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PAPER READ BY MR. HOMER JONES

BEFORE THE

ANNUAL MEETING OF THE AMERICAN STATISTICAL ASSOCIATION

ATLANTIC CITY, NEW JERSEY DECEMBER 28, 1937

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USES OF STATISTICS IN BANK ADMINISTRATION AND SUPERVISION

Summary

The fundamental function of bank supervision, as it has existed for the past fifty years and still exists today is that of reducing the risk of bank failure; that is, the risk that the value of the assets of a bank may fall below the amount of its liabilities (pp. 2-3).

The two major avenues by which such control of risk of failure may be maintained are: (1) by exercising an influence over the respective portions of a bank's funds which represent equity and which represent debt (pp. 3-5); and (2) by controlling the quality of assets held by banks (p. 3).

The low ratio of bank capital funds to total bank funds presents a very serious problem. The average ratio for all insured commercial banks in 1937 was 11.7 percent. More than two-thirds of the large banks of the country have capital funds of less than ten percent of total funds (p. 6). The position that banks must have small capital in order to be adequately profitable is subject to question (pp. 9-12).

Rules for controlling the quality of assets held by banks fall into two categories; rules which apply to the assets in general, for example, the limitation to total extensions of credit to any one borrowing interest; and rules which attempt to control the quality of specific categories of assets (pp. 12-13).

The usefulness of bank earnings data as a basis for developing principles in the granting of charters for new banks and branches and

for other supervisory policies seems doubtful in view of the lack of homogeneity of the data (pp. 13-15). The success of the banking ventures seems to depend upon factors so specialized from case to case that general principles cannot be enunciated. Indeed, it appears that if freedom of entry into business is to be permitted in any sizable portion of the economic system, there is no reason why freedom of entry should be denied in the banking field provided adequate standards are determined and adhered to (p. 14).

Although the Federal government has been fixing maxima in connection with certain banking costs in recent years, no adequate statement of principles for price fixing in this field have been worked out (pp. 15-16).

In conclusion, it appears that if banking is to remain a private-profit enterprise, bank supervision should be confined to requiring that a reasonable proportion of banking funds be supplied by owners and that assets held conform to minimum quality standards.

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Reasons for bank supervision

Bank supervision has existed for a variety of purposes. When bank notes constituted a sizable portion of the circulating medium of the country, such supervision was conceived of primarily as a means of regulating the quality of the currency. It might be supposed that when bank deposits were substituted for bank notes as the chief part of the country's currency, the main purpose of bank supervision became control of this new circulating medium. Actually, however, it appears that the supervision of the last fifty years has been conceived of primarily as a device for assuring minimum safety standards for a certain class of wealth. Supervision of commercial banks has rested upon essentially the same bases as the supervision of mutual savings banks, building and loan associations and life insurance companies. Together, these constitute a class of business institutions in connection with which the public early decided that the rule of _caveat emptor_ could not properly apply. Supervision of these financial institutions has attempted to control the quality of an economic service or commodity. Thus, bank supervision has fallen into that category of government functions which involves the standardization of commodities or services.

Federal deposit insurance and bank supervision

The preoccupation of bank supervision with the interests of bank customers, particularly depositors, has been somewhat altered by the introduction of Federal insurance of bank deposits. Insofar as their deposits are insured, most depositors have relatively little interest in the quality of the banks with which they deal. As of January 1, 1934, the fundamental raison d'etre of bank supervision changed. Previously, bank supervision was a service directly to banking customers. Since that date, bank supervision has become primarily a device whereby the government protects a government corporation from undue loss. This change does not necessarily mean that the socially desirable standards of bank supervision should now be higher than they should have been in the previous situation. The need for fireproof buildings is not greater when fire insurance is in operation than when it is non-existent. But, despite the change in the basis of bank supervision in recent years, its nature and the problems with which it has to deal have not changed fundamentally.

In the following analysis I shall assume that we are talking about a fractional reserve banking system operated for profit. I shall assume that the general business structure in which the banking system operates is in the main one of free enterprise and private profit. These assumptions may or may not conform to the existing situation. Furthermore, I mean to make no commitment as to whether these assumptions should exist in reality. It simply appears to me that they are useful assumptions for present analytical purposes.

Bank supervision and private enterprise

Bank supervision, as we have known it, and as I conceive of the term remaining significant, operates upon the assumption that banking is a private-profit enterprise. If banking is to remain a private-profit enterprise, the business men engaged in it must be free, within definitely prescribed limits, to exercise discretion in conducting their business and must be free to profit or suffer loss from their decisions.

While it is true that banking is possessed of a peculiar public interest, it is not in any useful sense a public utility; the laws, rules and logic applicable to other businesses which we term public utilities are not, for the most part, applicable to banking. Neither is it evident that the peculiar public interest which inheres in banking justifies arbitrary interference in the operation of banks. It is not uncommon to note that banking has a peculiar public interest and to assume that making this statement justifies any particular arbitrary interference in the business which may be suggested. I submit that it is necessary to decide definitely what sorts of interference are demanded by this peculiar public interest which inheres in banking and to reject all proposals for interference which do not conform to the principles decided upon.

The fundamental function of bank supervision is to reduce the risk of bank failure, i.e. the risk that the value of the assets of a bank may fall below the amount of its liabilities. As I see it, there are two chief avenues by which this control of risk of failure may be maintained. The first is by exercising an influence over the respective portions of a bank's funds which represent equity and which represent debt. The second is control of the quality of assets held by banks.

Control of bank capital

Let us consider first, possible rules concerning the capital of banks. It has long been customary for bank law and bank supervisors to provide for minimum absolute capital requirements. But no very definite or satisfactory proof has ever been forthcoming that this was a useful approach to the problem. Rather, the necessity is for rules drafted in the form of relations of equity to total banking funds. The simplest and most satisfactory statement of such rules sets up minimum relations of capital funds to total funds in a bank, or, otherwise stated, to total assets. Such a ratio shows the proportion of total funds which are supplied by owners as compared with creditors, and shows the proportion by which assets could depreciate before resulting in bank failure.

An alternative form of such rule has been suggested, namely, that a certain ratio of capital to assets which are subject to depreciation should be set up. However, such a policy has serious shortcomings since the character of business done by a bank in a particular year gives no assurance as to the type of business which will be carried on a year hence. At one time the assets of a bank may consist almost entirely of cash while a year later a great proportion of its funds may be invested in speculative securities. In fact, it is the hypothesis of the more speculatively inclined bankers that they will be able to shift from speculative investments to cash and short-term, high-grade securities at strategic times, and vice versa. Thus, a policy of making the required capital ratio dependent upon the character of assets held by a bank would prove most unsatisfactory.

In connection with certain problems, capital has sometimes been related to specific asset categories. For example, in deciding what volume of bonds banks might reasonably hold, capital has sometimes been related to total bond account.1/ Some such analyses have assumed that adequate reserves are set up in connection with other assets and that, consequently, all capital accounts are available as a cushion against depreciation in the bond account. On the other hand, some analyses have related total capital account to total loans, assuming that adequate reserves have been set up to provide for possible depreciation in other assets.2/ However, neither of these inconsistent approaches seems reasonable or useful. Total equity is available as a cushion protecting creditors against depreciation in total assets, not against depreciation in assets of some particular category.

During the past 60 or 70 years, the proportion of banking funds supplied by the owners has shown an enormous decline. In 1875, about 35 percent, and in 1890, 30 percent of the funds of the commercial banks of the United States were supplied by owners.3/ By 1920, owners were supplying only 12 percent. Since 1920, the ratio for the banks as a whole

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1/ Investment Bulletin, Indiana University, November 1937; Wall Street Journal, July 13 and July 28, 1937; Financial and Investment Review, University of Minnesota, October 1937.
2/ "If Bonds Decline" by E. Sherman Adams, Banking November 1937, pp. 22-23.
3/ Computed from Annual Reports of the Comptroller of the Currency.

has not changed materially.

Ratio of Total Capital to Assets
for
National, State (Commercial) Banks and
Loan and Trust Companies

Date (On or about June 30)	Ratio Total Capital to Assets[1]
1875	34.7
1880	30.6
1890	30.1
1900	20.6
1910	19.1
1920	11.8
1925	12.4
1930	14.5
1935	13.1
1936	11.4[2]
1937	11.7[3]

1/ Figures for 1875-1935 computed from Annual Reports of the Comptroller of the Currency.
2/ Computed from Annual Report of the Federal Deposit Insurance Corporation; includes all operating insured commercial banks.
3/ Computed from Assets and Liabilities of Operating Insured Banks, June 30, 1937, Report No. 7, Federal Deposit Insurance Corporation.

Approximately one-third of the bank deposits of the country are now in banks having capital of less than 10 percent of assets.[1] Over two-thirds of the very large banks of the country have capital ratios below 10 percent. No other business has attempted to operate with so small a portion of its funds supplied by owners. Even in the case of the

1/ Estimated from Federal Reserve Bulletin, August 1937, p. 798.

railroads and the public utilities, nominal equity has always amounted to at least 40 percent of assets.

The practice of commercial banks, of operating almost entirely with the funds of creditors and to only a very small extent with the funds of owners, has not been confined to the United States. In England, capital funds of commercial banks are 6 percent of total funds; in Germany, 8.8 percent; in Scotland, 9 percent; in Ireland, 9 percent; and in France, 10 percent.1/

Double liability

Previous to July 1, 1937, bank creditors were protected against asset depreciation to an extent considerably greater than that indicated by the capital ratio figures by double liability. Since the middle of 1937, however, this factor had ceased to be operative with respect to the bulk of the banks. Many aspersions have been cast upon the usefulness of double liability as a factor affording safety to bank creditors. However, a study of experience indicates that on the whole, some 45 or 50 percent of double liability assessments have been made good.2/ This would seem to indicate that from the standpoint of protection to depositors the capital of the banks has, in effect, been nearly a half greater than that which nominally appeared. Furthermore, collections might have been somewhat more complete if certain administrative reforms had been inaugurated.

1/ League of Nations Money and Banking 1936-37, Vol. II
2/ Annual Report of the Comptroller of the Currency for 1936, p/ 35.

The chief argument in support of abandonment of double liability was presumably the belief that bank stock would be more popular and the capital ratios of the banks would be increased. But no evidence has been forthcoming that capital ratios will be raised even though double liability is removed. Since capital ratios in other countries have declined to even lower levels than those of this country, there is reason to believe that the decline in the capital ratio is due to factors other than the existence of double liability. Possibly double liability did not contribute substantially to the proper operation of the banking system; but certainly it was not entirely without net benefit. There is no indication that anything is being substituted to take its place. In a sense it may be said that the capital of the banks of the country was reduced by approximately a third on July 1, 1937.

Official attention to the problem of a substitute for double liability has taken two chief forms. First, some pressure has been exerted to require capital ratios to be maintained at a certain minimum. Second, requirements have been instituted that surpluses shall be built up to a certain relation to par capital. But the surplus requirements seem to be without major significance. Their inadequacy is illustrated by the practice of increasing surplus by the simple device of reducing par capital. Any requirements of the supervisory authorities with respect to the relation of particular capital accounts to each other are of quite minor significance.

Capital superfluity

Bankers, students of banking, and bank supervisors have often given evidence of a vague feeling that banks must not have "too much capital". It has been alleged that if capital were too great in relation to total banking funds, operations would not be profitable. But so far as I know, there is no evidence to support this position and no principles have ever been devised showing how much capital is "too much". Apparently this concept is for the most part peculiar to the banking business. It is not commonly thought that other businesses will prove unprofitable if equity is too large in relation to total invested funds. It is true that many business men consider desirable the leverage which results from borrowing a large proportion of their funds. But it is generally recognized that such leverage introduces a highly speculative factor. It is peculiar that it should be thought that the greatest leverage is necessary in that business which presumably should be the most conservative of all businesses.

From an analytical standpoint it is difficult to see how the banking system, within any significant limits, could have too much capital. If additional capital were introduced into any given bank, an addition to gross earnings could be made by an amount equal to the earnings upon that specific increment. Thus, the additional capital could earn whatever it could have earned if invested directly in assets of comparable safety by its owners rather than through the medium of the bank. Thus, the owners of the bank as a whole presumably will earn upon their funds about the same amount as if they had continued to have only a portion of their funds invested in the capital of the bank and another portion invested directly outside the bank.

Presumably there will be an advantage to the capitalists from investing through the medium of bank stock rather than directly in other assets. First, specialized bank managers will make the investments. Second, risk will be reduced by the application of the law of large numbers. Since capital funds may be invested more or less permanently, incremental expenses resulting from incremental capital will be very slight. Apparently the argument that if banks are highly capitalized they will be unprofitable is a euphemistic way of saying that investments in bank stock will be taken somewhat out of the speculative class and placed in the investment class.

It is true that certain statistical analyses indicate that in practice there is some inverse correlation between the capital ratio of banks and the rate of earnings upon the capital of banks. However, this inverse correlation may be explained by two primary factors neither of which militates against high capital ratios either from the standpoint of bank supervisors or from the standpoint of investors in bank stock. In the first place it is to be expected that the rate of earnings on capital will be less in banks with the higher capital ratios because of the lower risk. When the earnings data of insured banks not members of the Federal Reserve System are adjusted for an assumed average loss of 1 percent per annum on total assets, the resulting rate of profits on capital shows no negative correlation with capital ratio.

PROFIT RATES ON BANK CAPITAL ACCORDING
TO RATIO OF CAPITAL TO ASSETS

Ratio of total capital account to total assets	Average net earnings per $100 of total capital account1/	Correction for losses2/	Theoretical profit per $100 of total capital account
.1% to 10%	$13.35	$12.50	$.85
10% to 20%	9.15	8.33	.82
20% to 30%	5.88	4.00	1.88
30% to 40%	4.53	2.86	1.67
40% to 50%	3.88	2.22	1.66
50% to 60%	4.25	1.82	2.43

1/ Arithmetic mean of ratios for 1936 computed for 7,459 insured commercial banks not members of the Federal Reserve System.
2/ This correction by an amount equal to 1 percent of total assets is based on a study of reported losses of national banks (fiscal years 1918-36). The figure is a very tentative one and the results of correction upon a basis of it are not exact. They simply give some idea of the sort of correction which needs to be made. Whether or not the assumption of independence of rate of loss on assets and capital ratio is proper, we do not know.

In the second place, a great many of the banks having high capital ratios presumably had planned to attract much greater amounts of deposits than they posses. As a result they not only have large amounts of capital in relation to total funds, but large investments in banking house, and a generally high overhead in relation to business. Thus, their low earnings are not due to the high capital, as such, but to the high overhead incurred in anticipation of larger volumes of business than actually resulted. If their overhead were adjusted to the amount of their business, the high capital should not be found an impediment. On the other hand, even though the high capital were reduced, earnings in comparison with those of banks with comparable total funds would be low because of the high overhead. The factors which we have analyzed do not seem to support the concept of over-capitalization of banks.

Control of quality of assets

We turn now to the second great category of rules in bank supervision, namely, those which exercise an influence over the quality of assets held by banks. A few rules may apply to the assets in general. For example, the rule which provides that the total extensions of credit to any one borrowing interest shall be limited to a certain percentage of capital funds or to a certain percentage of total assets, has proved a very useful one.

The quality of the loans of banks receive a great portion of the attention of bank supervisors. Some of the rules in this connection have to do with the security behind loans. For example, it is commonly required that a mortgage loan shall not be greater than a certain maximum percentage of the appraised value of the security. Rules with respect to security loans are now designed primarily with a view to general credit control and cannot be termed rules of bank supervision. Supervisors have long engaged in general quality classification of loans. Unfortunately the logic behind such classification has been obscured by the use of the term "slow" in connection with one of the major classes.

Clarification of loan classification would be promoted if the concept of degree of risk were in the mind of the person who is doing the classifying and if the substandard loans were thought of as those involving an undue degree of risk. Classification of loans depends, and apparently must continue to depend, upon the judgment of the examiners. They will consist both of loans which were unduly risky when made by the bank and those which have acquired unduly risky characteristics since acquisition. As a general principle, it is necessary that the banks shall dispose of loans so classified. The success of such classification depends upon a gradual growth of understanding between the supervisors and the bankers concerning proper quality standards.

Supervision of the securities held by banks has made use of somewhat more definite rules than have been possible in the case of loans. Ownership of equities has, for the most part, been prohibited. In the case of bonds, the end in view is to confine bank holdings to those having but a small risk of default. The use of the ratings of the private rating agencies in this connection is an attempt to apply uniform minimum quality standards.

The use of earnings data in bank supervision

Considerable interest has been evinced by bank supervisors in the earnings of banks. This interest is somewhat different from the interest of government in the earnings of public utilities. In the latter case, interest has been primarily with a view to limiting earnings to a reasonable level. But, generally speaking, bank supervisors have not been interested in restricting bank earnings. It appears that their interest is more nearly with an eye to actively aiding earnings. Apparently the supervisors exercise an influence on earnings in three ways: by controlling the number of banks, by keeping costs down, and by helping to maintain receipts.

Some statistical work has been done with the earnings of banks, with a view to developing principles in the light of which decisions might be made in the granting of charters for new banks and with respect to granting permission for establishment of bank branches. It seems quite improbable, however, that the data available are sufficiently homogeneous to give reliable principles with respect to the size of towns in which banks may be established, or any other objective criteria. The success of banking ventures seems to depend upon factors so specialized from case to case that general principles cannot be enunciated. Indeed, it appears that if freedom of entry into business is to be permitted in any sizable portion of the economic system, there is no reason why freedom of entry should be denied in the field of banking. It is true that banking has a peculiar public interest, but unless it can be shown that the protection of this public interest is dependent upon control of the establishment of new banking units, it would seem reasonable to refrain from arbitrary decisions not based upon general principles. So long as sufficient equity is required in the new units and so long as they are prohibited from acquiring assets of an unduly risky nature, there seems to be no reason why banks should not be established whenever it appears to the organizers that an opportunity for profitable operation is available. There is no reason to suppose that the judgment of supervisors with respect to the possibility of profitable operation is superior to that of persons desiring to invest their funds in new institutions.

Statistical analyses of bank earnings figures have sometimes been made in an attempt to contribute to criteria for deciding upon the closing of particular banks. Such attempts have not been notably successful. There are sufficient banks with inadequate equities or with unduly risky assets upon which the supervisors may exercise their inclinations to close banks. It is unnecessary for the supervisors to extend their closing activities to banks with adequate capital margins and with sound assets but which show earnings which do not conform to certain statistical norms computed by the supervisors. If capitalists are willing to continue to risk their funds in institutions of low earnings, while maintaining a sufficient investment and carrying on their business in a sufficiently conservative manner to protect depositors, there seems to be no good reason for supervisors concerning themselves about those earnings.

Price fixing in the banking field

Price determination in the banking field by government officials is becoming increasingly important. Many statistical analyses of banking data are conceived of as being useful in the price fixing process. But as yet no adequate statement has appeared justifying the extension of government price fixing to the banking field. Neither has anyone worked out the principles which should guide price fixing in this field nor the necessary accompanying principles of administration. Until such statements of principles appear, the burden of proof surely rests upon those who support the extension of price fixing to this field and who believe that the practice is administratively feasible. For four years the Federal government has been fixing maxima in connection with certain banking costs. It is becoming increasingly important that the principles for determining those maxima be stated.

The price fixing which I mention is not to be confused with broad influences upon interest rates which have long been exercised by governments and central banks and which constitutes so large a part of monetary control. Both the theory and practice of broad influences upon interest rates are quite different from the theory and practice of price fixing. The case for social control of, or influence upon, interest levels has been pretty well established, but that for government price fixing in the banking field is as yet lacking. We can attempt no analysis of the problem here, but it is to be noted that in cases in which government price fixing has been resorted to, either monopoly or great overhead costs, or both, have commonly been pre-existent conditions. Neither of these conditions seems to be inherent in the banking business.

In conclusion, it appears to me that if banking is to remain a private-profit enterprise, bank supervision should be largely confined to requiring that a reasonable proportion of banking funds be supplied by owners and that bank assets conform to minimum quality standards.

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