Financial Limits on Interstate Bank Expansion

The nation's banking system may be on the threshold of a major reduction of barriers to interstate banking Regional agreements have been reached by many states to permit interstate acquisitions on a regional basis and the Supreme Court has upheld the constitutionality of an agreement which limits bank acquisitions to specific states. It would be a logical step for those agreements to be opened to outside banks and, eventually, for the nation to move to nationwide banking.

Despite the fact that the removal of legal barriers to bank expansion could be expected to have benefits, there are many reservations about interstate banking Some observers have expressed concern that interstate banking would develop rapidly and result in the absorption of many regional and medium-sized banks that could otherwise be the nucleus of independent expansion and competition It is feared that a small number of giant banking organizations would operate nationwide, each of them wielding great market power

There has been considerable discussion of various legal and regulatory safeguards that could be put in place to protect against such developments. The safeguards include limits on the concentration of banking assets at both the state and national level These types of safeguards remain relevant since even modest acquisition programs by major banking organizations could involve a concentration of ownership in individual states

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This article considers, from a strictly financial perspective, whether large banks would be able to bear the likely costs of absorbing a substantially increased share of the nation's banking assets if nationwide interstate banking were introduced. The analysis of several hypothetical merger scenarios suggests that a number of acquisitions which may seem large by today's standards could occur if interstate banking were allowed, but expansion by the major banks would, because of the costs involved, tend to be self-limiting In contrast, it is also evident that the nation's large regional bank holding companies, because of strong earnings, capital, and share prices, are in a relatively favorable position to expand.

For example, our analysis indicates that while a modest expansion, say 5 percent, by one of the nation's top ten banking organizations may not involve severe financial constraints, larger bank acquisition programs would likely be much more difficult to carry out As acquisition programs increase from the 5 percent level, specific types of financial constraints become increasingly important.

- There is a substantial potential for a dilution of stockholder interests in mergers through an exchange of shares if the buying bank's common stock is selling at a level below book value.

- Coverage of interest and/or dividends could decline sharply when large amounts of additional capital must be raised to finance the purchase at a substantial premium

- The major banks may not be able to obtain low-cost capital on the strength of expected future growth
- When the volume of new funds needed to finance an acquisition program looms large, it is likely to have increasingly adverse effects on costs through downward pressure on share prices as well as increased dividend or interest costs
- A prospective combined organization, therefore, faces the task of having to increase its rate of return by a sizable amount after a merger to restore per-share and retained earnings to former levels
- The capital/assets ratio of the combined organization would have to be maintained at levels which comply with bank and bank holding company regulatory guidelines.

High-performance regional banks may tend to be especially attractive targets (because high capital ratios and high rates of return would ease the acquisition costs) But, the larger the target and the larger the purchase premium over book value, which those same high performance companies typically command, the more quickly the attractiveness diminishes Financial constraints become severe once a prospective acquisition (or series of acquisitions) by a major bank amounts to 20 percent of the acquiring bank's size and the purchase premium reaches 50 percent

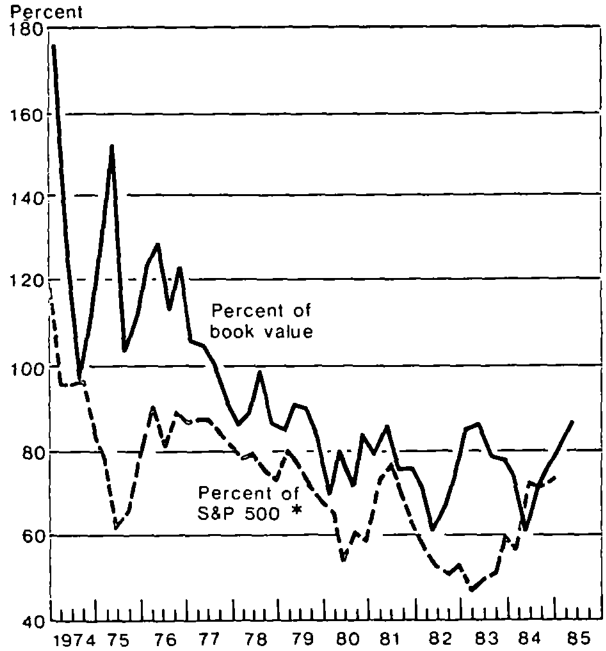
These types of constraints are not necessarily insurmountable Dynamic factors such as a high rate of return at the target bank coupled with strong prospects for economies after the merger and favorable capital costs might be significant offsets However, we estimate that efficiencies from such large-scale mergers would have to raise the rate of growth of net income at the combined organization by close to fifteen percentage points in the first year after the merger to restore retained income, eliminate earnings dilution, and provide funds for the gradual amortization of the purchase premium. If earnings growth does not accelerate rapidly, the acquiring bank may face an adverse reaction in the debt and equity markets Further, the constraints were estimated for an "average" major banking organization, the market-wide effects would become stronger if the number of major banking organizations seeking to expand was to increase.

Average or low-performing targets might also be attractive if the purchase price was appropriately low and there was a significant potential for earnings improvement of the target. If these low-performing banks could be purchased at close to current market levels and financing costs were low, the adverse financial effects on the acquiring bank would be small However, the constraints quickly become more binding if one assumes purchase prices only moderately above book value In general, it seems reasonable to expect that active bidding for target organizations could boost share prices even further above book values than they are at present Consequently, many would-be purchasers could find the prospective acquisitions no longer attractive

Some observers argue that the opening of interstate banking may enhance the market's valuation of the equity of the nation's major banking organizations and that, over a long period of time, there would be a

Chart 1

Stock Price Valuations of Top Ten Bank Holding Companies, 1974-85



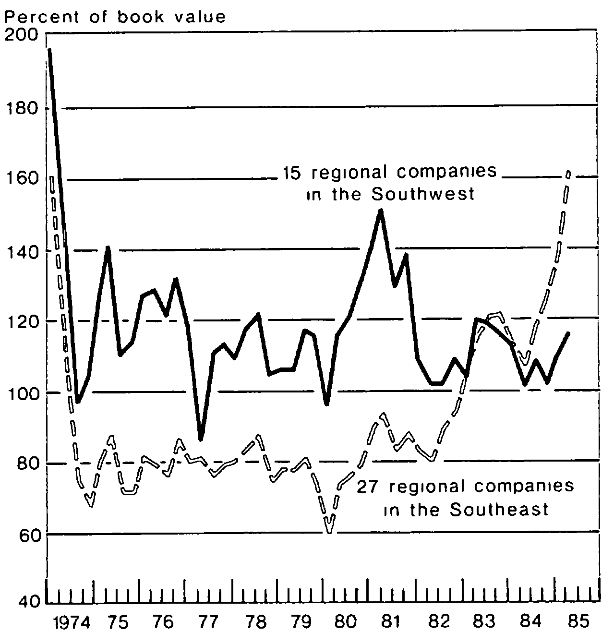
* Average price/earnings multiples of ten large banking organizations in percent of average price/earning multiples of Standard and Poor's 500 companies

Sources Average stock price valuations for the top ten bank holding companies were calculated from individual company data published in Bank Stock Quarterly, M A Shapiro & Co, Inc, various issues from 1974 to 1985, Comparative Market Valuation Statistics for 35 Banks by Quarter, 1971-1983, Salomon Brothers Inc, May 2, 1984, A Review of Bank Performance 1985 Edition, Salomon Brothers Inc, April 1985, and American Banker, June 17, 1985 tendency for these organizations to gradually absorb an increased share of the nation's banking assets This article suggests that such a persisting tendency would require a corresponding upward shift in profitability to levels not in evidence in recent years. Further, competitive pressures and the strains encountered in the recent past in lending at home and abroad may also influence the market's perception of the overall opportunities interstate expansion may afford the nation's major banking organizations. Hence, there is some question whether the leading bank holding companies will be able to increase their earnings so rapidly that the market prices of their common stock will advance to, and remain at, levels that would facilitate large-scale acquisitions.

More recently, the share prices of the nation's top bank holding companies have staged a recovery However, the advance in the first half of 1985 was closely matched by the rise in the share prices of target regional companies. As a result, the ability of the nation's large organizations to acquire attractive institutions on a large scale was not improved substantially. It appears likely, therefore, that the major banks would be selective in their approach to interstate acquisitions And it may well turn out that the least costly method of banking expansion across state lines for major organizations would be the conversion of existing offices of nonbank subsidiaries to full commercial banks (when permitted) rather than the purchase of other banks.

Chart 2

Average Ratio of Market to Book Value of Equity of Regional Bank Holding Companies, 1974-85



Sources Bank Stock Quarterly, M A Shapiro & Co , Inc , various issues from 1974 to 1985, and American Banker, June 17, 1985

There is also concern that even a modest initial expansion by major banks, if repeated, would eventually lead to sizable concentrations For example, a 5 percent expansion program by the nation's largest bank holding company could in the aggregate involve nearly $8 billion of acquired assets. In perspective, that aggregate would represent less than 4 percent of the total assets of some 42 largely high-performance bank holding companies headquartered in the most rapidly growing parts of the United States, and less than 2 percent of the aggregate assets of the five largest domestically-owned banks in 44 states and the District of Columbia (The latter consists of 225 banks in total, excluding California, Illinois, Massachusetts, New York, Pennsylvania, and Texas.) However, even that relatively moderate level of expansion could be inhibited by cost factors and could not easily be repeated without the required increase in profitability

It is noteworthy that financial factors place many of the large regional banks in a favorable position to expand through acquisitions because of their strong capital base and high rates of return Earnings dilution at acquiring large regional companies would be only one-half as large as that sustained by shareholders of the nation's major banking organizations for a comparable expansion. The average decline in retained income after a regional merger would be approximately 15 percent of the decline projected for a major banking organization. As a result, the need for accelerated earnings growth would be far less at large regional companies than at the top banking organizations. Moreover, because the regional banks are relatively small, the market effects of expansion could be expected to be mild and not impose significant additional constraints on expansion by a number of regional companies.

Finally, the market environment likely to accompany a relaxation of the present barriers to interstate banking suggests significant leverage for a regulatory policy which sets high capital standards and requires strong financial conditions to be maintained in merger transactions, including standards for tangible capital and earnings growth. Given appropriate statutory powers, the bank regulatory authorities would be in a position to guide interstate acquisitions in ways which promote sound and competitive banking.

Table 1

Assets, Equity, and Earnings of Selected Bank Holding Companies as of 1984

Key financial characteristics	Average major holding company	Hypothetical target companies Group (1) 10%	Group (2) 20%	Group (3) 50%
Total assets				
$ million	69,839	6,984	13,968	34,920
Average ratio of market to book value of equity	0 84	1.30	1 39	1 30
Total primary capital				
$ million	4,030	446	927	2,361
% of assets	5 8	6 4	6 6	6 8
Income before taxes				
$ million	543	72	157	359
Net income after taxes				
$ million	383	60	128	304
% of assets	0 55	0 86	0 92	0 87
% of primary capital	9 50	13 45	13 81	12 88
Dividends				
$ million	182	23	45	107

Data on assets and capital are averages of figures for December 31, 1983 and December 31, 1984 Income and dividends are for full-year 1984 The ratios of the market to book value of equity are weighted averages of quotations for March 29, 1985 and June 14, 1985 of bank holding company stock prices relative to their book values The weights were derived from the December 31, 1984 distribution of assets of companies included in the respective samples

Sources *Reports of Condition* and sources shown in Chart 1

Table 2

Hypothetical Ratio of Primary Capital to Assets After Acquisitions by a Major Bank Holding Company as of March 31, 1985

In percent

Method of acquisition and size of premium	Capital ratio after expansion of: 10%	20%	50%
Starting ratio: 6.3%			
Ratio after cash purchase from own resources or new debt at:			
Book value	5.8	5 3	4 3
50% premium over book*	5 5	4 8	3 2
100% premium over book*	5 2	4 3	2 1

The projected capital ratios were calculated from figures shown in Table 1 and adjusted upward to reflect the growth in the capital of the major banking organizations through early 1985

*Primary capital ratio if "Goodwill" is deducted from total assets in the calculation of primary capital At present, such a deduction is not required in the definition of bank holding company primary capital, but is required in the calculation of bank primary capital Where intangible assets are allowed, the capital ratio is that shown under "book value"

The background market conditions

The ability of a company to expand via mergers or acquisitions is affected importantly by the market's appraisal of the companies in question. Consequently, the price performance of the equity shares of major U.S. bank holding companies is relevant to this issue. To shed light on this factor, we examined two key groups of banks: the ten largest banking organizations headquartered in the major money market centers and the large regional bank holding companies.

As can be seen in Chart 1, during the mid-1970s the average market value of the equity of the major bank holding companies frequently exceeded book value. Stock prices weakened in the late 1970s and the decline carried the market value of equity to a low of nearly 40 percent below book value by mid-1982. The recovery from that decline has been slow, but by mid-1985 the average market price reached 85 to 90 percent of book value.

While part of the price weakness reflected the more general slippage of equities over the past ten years, the market's valuation of the equities of large bank holding companies has been more pessimistic than for other industries. To illustrate, the average price-earnings multiple accorded the large bank holding companies in March 1985 was 75 percent of the price/earnings ratio for Standard and Poor's 500 companies. This measure had been as low as 48 percent in mid-1983.

In contrast, the market values of regional bank holding companies have remained strong, particularly for companies in the southeast and southwest regions of the country where growth has been high (Chart 2). The common stock prices of about 27 regional bank holding companies in the Southeast have risen sharply since 1980 and have remained well above book value. The stock prices of about 15 regional companies in the Southwest generally have remained above book value in spite of a decline in energy prices in the past three years, which has had some adverse effect on earnings.

A number of factors may account for the relatively low valuation of the equity prices of large bank holding companies. During the past ten years, a number of major banking organizations have sustained large losses as a result of overextensions of credit in real estate, shipbuilding, and energy development. They also have had to deal with heavy strains in foreign lending and increased competitive pressures from nonbank financial service firms All of these factors have contributed to increased market uncertainties over the earnings and dividend potential of the major banking organizations. The relatively strong market valuation of regional banks can be explained by favorable earnings and demographic and business growth factors.

The purchase price of acquisition

A major cost in any acquisition is the price the acquiring institution has to pay to the stockholders of the firm to be acquired Stockholders of the selling firm typically expect to be paid the value of their equity holdings plus a premium to compensate for future growth potential, especially when the firm being sought occupies a strong market position.

A premium as high as 100 percent of book value has been common in many bank acquisitions In 1973 and 1974, the premium over book value, weighted by the size of the acquired bank, averaged 117 percent in bank mergers and 106 percent in bank holding company acquisitions Between 1975 and 1984, the weighted average premium was 58 percent in bank mergers and 48 percent in bank holding company acquisitions [1]

It would be reasonable to expect that the removal of interstate barriers would stimulate brisk (but ultimately self-limiting) bidding for many regional organizations. On balance, there would be a decided tendency for the share prices of these companies to rise significantly

What are the financial consequences of acquisitions by large bank holding companies?

A substantial acquisition usually holds important financial consequences for an acquiring firm. These consequences can vary with the method of financing the acquisition, its size, the purchase price, and the financial characteristics and market valuations of both the acquiring and target banks. The initial cost of an acquisition may result in a dilution of the earnings flow to the stockholders of the acquiring institution, a decline in retained income after the merger, and a decline in the acquiring bank's primary capital ratio When the short-run effects of an acquisition are adverse to the acquiring institution, the soundness of the transaction must rest on expectations of a substantial rise in the earnings of the combined institution The financial effects of major acquisitions are analyzed below through hypothetical mergers among selected samples of banks and bank holding companies in the United States.

Selecting the samples

There are, of course, many possible combinations of mergers and acquisitions involving banks of varying size. To make this analysis manageable and still provide meaningful insights into the financial impact that would be involved, we chose to focus on the differences in expansion potential of two separate and distinct samples of banking organizations. The first sample consists of the very large banking organizations which have been in the forefront of the bank holding company movement and could be expected to seek expansion in interstate banking nationally and regionally. The second sample includes a group of large regional holding companies which could be targets for acquisition by very large companies or be expected to expand in their own geographical regions and into major metropolitan areas throughout the country

The sample of the very large banking institutions was chosen to include the ten largest bank holding companies in the United States. This sample of ten organizations accounts for about 27 percent of the nation's banking assets booked in both U.S. and foreign branch offices. The assets of the selected ten bank holding companies totaled $728 billion as of March 31, 1985 (including both bank and nonbank activities) The largest was Citicorp with $155 billion in total assets; the smallest was First Chicago Corporation with $41 billion.[2]

The simulation method

To conduct the study, we chose an approach which would highlight the financial circumstances that would be likely to confront any of the ten bank holding companies seeking to undertake a large-scale expansion program. We constructed data to represent an "average" institution among the top ten banking organizations The average major company was developed by taking a simple average of the aggregate assets, capital, and earnings of the top ten companies. Three levels of hypothetical acquisitions by this average company were studied The first involved a 10 percent increase in the size of the acquiring organization, the second 20 percent, and the third 50 percent. These alternative levels of expansion are treated as singular acquisitions or the accumulation of a series of acquisitions concluded over a short period of time

The target banks to be acquired were selected from bank holding companies and independent banks having assets less than $10 billion and shares traded in the securities markets. These banking organizations were arrayed in descending order of asset size and three hypothetical target groups were selected. These groups were obtained by starting with the largest regional on the list and proceeding down the list until aggregate totals of banking assets were accumulated to provide totals equivalent to 10 percent, 20 percent, and 50 percent of the average assets of the ten largest bank holding companies.[3]

[1]This information was tabulated from premium data compiled by Golembe Associates in the *Banking Expansion Reporter*, Volume 1, No 11 (June 21, 1982) and Volume 4, No 14 (July 15, 1985)

[2]This sample of the top ten banking companies includes companies with varying interests in wholesale and retail banking activities

[3]This procedure could not be followed exactly in the construction of aggregates of the desired size Hence, some smaller institutions were added out of their order of size

Table 3

Acceleration of Earnings Growth to Eliminate Dilution

Acceleration in the annual growth rate of earnings, in percentage points	Bank holding company expansion by 10%		20%		50%	
	Purchase premium					
	50%	100%	50%	100%	50%	100%
	Years to eliminate dilution					
One	4 7	11 2	9 5	21 5	28 0	52 6
Three	1 6	3 8	3 2	7 2	9 4	17 7
Five	1 0	2 3	1 9	4 4	5 7	10 7
Seven	0 7	1 6	1 4	3 2	4 1	7 7
Ten	0 5	1 2	1 0	2 2	2 9	5 5
Initial earnings dilution, in percent	−4	−10	−8	−18	−22	−38

The data in this table are based on the banking data shown in Table 1 The acceleration of earnings growth required for the elimination of dilution was calculated on the assumption that earnings of the acquiring bank would have grown in the absence of merger at an annual rate of 10 percent No provision was made for amortization of the purchase premium

Key financial characteristics were then calculated for the average major bank holding company and for each of the three groupings of target banking organizations These characteristics include the return on assets and on primary capital, the ratio of primary capital to assets, and the average ratio of market to book value of equity (Table 1)

As shown in Table 1, the average major company was less profitable and had a lower primary capital ratio than the target regional companies Net income of the average major company was equal to 9 5 percent of its primary capital and 0.55 percent of its total assets in 1984, substantially below the figures for the regional companies The ratio of primary capital to total assets of the acquiring major bank holding company averaged 5.8 percent during 1984, compared with an average of 6 8 percent for the target companies As of March 31, 1985, the primary capital ratio for the average major company was 6 3 percent

The financial consequences

In the text below, we review the effects of hypothetical acquisitions on the financial position of the acquiring banking institution, as represented by the average major bank holding company we have defined The analysis focuses mainly on three effects the change in the primary capital ratio of the acquiring institution, the dilution of earnings per share to the owners of the acquiring institution, and the decline in retained income after the merger These financial effects vary with the terms and method of financing the acquisition There are in general four methods (1) exchange of shares; (2) cash purchase from the acquiring bank's own resources, (3) cash purchase from the proceeds of new equity, and (4) cash purchase from the proceeds of new issues of long-term debt (These methods are described in more detail in Appendix 1)

Effect on primary capital An exchange of shares leaves the capital of both organizations intact The combined organization's capital ratio would reflect the combined aggregates of capital and assets In this situation, a well-capitalized target would tend to raise the capital ratio of the combined organization after the merger

In contrast, an acquisition financed from the acquiring bank's own resources results in a lower ratio of equity to assets for the combined company than for the acquiring bank Furthermore, the decline in the capital ratio is greater as the premium paid for the target bank increases As shown in Table 2, the drop in the primary capital ratio for the average major company potentially would be substantial—from 6 3 to 4 3 percent—if the company attempted to expand its total assets by 50 percent without floating new equity Indeed, the decline in the primary capital ratio could be larger since the supervisory authorities are not likely to allow intangible assets to play an unduly large role in determining primary capital at the bank holding company level (Table 2) Large declines in primary capital ratios would be unacceptable to the market and to the supervisory agencies [4]

Under the new capital guidelines, the financing of substantial acquisitions from the bank's own resources could be used only by a bank with a relatively high ratio of primary capital to assets, say, 7 to 8 percent or more Only one bank holding company among the top ten had a primary capital ratio of more than 7 percent as of March 31, 1985 Three other companies had capital ratios in the range of 6½ to 7 percent, and five companies had ratios in the range of 6 to 6½ percent One company had a ratio of less than 6 percent.

[4]The banking supervisory authorities have recently issued capital adequacy guidelines requiring bank holding companies to maintain primary capital equal to at least 5 5 percent of total assets Primary capital of bank holding companies consists of common stock, perpetual preferred stock, capital surplus, undivided profits, contingency and other capital reserves, instruments mandating conversion into common or perpetual preferred stock, reserves for loan and lease losses, and the minority interest in the equity accounts of consolidated subsidiaries Certain intangible assets and equity commitment notes may be included (within limits) in calculating *bank holding company* primary capital, but not *bank* primary capital

Table 4

Major Bank Holding Company Expansion Financed by New Equity

Earnings effects and size of purchase premium	Expansion of assets of the acquiring company by: 10%	20%	50%
Change in retained income with purchase at:*			
Book value	−1	−3	−11
50% over book	−6	−13	−33
100% over book	−12	−24	−59
Amortization of premium†			
50% over book	3	5	9
100% over book	5	9	17
First-year acceleration in earnings growth to restore aggregate retained income‡			
Book value	§	2	7
50% over book	6	13	30
100% over book	12	24	55
First-year acceleration in earnings growth to eliminate dilution‡			
50% over book	7	14	40
100% over book	17	33	84

The figures shown in this table are based on data given in Table 1 The acquisitions in this example assume dividend costs in the range of 5½ to 7¼ percent prorated according to the amount of new equity issued by the acquiring institution (Appendix 2) The first-year acceleration of earnings growth required for the elimination of dilution and restoration of retained income was calculated on the assumption that earnings and dividends of the acquiring company would have grown in the absence of merger at an annual rate of 10 percent

*In percent of retained income of the combined organization

†Annual amortization over 20 years, in percent of total net income

‡In percentage points, includes annual amortization of purchase premium

§Less than 0 5 percent

Banking organizations with primary capital ratios close to the required 5½ percent level could employ their own resources for the financing of acquisitions only in the early stages of an expansion program Additional equity capital would have to be raised to support further substantial expansion.

Debt financing would also reduce the ratio of primary capital to assets because the equity at the acquired bank would be paid off with new debt which is not included in primary capital As in the case of financing from an organization's own resources, the magnitude of the decline would depend on the size of the acquired company and the premium paid on the acquired bank's stock.

Dilution of earnings. An important factor in the estimation of earnings dilution for the major bank holding companies is that the market value of the equity of the acquiring institution would decline, and the dividend yield on equity would rise, as acquisitions become larger and/or more expensive.[5] The average market value of equity of the average major bank holding company was 84 percent of book value as of specific dates in March 1985 and June 1985 The corresponding dividend yield was about 5⅜ percent. Using these figures as a starting point, we estimated that equity values would decline and dividend yields would rise in the financing of increasingly large acquisitions in proportion to the volume of new equity that would be required At the outer range of the examples in this article, namely a 50 percent expansion coupled with a purchase premium of 100 percent of book value, the dividend cost of financing would rise to 7¼ percent and the market to book value of equity would drop to 62 percent. These effects are estimated for expansion by an "average" major organization. If many more banks attempted a similar expansion program, the overall impact on equity values could be expected to be more severe (Appendix 2).

Dilution of the ownership interest of the acquiring institution's shareholders in the company's earnings is a major cost in an exchange of shares.[6] It is also one of the cost elements in new equity financing. The two financing methods result in the same level of dilution as long as the price paid for the acquired bank is identical in both situations.

Earnings dilution will be small when the acquisition is small or if the shares are exchanged at market prices which are close to book value. However, earnings dilution increases as the size of the acquisition and the purchase premium increase (and the more the acquiring bank's equity is discounted from book value). To illustrate, dilution amounts to 38 percent for a 50 percent expansion in size at a purchase price of 100 percent over book value (Chart 3, top).[7]

In an exchange of shares, the merger may provide an earnings benefit (in percent of pre-merger earnings) to

[5]An additional factor influencing share prices is the obligation of bank holding companies to issue new equity under equity commitment notes and debt instruments mandating conversion into common or perpetual preferred stock These notes and instruments accounted for just over 10 percent of the primary capital of the top ten bank holding companies as of December 31, 1984

[6]Earnings dilution is the percentage decline in earnings per share of the acquiring company after the merger relative to earnings per share of the acquiring company before merger (Appendix 1)

[7]The relationships in Chart 3 are derived from the banking data described in Table 1 Since the rates of return at the target banks are generally higher than at the acquiring organization, some of the dilution effect is mitigated

the shareholders of the bank being acquired.[8] The benefit in question is positively affected by the size of the purchase premium, but negatively affected by the size of the acquisition. The percentage earnings benefit is largest when the acquisition is small and the premium high; in fact, large acquisitions tend to diminish the benefit. The reason for this effect is that large acquisitions tend to increase earnings dilution, a consequence which the shareholders of the acquired bank cannot escape, since they receive payment in the form of shares of the acquiring bank (Chart 3, bottom)

It is worth noting that earnings dilution significantly higher than 5 percent is viewed by some market observers as prohibitive.[9] Earnings dilution of about 8 percent would occur in acquisitions which expand assets of the acquiring company by 20 percent and the purchase premium approaches 50 percent. To recover from this earnings dilution over a short period of time, say, within three years, would require an acceleration of about three percentage points in the growth of net income of the combined organization, exclusive of provisions for annual amortization of the purchase premium (Table 3)

Larger and/or more expensive acquisitions would boost the required acceleration in earnings or greatly lengthen the time period needed to recover the dilution For example, a 50 percent expansion with a purchase premium of 100 percent (resulting in an initial earnings dilution of 38 percent) would require earnings growth to accelerate by ten percentage points to recover the dilution in five and one-half years.[10]

As seen in Table 3, a "stretching out" of the earnings adjustment period reduces the required acceleration of earnings growth after the merger. However, it would prolong the period over which the equity value of the acquired bank, and the wealth of its shareowners, would be lowered in relation to what it would have been in the absence of the merger.

It is, of course, possible in specific instances for a substantial acceleration of earnings growth to occur after a well-planned merger Improvements in management, reductions of costs, and elimination of redundant facilities and low-yielding activities are some of the ways that profitability may be enhanced To the extent that the prospects for accelerated earnings growth are bright, the market might value the equity of the acquiring organization at an attractive price and be willing to supply the required new equity capital at low cost. In these circumstances, many of the constraints that would otherwise apply would be mitigated.[11]

Effects on retained income In our example involving a major bank holding company, retained income would decline initially after sizable acquisitions because dividend costs would rise more rapidly than additions to net income [12] This effect occurs because of the relatively high capital costs likely to face the major bank holding companies, including the cost of financing a sizable purchase premium. Further, the acquiring company would have to set aside a portion of its current earnings for the amortization of the purchase premium, which is typically booked as "Goodwill".

The reduction of retained income due to increased dividend payments is shown in Table 4. The larger the acquisition and the larger the purchase premium, the greater the decline in retained income. For example, a 50 percent expansion of assets at a purchase premium of 50 percent would cut retained income at the combined organization by 33 percent from the pre-merger level.

The size of the reduction of retained income due to amortization of the purchase premium would depend on the size of the purchase premium and the length of the amortization period. In a 20-year amortization schedule, a 50 percent premium would result in yearly amortization amounting to 3 to 9 percent of pre-merger net income of the combined organization for expansions ranging from 10 to 50 percent

When a substantial premium over book value is paid, a major bank would have to plan on a substantial speedup of its earnings growth in the first year after the merger or shortly thereafter to restore its rate of earn-

[8]An earnings benefit arises in an exchange of shares when the stockholders of the acquired bank are given a premium over the book value of their equity in the form of shares of the acquiring bank This earnings benefit may also arise without an explicit premium if the shares of the acquiring bank are selling below their book value The latter type of earnings benefit may be considered a quasi-premium because it can be converted into a capital sum by capitalizing the dollar amount of the benefit at the current rate of interest (Appendix 1)

[9]David C Cates, "Prices Paid for Banks", *Economic Review*, Federal Reserve Bank of Atlanta, Special Issue (January 1985), page 37

[10]For a general review of the relationship between earnings growth and elimination of dilution, see Peter C Eisemann and George A Budd, "Acquisition and Dilution", *Magazine of Bank Administration*, Volume 58, No 11 (November 1982)

[11]A review of economic literature has found evidence that bank acquisitions by bank holding companies tend to significantly increase both the revenues and expenses of subsidiary banks, but that the net effect on profitability is not well established Several studies in this area have produced contrary findings See Timothy J Curry, "The Performance of Bank Holding Companies", *The Bank Holding Company Movement to 1978 A Compendium*, a study by the Staff of the Board of Governors of the Federal Reserve System (September 1978), pages 101-103

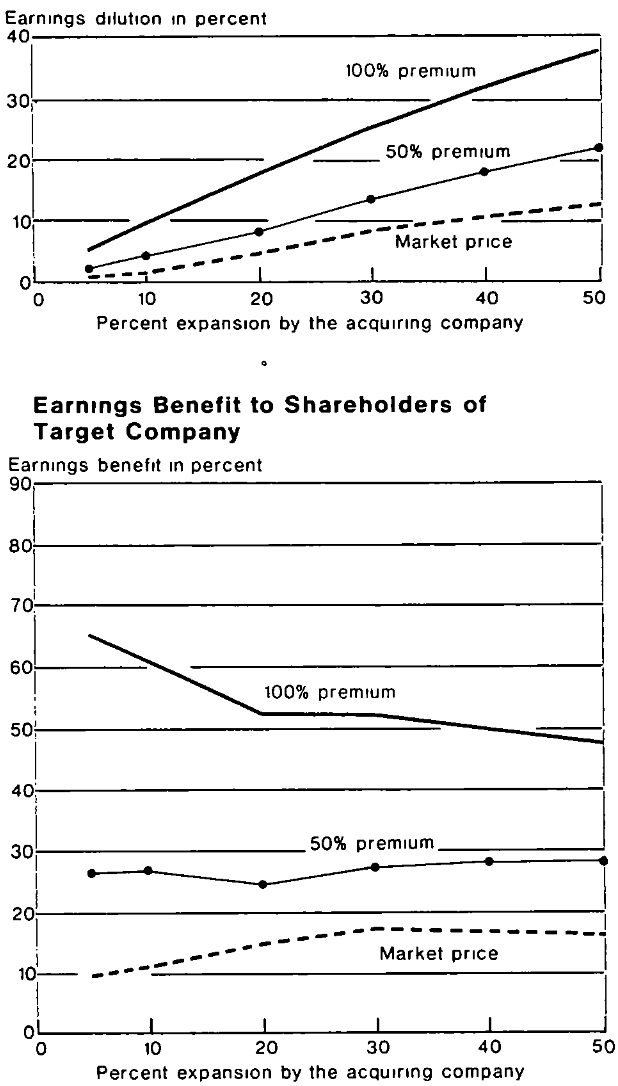
[12]Acquisitions of well-capitalized targets hold the potential for supporting additional expansion through increased leverage on the equity base of the acquired institution However, it is not clear how much additional leveraging would be acceptable to the regulatory authorities

ings retention As shown in Table 4, the acceleration of earnings growth to restore aggregate retained income of the combined institution in the first year would have to reach six percentage points if the acquisition is 10 percent in size and the purchase premium is 50 percent, a 20 percent expansion would require a thirteen per-

Chart 3

Earnings Dilution to Shareholders of Acquiring Average Major Bank Holding Company

Earnings Benefit to Shareholders of Target Company

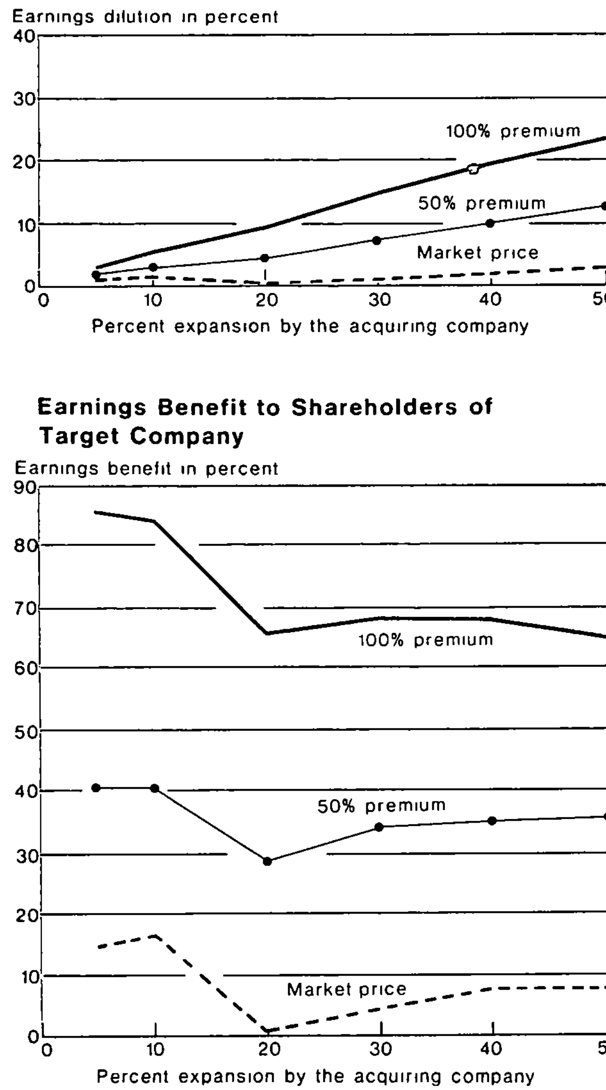


Source Federal Reserve Bank of New York staff estimates

Chart 4

Earnings Dilution to Shareholders of Acquiring Average Large Regional Bank Holding Company

Earnings Benefit to Shareholders of Target Company



Source Federal Reserve Bank of New York staff estimates centage point acceleration in earnings growth Larger and more expensive acquisitions would require even more rapid growth

The effect on retained income from acquisitions financed from new debt issues has been estimated in the same manner as the effect of new equity financing, except that interest payments were made deductible for income tax purposes We have assumed the interest cost on debt to be 12 percent per year and the marginal tax rate on bank income to be the present corporate tax rate of 46 percent Under these assumptions, the decline in retained income after the merger financed from the proceeds of new debt issues would be somewhat higher in acquisitions of moderate size

High versus low performing targets

We reviewed the financial effects in greater detail of hypothetical acquisitions of high- and medium-to-low performing banks, where a 20 percent expansion of assets of the acquiring major bank holding company is involved The purpose is to evaluate the benefits and costs of acquiring a highly profitable bank versus the benefits and costs of a possible "turnaround" situation A high performing target is a bank having a return on primary capital in excess of 15 percent during 1984 and the market value of equity of the bank above its book value as of December 1984 A medium-to-low performing bank is one having a return on primary capital of less than 11 percent and whose market value of equity was below book value

In the cases we considered, the average large banking institution was assumed to purchase a high-performing target with new equity and pay a premium of 50 and 75 percent over book value The dividend cost of new equity was assumed alternatively at 6, 6½, 7, and 8 percent Retained income of the combined institution would decline sharply To restore it to the pre-merger level in the first year after the merger, the net income growth of the combined institution would have to accelerate by twelve to eighteen percentage points, depending on the dividend cost of equity capital, when the purchase premium is 50 percent The required acceleration of net income growth would be seventeen to twenty-four percentage points for a 75 percent premium (Table 5)

The effects of the hypothetical purchase of a medium-to-low performing target by the average major bank holding company are shown in the last three columns in Table 5 The net income growth in the first year after the merger would have to accelerate by five to nine percentage points to recover the decline in retained income if the acquired bank is purchased at the market price Should the purchase price rise to 10 percent above book value, the first-year growth of net income would have to accelerate by seven to twelve percentage points At a 25 percent premium, required income growth would have to rise by eleven to seventeen percentage points

Expansion costs of an average regional bank holding company

This section reviews the acquisition costs that large regional bank holding companies would face in an interstate expansion program This analysis highlights possible cost advantages that well-managed, profitable regional bank holding companies would tend to have over the nation's major banking organizations.

We selected a hypothetical sample of acquiring companies so that it would include large regional bank holding companies with total assets in excess of $5 billion and a market value of equity of more than 10 percent above book value as of December 1984 According to this criterion, we selected 20 large regional bank holding companies operating in various parts of the country. However, none of them were located in the money market centers of New York, Chicago, and San Francisco The total assets of the selected 20 regionals averaged $17.4 billion during 1984. Their banking assets accounted for an estimated 6 percent of U S banks' total assets booked in both U S. and foreign branch

Table 5

Retained Income in Hypothetical Acquisition of High and Low Performing Targets by a Major Bank Holding Company

	First-year acceleration in earnings growth to restore aggregate retained income, in percentage points				
Alternative dividend yields on new equity, in percent	Purchase of a high performing bank with purchase premiums of		Purchase of a low performing bank with purchase premiums at		
	50%	75%	market price	10%	25%
6.0	12	17	5	7	11
6.5	13	19	6	8	12
7.0	15	20	7	10	14
8.0	18	24	9	12	17

The figures shown in this table are based on *Reports of Condition* and data given in Table 1 The acquired bank is equal to 20 percent of the acquiring company in terms of total assets The merger would be financed by new equity The required increase in earnings includes provision for annual amortization of the purchase premium The average market price of equity of low performing banks was 101 percent of book value as of March 29, 1985 and June 14, 1985

Table 6

Assets, Equity, and Earnings of Selected Regional Bank Holding Companies as of 1984

Key financial characteristics	Average large regional holding company	Hypothetical target companies Group (1) 10%	Group (2) 20%	Group (3) 50%
Total assets				
$ million	8,703	870	1,741	4,351
Average ratio of market to book value of equity	1 49	1 23	1 14	1 11
Total primary capital				
$ million	587	54	106	283
% of assets	6 7	6 2	6 1	6 5
Income before taxes				
$ million	110	7	16	41
Net income after taxes				
$ million	91	6	13	33
% of assets	1 04	0 69	0 75	0 75
% of primary capital	15 43	11 07	12 23	11 52
Dividends				
$ million	29	2	6	13

Data on assets and capital are averages of figures for December 31, 1983 and December 31, 1984 Income and dividends are for full-year 1984 The ratios of the market to book value of equity are weighted averages of quotations for March 29, 1985 and June 14, 1985 of bank holding company stock prices relative to their book values The weights were derived from the December 31, 1984 distribution of assets of companies included in the respective samples

Sources *Reports of Condition* and sources shown in Chart 1

Table 7

Hypothetical Ratio of Primary Capital to Assets After Acquisitions by a Regional Bank Holding Company as of December 31, 1984

Method of acquisition and size of premium	Capital ratio after expansion of 10%	20%	50%
Starting ratio: 6 8%			
Ratio after cash purchase from own resources or new debt at:			
Book value	6 2	5 8	4 7
50% premium over book*	6 0	5 3	3 6
100% premium over book*	5 7	4 8	2 5

The projected capital ratios were calculated from figures shown in Table 6 and adjusted upward to reflect the growth in the capital positions of the large regional companies as of year-end 1984

*Primary capital ratio if "Goodwill" is deducted from total assets in the calculation of primary capital At present, such a deduction is not required in the definition of bank holding company primary capital, but is required in the calculation of bank primary capital Where intangible assets are allowed, the capital ratio is that shown under "book value"

offices The average regional company was constructed by taking a simple average of the figures for the 20 companies The size of the average large regional company was $8 7 billion in total assets

The target companies were selected from the listing of all companies under $10 billion in assets. The procedure for selecting the hypothetical acquisition candidates was the same as the one described earlier

The average large regional organization is about one-eighth the size of the average major bank holding company Its return on primary capital was 15 4 percent in 1984, compared with 9 5 percent for the average major company and an average of 11 5 percent for the target regionals in this section (Table 6) The average market value of equity of the average large regional company was 149 percent of the book value of equity as of specific dates in March 1985 and June 1985. The average ratio of primary capital to assets of both the acquiring and the acquired regionals was relatively high and ranged from 6 percent to 6¾ percent in 1984 Consequently, there would be leeway for these regional companies to expand without severe adverse effects on primary capital.

Acquisition costs, notably earnings dilution, were significantly lower for the average large regional company than for the average major bank holding company (Chart 4, top) Moreover, the earnings benefit to the stockholders of the acquired bank tended to be larger (Chart 4, bottom) Earnings dilution for the average large regional organization was approximately half as large as it was for the average major bank holding company, given large purchase premiums

If the acquired institution were purchased at market value (through an exchange of shares or from new equity), the cost difference between the regional and the very large bank holding companies would be even more pronounced The shareholders of the regional company would sustain very little earnings dilution The reason for the more pronounced difference in this case is that the market value of equity at the large regional company is well above book value

The primary capital ratio would decline at about the same rate in hypothetical acquisitions by the average large regional bank holding company and the average major company in all the scenarios described Of course, the level of the primary capital ratio at the regional bank holding company would be higher after merger because of the higher starting level (Table 7)

There is a significant difference in the effects on retained income in acquisitions financed from new equity issued by a large regional company versus a major company The average decline in retained income at the regional company is approximately 15 percent of the average decline in retained income at the major com-

Table 8

Regional Bank Holding Company Expansion Financed by New Equity

Earnings effects and size of purchase premium	Expansion of assets of the acquiring company by: 10%	20%	50%
Change in retained income with purchase at:*			
Book value	†	3	3
50% over book	−1	1	−4
100% over book	−3	−2	−12
Amortization of premium‡			
50% over book	1	3	6
100% over book	3	5	11
First-year acceleration in earnings growth to restore aggregate retained income§			
Book value	‖	‖	‖
50% over book	2	2	9
100% over book	5	7	20
First-year acceleration in earnings growth to eliminate dilution§			
50% over book	4	7	22
100% over book	9	17	45

The figures shown in this table are based on data given in Table 6 The acquisitions in this example assume dividend costs in the range of $3^1/_3$ to 4 percent prorated according to the amount of new equity issued by the acquiring institution (Appendix 2) The first-year acceleration of earnings growth for the elimination of dilution and restoration of retained income was calculated on the assumption that earnings and dividends of the acquiring company would have grown in the absence of merger at an annual rate of 10 percent

*In percent of retained income of the combined organization

†Less than 0 5 percent

‡Annual amortization over 20 years, in percent of total net income

§In percentage points, includes annual amortization of purchase premium

‖No acceleration in earnings growth required

pany in acquisitions of the same size (Tables 4 and 8). Furthermore, the acceleration of earnings growth during the first year after the merger needed to restore aggregate retained income of the combined regional organization is about one-third, and the acceleration needed for the elimination of dilution is about one-half, of the levels required by the average major company.

These differences in acquisition costs reflect the high profitability of the regionals as compared with the rate of return at the nation's major bank holding companies. The high profitability of the large regional companies is also manifest in the willingness of the market to accept lower dividend yields on common stock In our study, we estimate that the large regionals could obtain new equity at a dividend yield of $3^1/_3$ percent to 4 percent for various size expansion programs The dividend yield for the nation's major companies was estimated in the range of $5^1/_2$ percent to $7^1/_4$ percent, reflecting the more substantial market impact the major banks would be likely to have in pursuing major expansion programs.

Conclusion

The hypothetical mergers discussed in this paper were analyzed using a range of assumptions about the cost of obtaining capital and the purchase prices of target banks. The results indicate that prospective large scale expansion programs by major bank holding companies would have to surmount major obstacles in the form of dilution of shareholder interests, relatively high capital costs, and regulatory constraints. At the same time, the expansion opportunities for large and well-managed regional companies could remain relatively attractive for an extended period of time As a result, these regional organizations can be expected to play a significant, independent role in the growth of interstate banking.

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Appendix 1: Financial Consequences of Acquisitions

The financial effects of bank mergers vary with the method of financing the acquisition There are, in general, four such methods The first method is an *exchange of shares*. The second is a *purchase for cash*, using the resources of the acquiring firm. The third and fourth methods are cash purchases financed from the proceeds of either *new equity* or *new issues of long-term debt*.

These four methods of financing are illustrated by a hypothetical acquisition in which a banking organization seeks to acquire an institution whose net worth is 50 percent of its own. To simplify, each of the two organizations is assumed to earn the same net rate of return on equity and each has the same ratio of equity capital to total assets The assets, capital, and income of the hypothetical acquiring and acquired banks are shown in Table A-1.

Table A-1

Key Financial Characteristics of the Hypothetical Acquiring and Acquired Banks Before the Merger

Characteristics	Acquiring bank	Acquired bank	Pre-merger total of acquiring and acquired banks
Total assets	$20,000	$10,000	$30,000
Equity capital/ assets ratio	5%	5%	5%
Tangible net worth	$1,000	$500	$1,500
Common shares outstanding	100	50	150
Book value of equity per share	$10	$10	$10
Market value of equity per share	$7 50	$10	*
Total annual earnings after taxes	$125	$62 50	$187 50
Rate of return on assets	0 625%	0 625%	0 625%
Rate of return on book equity	12 5%	12 5%	12 5%
Rate of return on market equity	16 67%	12 5%	*
Annual dividends paid at $0 50 per share	$50	$25	$75
Annual retained earnings	$75	$37 50	$112 50

*Not applicable

Exchange of shares

The rate of exchange of shares is a crucial factor in the impact of this type of transaction on both the shareholders of the acquiring and acquired organizations We make the assumption that the acquiring bank purchases another company by issuing a sufficient number of its own shares to pay the stockholders their market value We also assume, as a point of departure, that the shares of the acquiring bank are selling at 75 percent of book value in the market and that the shares of the acquired bank are selling at their full book value (Table A-2).

Table A-2

Key Financial Characteristics of the Hypothetical Combined Bank After Merger

Characteristics	Exchange of shares	Cash purchase with: Own resources	New equity	New debt
Total tangible assets	$30,000	$29,250	$30,000	$30,000
Purchase premium	*	$250	$250	$250
Total purchase price	$500	$750	$750	$750
Tangible book equity	$1,500	$750	$1,500	$750
Tangible equity/ tangible assets	5 0%	2 56%	5 0%	2 5%
Total net annual earnings	$187 50	$182 81	$187 50	$126 75
Number of new common shares at $7 50 per share	67	*	100	*
Total common shares outstanding	167	100	200	100
Net earnings per share	$1 12	$1 83	$0 94	$1 27
After-tax cost of debt at 15% and 46% tax rate	*	*	*	$60 75
Net return on tangible book equity	12 5%	24 4%	12 5%	16 9%
Earnings dilution sustained by shareowners of acquiring bank	−10%	*	−25%	*
Earnings benefit to shareowners of acquired bank	20%	*	*	*
Annual dividend payments	$83 50	$50	$100	$50
Annual retained income	$104	$132 81	$87 50	$76 75
Debt capital	*	*	*	$750

*Not applicable

Appendix 1: Financial Consequences of Acquisitions *(continued)*

The shareholders of the acquired bank receive in the exchange 67 shares of the acquiring bank valued at $7.50 each to compensate for their investment of $500 in the acquired bank. The total number of outstanding shares of the acquiring bank rises from 100 to 167, and earnings per share decline from $1.25 to $1.12 per share. Because of the increased dividends, retained earnings of the combined institution decline from $112.50 at the two banks prior to the merger to $104 afterward.

After the merger, the original shareholders of the acquiring bank have only nine-tenths of the interest in pre-merger total income they had prior to the acquisition, thus sustaining a 10 percent earnings dilution. Earnings dilution is the percentage decline in earnings per share of the acquiring bank after the merger relative to earnings per share of the same bank before the merger.*

To restore per-share earnings to pre-merger levels would require an 11 percent increase in the combined bank's earnings (the annual return on assets would have to rise to 0.694 percent from 0.625 percent). That improvement would restore the per-share earnings to the pre-merger level of $1.25 and could raise the combined bank's price close to $10 per share if investors were satisfied with a 12½ percent return on their investment.

The shareowners of the acquired company realize an earnings benefit by obtaining command of 20 percent more corporate income than they had before the merger. The capitalized value of this "income benefit" represents a 20 percent (or $100) premium over the book value of their original investment in the acquired bank. The premium has, in effect, been financed from the resources of the acquiring bank's original shareowners and has been reinvested in the combined bank.

Cash purchase with proceeds from sale of own resources

In this method the acquiring organization pays for the acquisition in cash by selling a portion of its assets. It also writes down the value of its tangible net worth and makes a corresponding entry for increased intangible capital or "Goodwill" to reflect the payment of a premium (Goodwill is not included in bank primary capital.) The shareholders of the acquired bank receive a cash payment of $750 to reimburse them for their investment of $500 in the target bank and to give them a premium of $250 over book value. As a result, the ratio of tangible equity to tangible assets of the combined bank would drop sharply to 2.56 percent from 5 percent before the merger. The earnings of the combined organization would be slightly less than the sum of the pre-merger earnings of the two banks because the acquiring bank has had to liquidate assets to pay a $750 purchase price.

The viability of the acquisition, of course, hinges on the potential for a future increase in the earnings of the combined organization. To rebuild equity as well as amortize the purchase premium in 20 years would require that the return on post-merger assets rise from 0.625 percent to 0.753 percent each year over the 20-year period. Tangible capital would rise to 5 percent of total assets over that time period. To accomplish the same result in five years would require the annual return on post-merger assets to rise to 1.138 percent.

Cash purchase with proceeds of new equity

The acquiring organization floats $750 in new equity at $7.50 per share. The shareholders of the acquired bank would be paid $500 for the book value of their equity and a $250 premium. The total number of shares would rise to 200 and, consequently, earnings per share would decline from $1.25 to $0.9375. The original shareowners of the acquiring bank would sustain a 25 percent dilution of earnings.

To eliminate the dilution, the earnings of the combined institution would have to rise by $62.50—from the combined total of $187.50 before the merger to $250 after the merger. (The latter figure was obtained by multiplying the number of shares outstanding after the merger by the pre-merger earnings per share, *i.e.*, 200 × $1.25 = $250.) The required increase in earnings is quite steep, about 33 percent, but could be spread over several

	Average annual increase in:	
Number of years	Total earnings (in percent)	Rate of return on assets (in percentage points)
One	33.3	0.208
Two	15.5	0.104
Three	10.0	0.069
Four	7.5	0.052
Five	5.9	0.042

*Earnings dilution can be expressed as follows:

$$\text{Dilution} = \left[\frac{\text{Earnings per share after merger}}{\text{Earnings per share before merger}}\right] - 1$$

Since dilution is determined by the size of the two organizations involved and the rate at which the equity of the two companies are exchanged, the above relationship can be restated as

$$\text{Dilution} = \left[\frac{\text{Combined earnings after merger}}{\text{Earnings of the acquiring bank before merger}} \times \frac{1}{1+R}\right] - 1$$

where R equals the ratio of the market value of equity of the acquired bank to the market value of the equity of the acquiring bank. A similar relationship can be formulated for the earnings benefit to the shareowners of the acquired institution.

Appendix 1: Financial Consequences of Acquisitions *(continued)*

years. The previous tabulation shows how total earnings and the rate of return on assets could increase over periods ranging from one to five years

The combined institution's retained income would decline by $25 due to the higher dividend payments on the new equity needed to finance the acquisition In addition, retained income would be reduced by $12 50 due to amortization of the purchase premium (In a 20-year amortization period the annual amortization is equal to $250 − 20 = $12.50.) To restore the level of retained income to the pre-merger level would require an increase of 0 125 percentage points in the annual rate of return on assets—from 0 625 percent to 0 750 percent

Cash purchase with proceeds of new debt

We assume that debt is floated at a market rate of 15 percent and the marginal corporate income tax is 46 percent The financing cost reduces the retained income of the combined bank to $76 75 from $112 50 The return on assets would have to rise to 0.786 percent per annum to offset this drop and to amortize the purchase premium over 20 years

Appendix 2: The Dividend Cost of New Equity

The dividend cost of new equity is a critical factor when a bank holding company seeks to finance a large acquisition from external sources If the yield on the equity raised to finance the acquisition is high, the resulting increase in dividends produces a drain on retained income and a reduction of additions to capital from internal sources

Evidence from our sample data suggests that the dividend yield on new equity issued by a major company will be higher than the dividend yield on the equity of the acquired institution. Moreover, it is likely that the market value of the equity of the acquiring company would decline the larger and more expensive the expansion program. The extent of the possible changes in dividend yields in the course of an expansion program would, of course, depend on investor expectations about the future income of the combined bank holding company. Using recent evidence, we constructed in the table below what we believe are possible declines in the market value of equity and the consequent rises in dividend yields for various levels of expansion by both major and regional bank holding companies with the payment of a purchase premium of 100 percent *

*Dividend yields for a purchase premium of 50 percent are not shown

Alternative Dividend Costs

	Size of acquisition in percent of assets of acquiring company			
	0%	10%	20%	50%
Average major company				
Dividend yield (in percent)	5 38	5 73	6 11	7 25
Ratio market to book value of equity	0 84	0 79	0 74	0 62
Percent decline in ratio	0	−6	−12	−26
Average regional company				
Dividend yield (in percent)	3 30	3 43	3 56	4 00
Ratio market to book value of equity	1 49	1 43	1 38	1 23
Percent decline in ratio	0	−4	−7	−17