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CHAPTER 1

Introduction and Summary of Results

Put briefly, and in the most general terms, the object of this study is to measure the relative importance of various factors that affect the market price of bank stocks and thereby influence the ability of banking institutions to raise capital funds by the sale of additional stock. More specifically, its object is to investigate the factors affecting the ratio of market price to book value, for the study assumes that the ability of institutions over the long run to raise capital through stock flotation is vitally affected by this ratio. The potential supplier of new bank equity, whether seeking long-term appreciation or just a fair return with safety of principal, cannot expect to achieve his ends unless, over the long run, the price of the stock to which he subscribes offers some prospect of being at, or slightly above, book value. Otherwise, the subscriber to stock faces the unhappy prospect of seeing his investment deteriorate over the long run, as each dollar subscribed is recompensed by securities worth less than a dollar by market appraisal.

At this point a strong warning is necessary. Although the study assumes that a market price at or above book value is the key to the ability of banks to maintain substantial long-term growth by the sale of new stock issues, it does not assume either that banks become suddenly unable to issue stock if the market price drops below book value, perhaps only temporarily, or that banks should invariably refrain from offering new stock to their own stockholders on privileged subscription at prices below book or below market. Chapter 4 will consider these points in more detail.

The relation between bank stock prices and book value is complex, for there are many factors that presumably exert, simultaneously, an influence on the value of such securities. Furthermore,

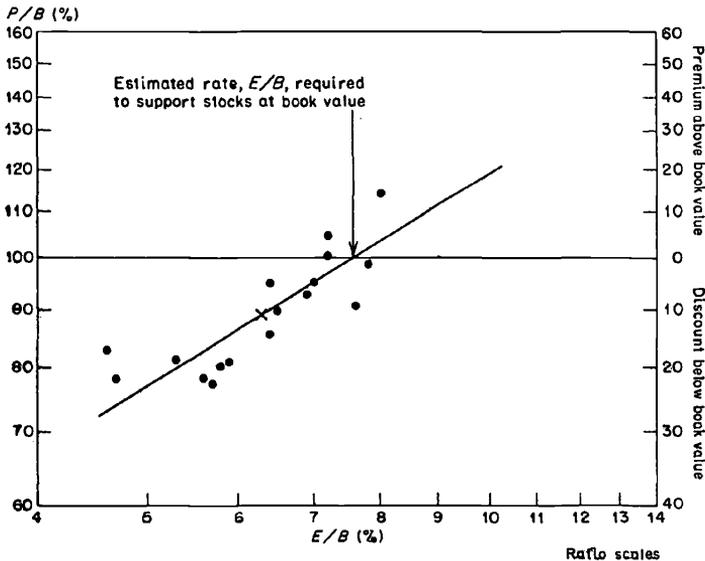
there is ground to suspect that the relative importance of these factors varies for different banks at any given time, and for any given bank at different times. Accordingly, the choice of a technique to be used in this study was governed by the need to analyze the various factors that simultaneously influence bank stock prices, and also to detect any important variations that might exist. An understanding of the technique chosen and what it hopes to accomplish is best begun with a simplified example in which the influence of one factor only is treated.

Illustrative Diagram
Considering Earnings Alone as a Price Factor

In Chart 1, which illustrates the bare essentials of the statistical technique used in this study, the ratios of price to book value, P/B , for seventeen New York bank stocks in early 1952 are plotted against rates of earnings on book value, E/B . From the scatter of these observations it will be seen at once that a fairly close and systematic relationship exists between the ratio of earnings to book

CHART 1

Relation between Ratios of Earnings to Book Value and of Price to Book Value, for 17 New York City Bank Stocks, Early 1952



and of price to book. Although a few institutions provide exceptions, the relationship is sufficiently close so that it can be represented by an upward sloping trend line drawn through the center of the distribution at the point X , which marks the average ratio of price to book value, $P/B = 89$ per cent, and the average rate of return, $E/B = 6.3$ per cent.

A trend line of his sort, to the extent that it is really representative, answers an interesting and important question. What rate of return on bank capital is required on the average to support bank stocks at book value? Specifically, the illustrated trend line in Chart 1 crosses the 100-per-cent-of-book-value line at about 7.6 per cent, implying that this rate of return was required on the average to support New York City bank stocks at book value in the early part of 1952. The same trend line also permits estimating the rate of return required to support bank stocks at 90 per cent of book value, or at 105 per cent of book value, or at any other desired level not too far removed from the center of the scattered points. Although trend lines of this sort can be extended indefinitely in either direction, they are apt to become highly unreliable outside the actual range of scatter.

In fact, even within the range of scatter the reliability of such estimated required rates of return is open to question. This problem has already been discussed¹ and will, no doubt, come in for more discussion in the future. But the emphasis of the present study is not so much upon the statistical rectitude of the estimates as upon their economic significance, on the assumption that they are indeed reliable. It is only to be hoped that this specialization of emphasis will not mislead the unwary into thinking either that problems of reliability do not exist, or that they have been brushed casually away.

Inclusion of Other Factors

If earnings were the only factor of consequence bearing on the market price of securities, and if their effect on bank stock prices were uniform for all bank stocks at all periods of time, then Chart 1 would indeed provide a definitive answer to our question of what rate of return is required to support bank stocks at book value and thus to facilitate the flotation of new equity capital. But we know, of course, that other factors are important, and that prominent

¹See David Durand, "Joint Confidence Regions for Multiple Regression Coefficients," *Journal of the American Statistical Association*, Vol. 49 (1954), pp. 130-46; and "Bank Stocks and the Analysis of Covariance," *Econometrica*, Vol. 23 (1955), pp. 30-45.

among them is the dividend rate. Chart 1 was selected for the preliminary simplified illustration because dividends exerted no discernible effect on prices of New York City bank stocks in 1952. But Chart 1 illustrates the exception, not the rule. Merely on the basis of general observation, we know that different investors place very different emphasis on dividends. Some require steady income in the present or the near-term future, and for them a stock that retains most of its earnings will have little value, even when the earnings are substantial. Others, however, and notably those in the higher income tax brackets, prefer stocks with low dividend payout ratios promising greater capital appreciation in the long-term future. Thus dividends may be expected to exert both a substantial and a varying effect.

An adaptation of Chart 1 to take account of dividends and such other factors as may influence bank stocks would involve tremendous problems of graphical analysis and presentation, for each additional variable, or factor, would require the addition of another dimension on the chart. The same ends can be achieved mathematically, however, by a standard statistical technique, multiple regression, which enables us to estimate the relative influence exerted by earnings versus dividends and to investigate the strategic question of the combined rate of earnings and dividends required to support bank stocks at book value — or at some other level.

For application of the multiple regression technique, the data illustrated in Chart 1 were supplemented by dividend payout ratios, various capital ratios, size of bank in terms of total capital, and other variables to be discussed in Chapter 2. These data were collected for each of the eight years 1946-53, and for five groups of bank stocks in addition to the New York bank stocks. All told, the analysis covered eight years and 117 bank stocks divided into six groups, so that forty-eight separate cross-sectional analyses were made. These forty-eight analyses constitute the core of the study.

Summary of Results

The first conclusion resulting from the forty-eight cross-section analyses is that the influence exerted by the various factors on bank stock prices varied substantially from group to group. Thus, although dividends seem to have played only a secondary role for the New York City bank stocks over the eight years studied, dividends played the major role in several other groups. In addition to the variation in influence from group to group, there was some suggestion, as one might expect, of variation from year to year,

though this was by no means as clear as the intergroup variation. Differences of these sorts highlight the danger of drawing generalizations that purport to apply to all bank stocks, across the board.

Probably the second most important conclusion is that only two primary factors, dividends and earnings, seemed to play a systematic and easily demonstrable role in determining ratios of bank stock prices to book value. That other factors play at least minor roles is virtually certain; but since fairly refined statistical methods seem unable to identify the factors, or to describe their roles, it seems fair to conclude that these factors are either much less important than dividends and earnings, or that they are much more subtle in their operation.

Accordingly the major effort of the study is toward presenting and interpreting a series of estimates of the relative importance of dividends and earnings as determinants of market price in relation to book value. In doing this, the ensuing chapters follow two apparently different, though actually complementary approaches. Chapter 2 assumes that three primary factors — namely, book value, dividends, and earnings — all affect price; and it presents weights to represent their relative contributions. Then, Chapter 3 shifts emphasis from price itself to the ratio of price to book value, assuming that this ratio is affected by only two primary factors — specifically, the ratio of earnings to book value and the ratio of dividends to book value. It extends the type of analysis illustrated in Chart 1 to provide estimates of the combined rates of earnings and dividends required to support bank stocks at book value and it traces these estimates for the six groups of bank stocks over the eight-year period 1946-53.

Chapter 4 deals with conceptual difficulties arising out of retained earnings and growth. Clearly, growth is an important factor bearing on stock prices, and hence on the cost of capital; but it is also one of the most baffling. The study was unable to find a direct relationship between bank stock prices and obvious measures of growth, such as the rate of increase in bank earnings. Accordingly, Chapter 4 attempts a reconciliation between these empirical findings and the conventional theory of security evaluation, by which present values are ascertained by discounting expected future dividends. The attempt is inconclusive from the standpoint of reconciliation, but it illustrates the highly complex nature of problems associated with the cost of capital — and especially the complex nature of growth problems.

Relation of the Study to the Cost of Bank Capital

Attempts to measure such quantities as the ratio of earnings to book value that is required to support bank stocks at book value are concerned directly with a fundamental concept — the cost of bank equity capital. It would be rash, of course, to argue that anything so simple as a ratio of earnings to book value, or even a combination of this ratio with a ratio of dividends to book value, could represent, all by itself, the cost of bank capital, which has too many facets and is far too complex to be neatly defined and summarily measured. In a rough sort of way, the cost of bank capital is the rate of return required to attract new equity into the business fast enough to keep pace with the secular increase in bank deposits. But the rate that will do this presumably depends on many factors, including the skill of underwriters, the attitude of bank supervisors in maintaining bank capital ratios, and the manner in which new capital is acquired — that is, retentions versus new stock issues. And as Chapter 4 shows, one of the most challenging problems encountered in studying the cost of bank capital is how to measure the relative cost of capital acquisition through retentions and through new stock issues; and this leads directly into the equally challenging problem of evaluating retained earnings — especially for growth stocks.