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ISSUES IN FINANCIAL REGULATION

Working Paper Series

Capital in Banking:
Past, Present and Future

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FEDERAL RESERVE BANK
OF CHICAGO

WP - 1991 / 10

Capital in banking: Past, present and future

George G. Kaufman*

The economic capital or net worth of banks represents the amount of funds available to be absorbed by losses before they must be charged against deposits. This concept of bank capital represents the difference between the market value of a bank's assets and that of its deposit liabilities. In accounting terms, it includes any account on the right-side of the balance sheet that is legally subordinated to deposits. Thus, it both includes and assigns equal weight to equity (common stock, preferred stock, and retained earnings) and subordinated debt. In the absence of federal deposit insurance and regulation, the market value of capital required of banks or any other private firm is determined in the market place by considerations of risk and return. The greater is the perceived risk of the bank by its depositors, the greater will be the capital the depositors demand for a given promised return on their deposits or the greater is the promised return they will demand for a given capital base.

I. History of capital ratios

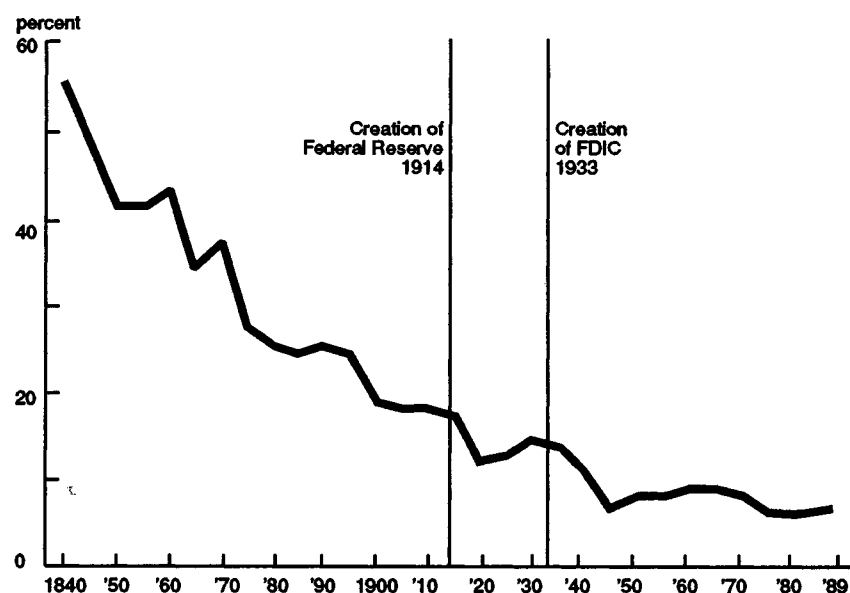
Banking has always been perceived by the market as less risky than nonfinancial businesses and has been able to operate with a lower capital-to-asset ratio. The ratio of reported book value capital-to-assets in banking since 1834 is plotted in Figure 1. (Before 1896, the data do not permit the separation of commercial and savings banks and since 1971, the data are for insured commercial banks only). Consistent data series on the capital ratios of firms other than banks are available for only more recent periods. Ratios for a small number of industries for a limited number of years are available back to 1902 and for all corporate firms back only to 1926. These series are shown in Tables 1 and 2.

It is immediately evident from the tables and figure that banks have consistently had a lower capital-asset ratio. For example in 1902, the capital

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Figure 1

Equity as a percent of assets for banks*
1840-1989



*Ratio of aggregate dollar value of bank book equity to aggregate dollar value of bank book assets. For 1840-1896, data are for commercial and savings banks. Since 1971, data are for insured commercial banks.

Source: U.S. Treasury Department, *Modernizing the Financial System*.

ratio for banks was 20 percent, compared to 52 percent for street and electric railway companies, 62 percent for telephone companies and 69 percent for telegraph companies. In 1926, the first year for which data are available for a large sample and broad range of nonbanking firms, commercial banks had a capital ratio of 12 percent, while all nonfinancial industrial firms had a capital-asset ratio of 60 percent. Ratios by type of nonfinancial industry in 1926 ranged from 41 percent in construction to 72 percent in manufacturing. Regulated public utilities had a ratio of 46 percent. All financial firms, including commercial banks, had a ratio of 21 percent. Nonfinancial firms excluding banks had a ratio more than double that of the banks.

Table 1
Capital-to-asset ratios for selected industries, 1902-1970

Year	Industry			
	Telegraph	Telephone	Street and electric railroads	Electric light and power
	(percent)			
1902	69	62	52	
1907	67	54	49	
1912	60	50	46	52
1917	56	58	42	48
1922	54	58	37	44
1927			34	47
1932			31	50
1937			31	48
1940				49*
1950				45
1960				42
1970				40

*Break in series

Source: U.S. Department of Commerce, *Historical Statistics*, p. 939.

For purposes of the above analysis, the capital ratios of banks through 1933 are somewhat understated. Shareholders of all national banks and some state banks were subject to personal double liability. That is, they were liable in case of insolvency not only for the value of their investment at the time of purchase but also for an additional amount equal to the par value of the shares when initially issued. At that time, new bank shares were issued at par value. Double liability did not exist in other industries.

The market had good reason to perceive banking as less risky than other industries and permit banks to maintain lower capital ratios. From 1875 through 1920, the failure rate in banking was lower than that of nonfinancial firms. Moreover, before the introduction of federal deposit insurance in 1933, insolvent or near insolvent banks generally encountered liquidity problems that led to an almost immediate suspension of activities, which was followed by regulatory closure if the bank was unable to recapitalize itself. Banks that were perceived to be insolvent could not continue to operate for long without a credible demonstration of their actual solvency. As a result, losses to depos-

Table 2**Capital-to-asset ratios at corporations by industry select years, 1926-1986**

Year	Industry									
	All corps.		Public						Trade	Services
	Total	Excl.	Finance	Construction	Mining	Manufacturing	utilities			
	(percent)									
1926	45.5	60.3	21.3	40.5	68.6	71.5	46.3	63.0	52.5	
1930	48.3	62.3	28.9	48.3	69.8	75.3	50.7	63.6	57.1	
1940	43.2	61.0	27.1	49.7	70.9	72.9	48.7	59.8	48.2	
1950	37.4	61.2	13.4	43.8	67.0	68.5	51.4	58.2	53.3	
1960	33.9	56.1	14.9	34.6	63.0	64.5	48.5	50.4	38.6	
1970	28.5	44.9	14.2	28.6	57.1	51.2	42.3	41.1	32.8	
1980	25.5	39.3	13.2	24.7	42.6	43.8	37.7	34.4	29.7	
1986	26.1	35.5	18.8	24.1	47.8	38.4	37.0	28.0	26.2	

Source: U.S. Internal Revenue Service, *Statistics of Income: Corporation Income Tax Returns* (Washington, D.C.: Department of the Treasury), various years.

itors, almost all of whom were uninsured, at failed banks were small, averaging only 0.20 percent of total deposits in the banking system annually. In addition, it was estimated that the losses to depositors at failed national banks in this period were only about 10 cents on the dollar of their deposits, compared to nearly 90 cents on the dollar for bondholders of failed nonfinancial firms.¹ This is not to argue that banks did not suffer losses in these years, but that most of the losses were absorbed by the banks' own capital. It appears that private market discipline by shareholders and depositors on banks was more effective than in many other sectors.

Capital-asset ratios have declined through time for both banks and nonbanks. On average, the ratio for banks was near 45 percent through the 1840s and 1850s, 35 percent in the 1860s, 30 percent in the 1870s, 25 percent in the 1880s and 1890s, 20 percent in the 1900s, 15 percent through early 1930s and below 10 percent since the 1940s. In effect, the decline in the 1930s from 15 percent to less than 10 percent is greater than it appears because of the phase-out of double liability for national banks in the mid-1930s.² Moreover, because total assets are measured as the sum of on-balance sheet accounts only, the rapid growth in off-balance sheet accounts in recent years overstates the capital-asset ratio in these years relative both to the earlier capital ratios in

banking and to capital ratios in other industries, where off-balance sheet activities are substantially less important.

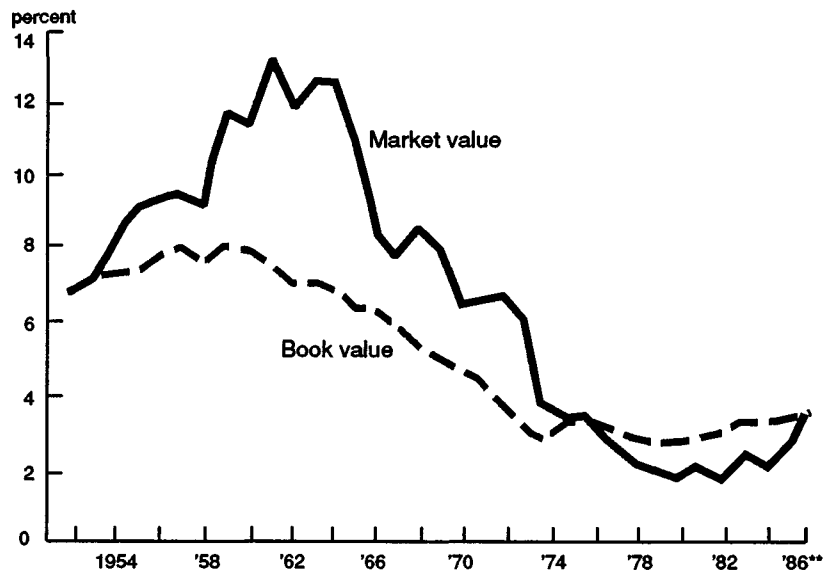
Lastly, the regulators have, until recently, also included loan loss reserve in capital. To the extent that these reserves are related to expected loan losses they should not be included as capital. However, through 1986, the federal tax code permitted banks to deduct from income first all and then part of such reserves equal to a given percent of gross loans rather than loss experience. Thus, banks over-reserved and it was appropriate to include the excess as capital. Inclusion of any greater amount overstated the amount of capital. Since 1986, the tax code permits only actual losses to be deducted from taxable income and inclusion of any part of loan reserves in capital is incorrect and overstates the capital ratio. The decline in capital ratios does not appear to have increased the return on capital, however. A recent study reported that, with the exception of the 1930s, the return on equity for the average commercial bank has remained relatively constant since the 1870s.³

For nonbanks, capital ratios declined from 52 percent in 1902 to 31 percent in 1937 for street and electric railroad companies, from 52 percent in 1912 to 40 percent in 1940 for electric light and power companies, and from 60 percent in 1926 to 36 percent in 1986 for all nonfinancial firms. Thus, since 1900, the decline in capital ratios has been somewhat faster in banking than in most nonbanking sectors. Although more difficult to document precisely, the high capital ratios for nonbanks in the early 1900s suggest that bank capital ratios also declined relatively more quickly in the late 1800s.

Why did bank capital ratios decline to their current low levels? Shortly before and during the Great Depression, they increased sharply from 12 percent to 16 percent. Then they declined slowly through 1939. Thereafter, the book value ratios declined sharply through 1945 from 12 to 6 percent, as bank assets more than doubled, increased slightly to 8 percent in the early 1960s and then declined back to near 6 percent before increasing slightly in the mid-1980s. However, the changes in book value capital ratios since 1960 are somewhat misleading. As can be seen from Figure 2, the market value capital ratios for the 25 largest publicly traded bank holding companies increased sharply to well above the book values through the early 1960s and then declined sharply to below book values over the next 10 years.⁴

Figure 2

Capital-to-asset ratios, market and book values*



*Ratios are a weighted average of the 15 largest bank holding companies in 1985.

**1986 data are third quarter figures. All other years are year-end data.

Source: Michael C. Keeley, "Deposit Insurance, Risk, and Market Power in Banking", *American Economic Review*, December 1990, p. 1185.

The failure of banks to rebuild their capital ratios after the sharp increase in asset size during World War II to prewar levels, no less the no double liability adjusted levels of pre-1933 years, may be attributed in large measure to federal deposit insurance. The insurance greatly reduced the intensity of market discipline on banks from, at least, their depositors. Indeed, it is difficult to imagine that at-risk depositors and other creditors would lend to anyone whose book value capital ratio was only six percent or even 10 percent. It does not take much of an adverse shock to asset values to deplete this amount of capital, particularly if banks' portfolio risk exposures have also increased as a result of deposit insurance. Banks were more vulnerable than any other time in their history. And as the economy became more volatile in the 1980s, the shocks did exactly that.

It is of interest to note that before the introduction of federal deposit insurance in 1933, bank capital ratios tended to move inversely with the number of bank failures. Between 1870 and 1933, there were nine periods of sharp increases in the number of bank failures--1872-74, 1876-78, 1884-5, 1893, 1895-97, 1904, 1908, 1920-28 and 1930-33. In all but two of these--1872-74 and 1895-97--banks increased their capital ratios. In 1920-28, the banks increased their capital ratios in 1921 and 1922, the only years in which other than very small banks failed. Because banks used their capital to absorb losses in these periods, it appears that they raised new capital to more than offset the depletion. This may have been done to reassure their deposit customers of the financial strength of the banks. Indeed, at least one large bank pursued such a policy actively during part of this period.⁵

An analysis of financial firms other than banks and that are not covered by the federal safety net indicates that they maintain substantially higher book capital ratios.⁶ This is evident from Table 3, which shows the capital-asset ratios of major nonbank industries as computed by the Federal Reserve Bank of Minneapolis for the 1970s and early 1980s and from more recent data published by Value Line and the U.S. Treasury Department for 1989. All have capital ratios two to four times that of bank holding companies. It is unlikely that these industries are currently viewed by the market as much riskier than banks. Indeed, their recent failure rate is substantially lower than that of banks. Thus, it is reasonable to conclude that, in the absence of FDIC insurance, market forces would require banks to maintain capital ratios closer to those in these industries. Federal deposit insurance has effectively permitted banks to substitute public capital (taxpayers' funds) for private capital (shareholders' funds).⁷

II. Adjusting capital ratios

It follows from the previous section that a combination of increased emphasis on market forces and of deposit insurance reform that reduces the burden on the taxpayers is likely to require banks not only to rebuild their capital ratios to the levels before the current crisis but also to increase them substantially. How can this be done? Higher capital ratios can be achieved through higher capital, reduced bank assets, or a combination of both. The next sections analyze the feasibility and implications of each alternative.

Table 3**Capital-asset ratios in various financial industries, 1970-1989**

Industry	Federal Reserve Bank of Minneapolis 1971-84 ¹	Value Line 1989 ²	Treasury Department 1989 ³
	(percent)		
50 Largest Commercial Banks			5.0
Large National Bank Holding Companies			6.3
Bank Holding Companies	6.0	5.3	
Savings and Loan Associations		5.1	
Securities Dealers	20.0		19.7
Life Insurance	21.0	11.8	12.4
Property/casualty insurance	22.0	20.6	22.3
Diversified Insurance Companies		10.9	
Insurance Agents	37.0		
Personal Credit Companies			13.8
Short-term Business Credit Companies			13.8
Real Estate Development	27.0		
Other Real Estate	24.0		

Sources:

1. Federal Reserve Bank of Minneapolis, Annual Report, 1988, p. 11.
2. *Value Line Investment Service*, November 9, 1990; November 23, 1990; December 14, 1990 and January 11, 1991.
3. U.S. Treasury Department, *Modernizing the Financial System* (Washington, D.C. 1991), Chapter II.

Increasing capital

The accounting components of total equity capital of all insured commercial banks since 1960 are shown in Table 4. The composition of capital growth has changed through this period. From 1960 to 1980, about one-half of the growth in equity capital came from the sale of new stock and one-half from growth in retained earnings. Because retained earnings started from a much lower base in 1960 than funds raised from the sale of shares, their importance as a component of total banks capital doubled in this period from 23 percent to 45 percent. From 1980 to 1988, the growth in retained earnings slowed and banks relied more heavily on the sale of new stock to increase their total capital. Indeed, in 1987 and 1988, large losses reduced retained earnings and banks had to replenish their capital through the sale of new stock. At the end

of 1988, retained earnings accounted for 44 percent of total equity capital. Except for 1987, this was the lowest level in the 1980s.

In the 1980s, the banks also increased their sales of subordinated debt sharply. By 1987, subordinated debt was equal to almost 10 percent of total equity capital compared to only about 6 percent at the beginning of the decade. The deteriorating financial condition of the banking system likely increased the cost of selling subordinated debt sharply in 1988 and the amount declined slightly.

Table 4
Composition of capital at FDIC insured banks, 1960-1988

Year	Total	Equity				Subordinate Debt	
		Common stock	preferred stock	Surplus	Undivided profits		
					Adjustment		
				(billion dollars)			
1960	23.6	6.2		12.1	5.3		
1965	28.2	8.5		13.5	6.2	1.7	
1970	40.5	11.1	0.1	18.1	11.1	2.1	
1975	66.0	15.6		26.7	23.6	4.4	
1978	87.4	18.2	0.1	33.2	35.9	5.9	
1979	97.2	20.2	0.1	35.3	41.5	6.0	
1980	107.6	21.7	0.1	37.8	48.0	6.3	
1981	118.3	23.6	0.2	40.3	54.3	6.5	
1982	128.9	24.8	0.3	43.2	60.6	7.3	
1983	140.6	25.7	0.7	47.8	66.4	7.1	
1984	154.4	28.1	0.8	52.9	73.0	(0.4)	10.2
1985	169.2	29.1	1.0	58.7	80.0	(0.4)	14.7
1986	182.3	29.6	1.4	63.9	87.7	(0.3)	16.9
1987	181.4	30.3	1.6	70.5	79.2	(0.3)	17.6
1988	187.9	30.3	1.7	76.7	83.5	(0.3)	17.3

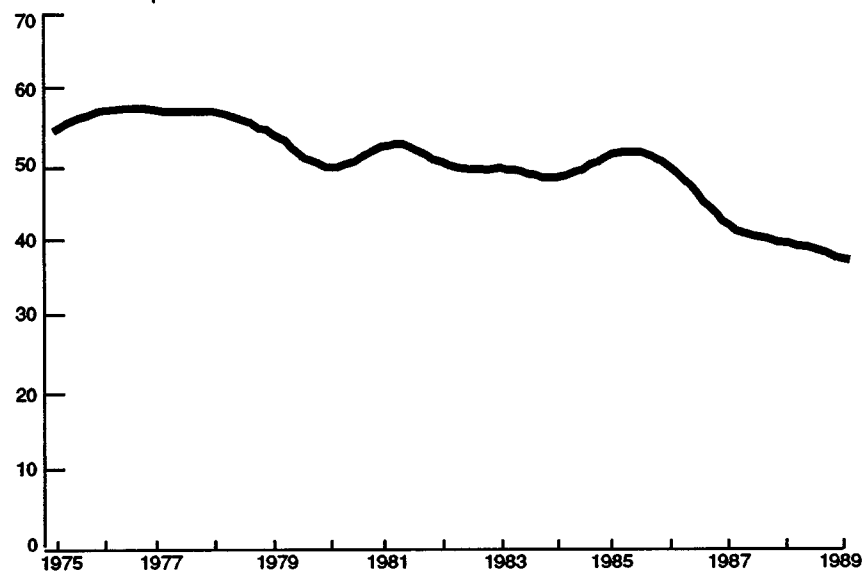
Source: FDIC, *Statistics on Banking and Annual Report*, various years.

The ability of banks to raise capital through either retained earnings or the sale of new securities in the future is likely to be handicapped by the poor performance of banks in recent years. The low earnings have reduced both growth in retained earnings and the return on bank stocks. The index of bank (technically bank holding company) stocks as a percent of all stocks since 1975 is plotted in Figure 3.

Figure 3

**Bank stocks as a percent of S&P 500
1975-1989**

bank index as a percent of S&P 500

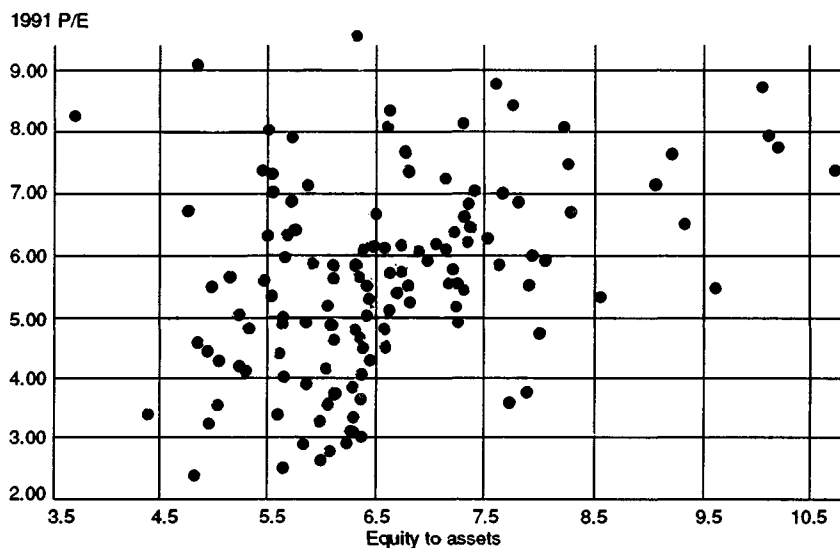


Source: U.S. Treasury Department, *Modernizing the Financial System*, Chapter I (Figure 9).

As is readily evident, the bank index has trended downward, particularly since 1985, declining from about 55 percent of the S&P 500 index to 38 percent in 1989. The same results hold for longer periods. From the fourth quarter of 1964 through the third quarter of 1990, the annual total return on the S&P 500 was 9.54 percent. The return for the S&P money center banks was 7.52 percent and for the S&P regional banks was only 4.86 percent. The poorer performance of the regional banks reflects the inclusion of Texas banks in the mid-1980s and New England banks in the late-1980s. Moreover, although

bank returns were lower, their risk as measured by the standard deviation of quarterly returns was substantially higher. Thus, banks stocks performed even more poorly on a risk adjusted basis.

Figure 4
Price-earnings and equity capital ratios
for major bank holding companies, 1991



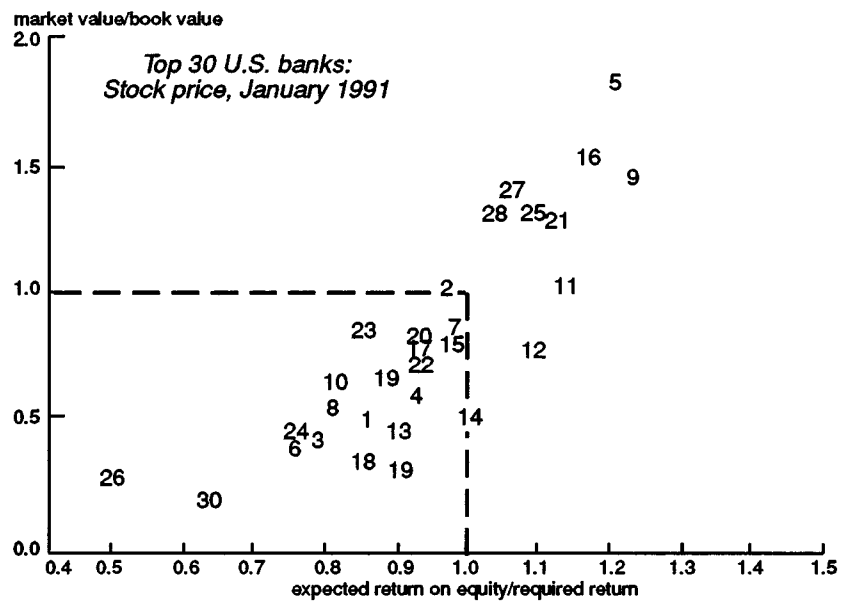
Source: Senchak and Lott, p. 13A. Ratios computed by Keefe, Bruyette, and Woods, Inc.

Unless the prospects for bank profitability improves substantially in future years, the cost of capital to banks may be expected to remain high. Indeed, a recent analysis by Keefe, Bruyette and Woods of price earnings ratios only concluded that it is more than twice as expensive on average for major bank holding companies to raise equity capital currently as it is for industrial companies.⁸ But within banking the cost varies considerably. The study showed that the banks with the highest equity capital ratios had the highest price-earnings ratios. This relationship is in Figure 4. Likewise, a study by the First Manhattan Consulting Group reported that in January 1991 large banks whose capital was valued the highest by the market relative to their book value also had the highest return on equity.⁹ This relationship is shown

in Figure 5. A study by the Federal Reserve reported that in the period 1983-89 banks that increased their capital ratios increased their ROEs.¹⁰

Figure 5

Return on equity versus market to bank value ratios of capital for 30 large banks



Legend:

- | | |
|-------------------------|----------------------|
| 1 Citicorp | 16 Banc One |
| 2 BankAmerica | 17 First Union |
| 3 Chase Manhattan | 18 Bank of Boston |
| 4 Security Pacific | 19 Fleet/Norstar |
| 5 J.P. Morgan & Co. | 20 Mellon Bank |
| 6 Chemical Banking | 21 SunTrust Banks |
| 7 NCNB | 22 Barnett Banks |
| 8 Manufacturers Hanover | 23 First Fidelity |
| 9 Bankers Trust | 24 Continental |
| 10 First Interstate | 25 Republic New York |
| 11 Wells Fargo | 26 MNC Financial |
| 12 C&S/Sovran | 27 Norwest |
| 13 First Chicago | 28 NBD |
| 14 Bank of New York | 29 Shawmut |
| 15 PNC Financial | 30 Midlantic |

Source: Jon Moynihan, First Manhattan Consulting Group.

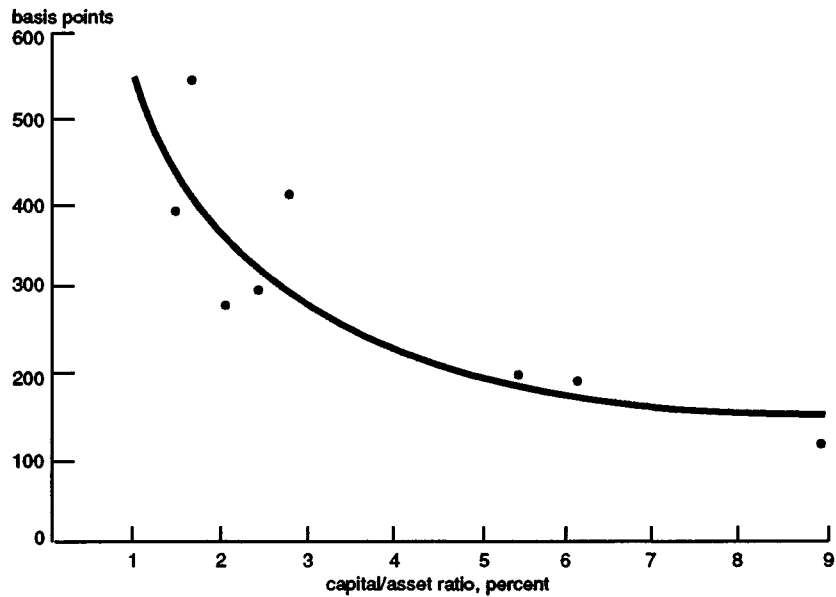
Moreover, banks with the highest capital asset ratios also had their subordinated debt (bank holding company bonds) trade at the lowest spreads over Treasury securities.¹¹ This relationship is shown in Figures 6 and 7. Combined, these two relationships strongly suggest that the best capitalized institutions are likely to have the lowest cost of capital and the easiest time in improving their position further. It should also be noted that the higher capital ratios for nonbank financial firms also suggests that there is not a shortage of capital for bank-like activities, if they were competitively profitable.

Unfortunately, the purchase of bank stock is limited in the United States to individuals and to corporations that do not also control nonfinancial firms and even some financial firms, such as insurance companies. The Bank Holding Company Act of 1956 restricts the activities of the holding company itself and its affiliates and subsidiaries to a narrow list of financial activities that more or less are permitted a national bank. This limits the ability of all nonfinancial and some nonbank financial firms to provide capital to the banking system. In light of the dramatic need for additional capital in banking, the increasing ability of nonbanking, including basically nonfinancial, firms to provide bank-like services and the sharply reduced potential economic power wielded by banks, it is reasonable to reexamine whether the benefits of the Bank Holding Company Act still outweigh the costs in terms of public policy. This was a major recommendation in the Treasury Department's recent proposal for banking reform.

However, at least in the U.S., the private benefits of mixing banking, other financial services and nonfinancial activities under one roof have not been demonstrated convincingly. Historically, before it was prohibited in 1956, nonbanks and banks did not consolidate on a significant scale. Nor did this happen in the S&L industry, where such combinations were legal without limit until recently and still legal on a more limited basis. Moreover, the advantages of additional activities is likely to be affected by any restrictions imposed on organizational structure with respect to the ability to engage in shared production and cross-marketing. The greater the restrictions in terms of requiring firewalls and separate organizations and even physical facilities, the less are any synergies likely to be captured and the smaller any potential gains from the new activities.

Figure 6

**Interest rates on large bank subordinated debt; spread over Treasuries
(1990 average)**



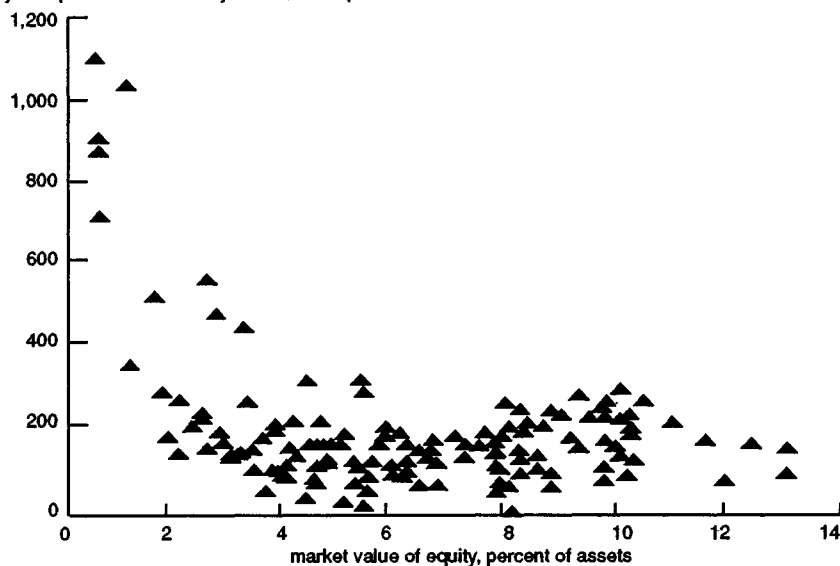
Source: Randall J. Pozdena, "Recapitalizing the Banking System," *FRBSF Weekly Center* (Federal Reserve Bank of San Francisco), March 8, 1991, p. 2.

Thus, even under the most liberal scenario, it is questionable whether substantial additional capital will be attracted into banking if the Bank Holding Company Act is modified or repealed. Nevertheless, unless there are overriding detrimental societal effects of such mixing, there is no reason to prohibit it. Moreover, if such benefits do exist, then not only is efficiency lost in banking to the detriment of consumers by prohibiting such combinations, but U.S. banks are at a competitive disadvantage with respect to banks in countries in which these combinations are permitted and are quite common e.g., Germany.

Figure 7

Risk premiums on U.S. bank holding company bonds, 1986-90

yield spread over Treasury bonds, basis points



Data are for all U.S. bank holding companies with 8-12 year bonds outstanding: January 31 figures for 1966-89, June 30 figures for 1990. The yield spreads are adjusted for the value of imbedded call options.

Source: Brian C. Gendreau, "U.S. Deposit Insurance Reform", *World Financial Markets*, (Morgan Guaranty Trust Co.), January 25, 1991, p. 4.

The raising of private capital is also made more difficult by the emphasis of bank regulators on accounting definitions and their failure to distinguish between bank and nonbank firms. As noted earlier, the key role of capital in a bank is to be available to absorb losses so that they are not charged against deposits. Thus, in a world of deposit insurance, capital also protects the deposit insurance agency. This concept of capital relies on market valuations and does not differentiate among the accounting components, such as common stock, preferred stock, retained earnings, and any debt that is subordinate to deposits. All are equally available to absorb losses before deposits.

The regulators, however, differentiate among these components and compartmentalize them in groups that are given different weights in satisfying the regulatory capital requirements. Thus, both subordinated debt and

nonperpetual preferred stock are considered less valuable by regulators than an equal dollar amount of common stock. The reasoning for such a distinction focuses on the need of the issuing bank to make periodic obligated interest and maturity payments for debt and nonperpetual preferred stock. While this may place pressure on the bank, it does not diminish from the ability of these accounts to absorb losses fully. Nor can these funds "run" until their maturity dates. For banks, unlike other firms, the concern of public policy should be on protecting depositors, not other creditors.

Moreover, these forms of capital have two advantages over equity capital. One, the market yields and the ability to rollover maturing issues at competitive interest rates send clear and visible signals of the market's evaluation of the financial strength of the issuing institution. Two, in the United States, debt has a substantial cost advantage to banks as interest payments are generally deductible as a corporate expense, while dividends on equity are not. Thus, by not including cheaper subordinated debt and preferred stock fully in regulatory capital, the regulatory agencies discourage the entry of capital into banking.

It is sometimes argued that U.S. banks are also disadvantaged at raising additional capital because foreign banks have lower capital ratios to begin with. This claim is true neither on a book nor on a market value basis. Indeed, on a market value basis, large U.S. banks had the lowest capital ratios in 1990.¹² Japanese Banks had the highest. In addition, a recent study concluded that, in contrast to U.S. banks, banks in Europe have focused more on increasing capital than on selling off assets.¹³ They have done this primarily to expand their assets and business, rather than to meet existing or projected regulatory capital requirements.

Decreasing bank assets

If banks cannot profitably raise additional capital at competitive rates through sales of new issues or growth in retained earnings to increase their capital asset ratios to higher levels, they will need to reduce their total assets. This appears to be the more likely scenario for at least four reasons:¹⁴

1. Advances in telecommunications and computer technology have reduced the traditional competitive advantage of depository institutions in collecting and processing credit information. At least larger borrowers are finding it progressively easier to tap lenders directly and bypass banks.

2. Regulation designed for an earlier and different era are restricting bank activities and profitability relative to their nonbank competitors and eroding their franchise value.
3. Federal deposit insurance is being repriced to eliminate any underpricing/subsidy that has promoted asset growth.
4. The deterioration in the industry's financial condition, has increased the cost to high credit quality borrowers of obtaining funds through lower credit quality banks rather than tapping lenders directly. It is not profitable to "intermediate down".

III. Implications of alternative deposit insurance proposals

Although almost all of the major deposit insurance reform proposals currently on the table are likely to increase bank capital asset ratios, they are likely to do so in different ways and by different amounts. As discussed in the previous section, an increase in capital ratios does not imply an increase in the dollar amount of bank capital and most likely will occur from a decline in bank assets. In addition, any change in either the capital ratio or the dollar amount of capital in the banking system in consequence of deposit insurance reform depends, in part, on the definition of capital in each proposal. Thus, any particular capital asset ratio is consistent with greatly different amounts of capital. The effects of changes in capital and capital ratios on total bank assets pull in different directions. An increase in the dollar amount of capital, *ceteris paribus*, will increase total bank assets, while an increase in capital ratios, *ceteris paribus*, will decrease total bank assets. The net effects on the size of the banking industry will depend on the relative strengths of the two. The stronger the upward pressure on capital ratios, the less likely is any increase in the dollar amount of capital to lead to an increase in bank assets. Indeed, regulated increases in capital ratios to levels not warranted in the market by the existing rates of return will result in divestment in banking and a shrinking of the industry.

As discussed earlier, capital is a source of funds to banks that has a higher cost than deposits because it entails greater risk to the holder. But, as is well known in finance, in the absence of taxes and distortions such as mispriced deposit insurance, in equilibrium, the higher cost of capital is offset by a lower cost of deposits and the overall cost of all funds to the bank is unchanged by changes in the capital to deposit ratio. But other things are not equal. Taxes

make equity capital more costly than either debt capital or deposits because interest payments but not dividends may be deducted by the bank as a taxable expense and underpriced deposit insurance reduces the cost of deposits to banks relative to either debt or equity capital. The more a reform proposal permits subordinated debt to count as capital, the more total capital may be attracted into the banking industry and the more a reform reduces the insurance subsidy, the more likely is it to increase the capital-asset ratio but not to increase total capital in the banking system. Thus, the reform proposals need to be evaluated on the basis of their implications for both total capital in banking and thus industry size and the capital-asset ratio.

The largest increases in capital ratios would result from proposals to eliminate federal deposit insurance altogether and replace it with private insurance or a system of bank cross-guarantees. Because of pressures from market discipline, capital ratios may be expected to increase to near their pre-FDIC levels and become comparable to those in financial industries that are not covered by the safety net, such as finance and insurance companies. A similar increase may be expected if insurance coverage per account, bank, or depositor were cutback very sharply to, say, \$10,000 or less. This would induce almost the same degree of market discipline as no federal insurance whatsoever. To the extent the insurance subsidy is removed, the asset size of the industry may be expected to decline.

The implications of risk-based insurance premium proposals would depend on how risk is measured. If risk were measured by portfolio credit and interest rate characteristics, capital ratios may not increase greatly, particularly if an explicit, mandatory closure (resolution) rule were not included. If risk were measured by capital levels, capital ratios may be expected to increase, although by how much would depend on both the levels and progressivity of the premium structure. It is possible, for example, for a risk-based premium structure to maintain the existing capital ratio in the banking system and only redistribute the amounts held by individual institutions. Unless the required capital ratios are greatly different from current ratios, there should be little or no effect on industry size.

The same conclusions may be projected for risk-based capital requirements. Changes in the overall capital ratio in the banking system depend on the risk measures used and the weights assigned to each grouping. For example, it appears that the risk-based structure introduced in the U.S. will not increase capital ratios in the banking system greatly, even though it includes off-balance sheet accounts as well as on-balance sheet accounts. It has been

estimated that some 95 percent of all commercial banks already satisfied the final yearend 1992 requirements in 1990. This includes almost 90 percent of the largest 100 bank holding companies. Although the banks that failed to satisfy the requirements held about one-quarter of total bank deposits, they required only \$13 billion of additional capital. This represents only 5 percent of current bank capital.¹⁵

Increases in capital ratios in the banking system should follow from most mandatory early intervention and recapitalization resolution proposals. These proposals generally start with much higher capital requirements in order for individual banks to qualify for maximum powers and minimum supervision. The amount of capital maintained by individual banks below this amount would depend on the restrictions imposed on the banks for progressively poorer performance, the minimum ratios required in each performance tranche, and the capital ratio at which a bank is forced to be recapitalized. The higher the minimum requirements in each tranche, the higher the final resolution requirements and the stronger and more mandatory the restrictions imposed in each successively lower tranche, the higher will be the capital ratios maintained. To reduce the pressure to shrink assets because of the higher cost of equity capital, these proposals generally permit subordinated debt to be fully included as capital.

If significant reform is not enacted and insurance premiums are increased further, the relative profitability of banking may be expected to decline further, the cost of capital to increase, and the amount of capital in banking to be reduced. Capital ratios should remain at near their present levels, but total bank assets would be smaller.

IV. Capital implications of regulatory changes

Changes in bank regulations can impact both the amount of capital invested in the banking system and the capital ratios banks are required to maintain directly through regulation or indirectly through market forces. Here we focus only on the indirect effects. The market requires any firm to maintain higher capital the riskier its activities are perceived. A bank may change its risk profile through appropriate diversification. Existing product and geographic restrictions on banks have restricted their abilities to diversify. It should be noted, however, that the introduction of new permissible activities per se does not necessarily imply that banks will reduce their risks by offering them. It is conceivable that some new activities are substantially riskier than

the old activities and that involvement in these activities beyond a threshold level could increase the overall riskiness of the institution. This appears to have been the case with some of the new activities permitted savings and loan associations in the 1980s. Blind diversification does not always reduce risk; diversification must be properly structured. But without additional opportunities, properly structured, risk reducing diversification cannot occur and banks' will be riskier than otherwise.

In a market economy, the market attempts to determine whether the new activities are used by an institution as risk reducing or risk increasing. Thus, in the absence of distortions from mispriced deposit insurance, there is little reason to maintain existing product and geographic restrictions for the sake of prudence. To the extent that the banks use the new product and geographic powers to reduce their risk exposure, the market will permit capital to be reduced without a corresponding reduction in asset size or permit banks to increase their assets on a given capital base. Moreover, to the extent that such use improves the risk-reward tradeoff, it may attract additional capital into the industry and help reverse the ongoing deterioration in market share. The U.S. Treasury Department's recent recommendations to broaden bank powers is a step in the right direction.

V. Conclusion

Commercial banking has traditionally been viewed as less risky by investors and creditors (depositors) and permitted to operate with lower capital-to-asset ratios than nonfinancial firms. This was true before the introduction of federal deposit insurance, when it was justified by the low failure and loss rates relative to nonfinancial firms, as well as after, when the deposit insurance agency assumed most of the depositor losses. But deposit insurance has helped permit bank capital ratios to decline to levels that cannot adequately protect banks against the magnitude of shocks being currently generated by the financial markets and the macroeconomy. Thus, bank failures and losses to the FDIC have increased sharply and the current historically low private capital ratios are sustainable only in the presence of increased government intervention.

Market forces and reform of the deposit insurance system are likely to require higher capital asset ratios. The paper argues that for a number of reasons the higher ratios will more likely be achieved through reductions in bank assets than through increases in capital. This is likely to extend the significant

deterioration in the banks' market share that has been underway throughout the post-World War II period. Overcapacity exists in terms of asset size not in the numbers of banks. Any resulting "credit crunches" from this shrinkage may appear in particular sectors but should be only transitory and do little lasting economic harm to the economy overall. Credit worthy borrowers either are obtaining credit from better capitalized banks or from nonbank suppliers and contributing to the shrinking of the banks' asset base or will be able to obtain credit from such sources if they wish without extraordinary transition costs or delays. Some churning occurs as borrowers and new or remaining lenders, who may be in different geographic or product sectors, search each other out. But, on net, the credit crunch represents only an acceleration of the longer ongoing decline in banking. Public policies to alleviate any credit crunch by countering market forces are likely to do considerable more long-term harm than good. One public policy initiative--ironically, risk-based capital standards--may be contributing to the perception of a credit crunch by encouraging banks and thrifts to invest in government securities and mortgage-backed securities, which have no or lower capital requirements, rather than making business loans, which have the highest capital requirements.

The longer-term credit crunch will be halted if public policy is directly at permitting depository institutions to increase their profitability in a competitive environment and reduce their risk exposure so that they can attract additional private capital. As in earlier years, a competitively profitable and not excessively risky banking industry will face no capital shortage. And with sufficient capital, bank borrowers will face no credit crunch.

The paper also considers the impact for bank capital of the major alternative deposit insurance reform proposals and of likely regulatory changes. Although each affects the dollar amount of capital and capital ratios differently, none are likely to reverse significantly the banks' continuing decline in market share.

Footnotes

¹George G. Kaufman, "Bank Risk in Historical Perspective" in George G. Kaufman, ed., *Research in Financial Services* (Greenwich, CT.: JAI Press, 1989), pp. 151-164 and George J. Benston et al., *Perspectives on Safe and Sound Banking* (Cambridge, MA.: MIT Press, 1986).

²Double liability was repealed by the Banking Act of 1933 for new shares of national banks in 1933 and for existing shares in 1937. Because of some confusion about whether the repeal applied to Federal Reserve member banks, the provisions were repealed again in 1959.

³Alan Greenspan, "Remarks Before the 27th Annual Conference on Bank Structure and Competition", Federal Reserve Bank of Chicago, Chicago, IL, May 2, 1991, pp. 7-8.

⁴Michael C. Keeley and Frederick T. Furlong "A Deposit Insurance Puzzle", *Weekly Letter*, Federal Reserve Bank of San Francisco, July 3, 1987.

⁵Harold Van B. Cleveland and Thomas F. Huertas, *Citibank 1812-1970*, (Cambridge, MA.: Harvard University Press, 1985).

⁶For a survey of the determinants of capital structure for nonfinancial firms see Milton Harris and Artur Riviv, "The Theory of Capital Structure", *Journal of Finance*, March 1991, pp. 297-355.

⁷The same argument may be made for other entities explicitly or implicitly covered by the federal safety net, including government sponsored enterprises.

⁸Andrew M. Senchak and James C. Lott, "Does Banking Face a Capital Challenge or a Capital Paradox?", *American Banker*, February 26, 1991, pp. 11A-13A.

⁹John Moynihan, "Banking in the 1990s: Where Will The Profits Come From", (First Manhattan Consulting Group), presented at the conference on Bank Structure and Competition, Federal Reserve Bank of Chicago, May 2, 1991.

¹⁰Greenspan, pp. 8-9.

¹¹Randall Pozdena, "Recapitalizing the Banking System", *FRBSF Weekly Letter* (Federal Reserve Bank of San Francisco), March 8, 1991, p. 2, Brian C. Gendreau, "U.S. Deposit Insurance Reform", *World Financial Markets*, (Morgan Guaranty Trust Co.), January 25, 1991, p. 4, and Greenspan, pp. 9-10.

¹²Herbert L. Baer, "Foreign Competition in U.S. Banking Markets", *Economic Perspectives* (Federal Reserve Bank of Chicago), May/June 1990.

¹³U.S. General Accounting Office, *International Banking: Implementation of Risk-Based Capital Standards*, (GAO/NSIAD-91-80), (Washington, D.C., January 1991), pp. 17-19.

¹⁴For an expansion of the reasons banks may reduce their assets see George G. Kaufman, "The Diminishing Role of Commercial Banking in the U.S. Economy", A paper presented at a Conference on the Banking Crisis, New York University, April 29, 1991.

¹⁵Kelley Holland, "Most Big U.S. Banks Already Meet Capital Levels of the Basel Accord", *American Banker*, April 19, 1990, pp. 1 and 19; "Capital Adequacy" in U.S. Treasury Department, *Modernizing the Financial System*, (Washington, D.C.: Government Printing Office, February 1991), Chapter 2; and U.S. General Accounting Office, *International Banking*, p. 16.