0034	2.117	.0084
Retail Sales	1.839	.0208	1.877	.0238	2.4301	.0018
Household Income	1.070	.7946	1.309	.3306	1.2859	.3722
Bank Deposits	*	*	1.514	.5712	1.3526	.7288
# of Employees	5.406	.0000	3.605	.0000	1.0914	.8002
# of Business Units	1.6217	.1258	1.501	.1980	1.7080	.1234
Taxable Payrolls	12.558	.0000	8.4208	.0000	2.0339	.0420

\* Insufficient data available

Tests were performed to determine whether any significant differences exist in the means of percentage changes for each variable from the entire failure county sample and from the entire control county sample.<sup>16</sup> These results are reported in Table II. The significance levels indicate the probability that the reported t-statistic would occur if in fact the null hypothesis is true. In column (1) we report the t-statistic calculated from the difference of the control county mean and the failure county mean for the percentage changes in each variable from the year of the bank failure to the year after the bank failure. At a 5 percent level of significance we cannot reject the hypothesis that economic activity (as measured by our test variables) in counties which experience instances of bank failures is the same as economic activity in

<sup>16</sup>In strict usage, the t-test for any significant difference between two means requires two samples of a normally distributed variable from two populations having equal variances. Our two samples of 62 counties each are large enough so that distributions are approximately normal; and for large samples the equal variances are not required. See F-test results in Table I; see also J. Kmenta, Elements of Econometrics, p. 145, p. 147.

those which do not. Even at a 10 percent level of significance, only the percentage change in the number of business units for the first year after the failure can be considered different for the two samples; the control counties had a significantly larger increase, or a lower decrease, on average than did the failure counties. Columns (2) and (3) contain the results for the changes from the year of the bank failure to the second and third year, respectively. We find in none of these variables statistically significant differences between the sample of failure counties and the sample of control counties.

Table II  
T-TEST: DIFFERENCE IN PERCENTAGE CHANGES FROM YEAR OF  
BANK FAILURE

Variable	(1) One Year		(2) Two Years		(3) Three Years	
	T- Statistic	Signif. Level	T- Statistic	Signif. Level	T- Statistic	Signif. Level
Population	-1.295	.1980	.828	.4095	.870	.3861
Retail Sales	-.403	.6876	.264	.7920	1.023	.3088
Household Income	.778	.4380	.669	.5050	.535	.5938
Bank Deposits	*	*	-1.115	.2814	-1.512	.1544
# of Employees	.390	.6975	.392	.6963	.217	.8289
# of Business Units	-1.891	.0622	-.799	.4267	.385	.7013
Taxable Payrolls	.962	.3391	1.04	.3008	.476	.6358

\* Insufficient data points are available to calculate percentage changes and the test statistics.

The Mann-Whitney U test, unlike the t-test, is a nonparametric test. The Mann-Whitney U statistic is based on the number of times an observation from one sample precedes an observation from the second sample in the sample formed by combining all observations from both samples and arranging this combined sample into a single sequence of observations increasing in magnitude. If the hypothesis that the two random samples are drawn from a common unspecified population, then high (or low) observations should be just as likely to come from the first sample as from the second.

The results of the Mann-Whitney U test are reported in Table III. For each variable tested the results do not allow us to reject the hypothesis that economic growth in counties which experience bank failures is the same as in counties which do not experience bank failures; the failure sample and the control sample are drawn from a common population and can be expected to display common characteristics.

Table III  
MANN-WHITNEY U TEST OF PERCENTAGE CHANGES FROM YEAR OF  
BANK FAILURE

Variable	One Year		Two Years		Three Years	
	U-Statistic	Signif. Level	U-Statistic	Signif. Level	U-Statistic	Signif. Level
Population	1764.0	.8501	1281.0	.2768	1208.0	.3492
Retail Sales	1717.0	.6631	1371.0	.5929	1310.0	.7848
Household Income	1719.0	.6707	1346.0	.4913	1292.0	.6965
Bank Deposits	*	*	28.0	.11**	16.0	.025*
# of Employees	847.00	.7542	829.00	.6354	590.00	.7916
# of Business Units	681.00	.0721	734.00	.1855	582.00	.7202
Taxable Payrolls	845.00	.7406	874.00	.9429	564.00	.5689

\* Insufficient data points available to calculate percentage changes and calculate the test statistic.

\*\* Approximations formed by interpolation.

The median test is a nonparametric procedure for testing the likelihood that two samples have been drawn from populations with the same median. The test is similar to the Mann-Whitney U test in that it is a ranking of the combined samples. Unlike the Mann-Whitney U test, the median test may be used whenever the scores for the two groups are at least ordinal. As such it is not as powerful a test as the Mann-Whitney U test; however, it is less sensitive to ties in the data. If our results from the Mann-Whitney U tests are valid and do not derive from some spurious characteristics of the data, then the results of the median test, shown in Table IV, would be in agreement with the results of the Mann-Whitney U test.

Table IV  
 MEDIAN TEST: PERCENTAGE CHANGES FROM YEAR OF  
 BANK FAILURE

Variable	One Year		Two Years		Three Years	
	Median	Signif. Level	Median	Signif. Level	Median	Signif. Level
Population	.0063	.5720	.0072	.2828	.0195	.4227
Retail Sales	.0615	.4280	.1366	.1689	.2299	.4227
Household Income	.0444	.4280	.0769	.2828	.0912	.4227
Bank Deposits	*	*	.1853	.1735	.4323	.5952
# of Employees	.0365	.4141	.0857	.4141	.1210	.3173
# of Business Units	.0003	.0634	.0069	.0634	.0044	.5000
Taxable Payrolls	.0939	.4141	.2136	.4141	.3318	.1705

As expected, the results from the median test lead to substantially the same conclusions as those from the Mann-Whitney U test. In almost every case, no significance between the failure sample and the control sample is reported. The single example is for the number of business units. The control group average increase (or decrease) of business establishments is higher (or lower) than that of the failure group for the one-year and the two-year periods following the year of the bank failure if a level of significance higher than 6 percent is chosen. For the two-year period, the median test results are different from the Mann-Whitney U test significance result of 18.6 percent. Given the number of observations available for the test (84 out of 124), the Mann-Whitney U statistic is a more powerful test, and the tenor of the results continue to suggest that there are essentially no differences between the characteristics of the failure counties and the control counties.

#### Summary

The commercial banking industry is subject to various regulatory constraints which some observers believe inhibit competition, efficiency, and innovation. These regulatory constraints for preventing bank failures are said to be necessary because of the detrimental effects of bank failures on the markets previously serviced by the failed banks.

We have attempted to examine the validity of this justification of regulatory constraints by using various methods of analyzing the changes in certain key economic variables for counties in which bank failures occurred and comparing these changes with analogous changes in the control counties. The results of the F-test for variability, and the t-test, the Mann-Whitney U test and the Median test for differences in the economic variables all tend



to support the conclusion that economic activity in counties which experience bank failures does not differ significantly from economic activity in those which do not. Individual bank failures, as opposed to widespread or epidemic bank failures, do not appear to make a significant difference to local market development.

This conclusion suggests that economic havoc does not necessarily attend bank failures; therefore, regulations designed primarily for the purpose of preventing bank failures provide no discernible economic benefits. Given the costs associated with such regulations, we conclude that any higher incidence of bank failures that might result from fewer restrictions has no systematic consequences in terms of altered economic growth or well-being.

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