

Stock Market Fundamentals

by Joseph G. Haubrich

The Great Bull Market of 1996–97 has caught the attention of stock market professionals and individual investors alike. Because the stock market serves as an economic indicator and a possible source of economic disturbances, its recent movements have captured the interest of policymakers as well.

Most of this concern has centered around whether current stock prices are justified by economic “fundamentals,” or whether they indicate a speculative “bubble.”¹ Investors worry that such a bubble may burst, leaving their recent gains a mirage. Policymakers worry about how stock market wealth impacts consumer spending, whether a bull market is driven by fears of inflation, and how they should respond if the recent correction becomes a full-fledged bear market.

This *Economic Commentary* looks at the major factors behind stock price fundamentals and examines how well those factors explain—or fail to explain—market fluctuations.² As in many prognoses, there are reasons for both optimism and pessimism. Keep in mind, however, that while economic analysis may offer insights into the stock market, it by no means guarantees profits.

■ A Shift in Perspective

Before their recent losses, stock prices had been surging, with market averages soaring to new heights (sometimes on a daily basis). These gains can be exaggerated, however, if one ignores the previously high level of the market. If the Dow Jones industrial average moves up

1,000 points to a level of 2,000, investors double their money. A move from 5,000 to 6,000 means a return of 20 percent, and a similar jump to 7,000 translates into a 17 percent gain. Figure 1 exploits this insight by plotting the Standard & Poor’s (S&P) 500 index on a proportional (logarithmic) scale, where straight lines indicate constant percentage growth rates. To provide the same return, prices must rise more when they are high than when they are low. From this perspective, the market’s recent increases look more typical.

■ Market Fundamentals

Why are people willing to buy a share of stock? The fundamental approach argues that investors value the dividends the stock will pay.³ (More generally, they value the income from the stock, which might also come from buy-backs or, in closely held firms, from cushy jobs given to shareholders.) The value of this dividend stream should be the value of the stock.

The value of the dividend stream has two components. The first is the dividend stream itself, which, given the uncertainty of its future, entails an educated guess about what the firm will pay at some later date. It is by nature a forward-looking, expected-value calculation that buyers must make. Will your favorite biotechnology company find the cure for the common cold? Is that gold stock in your portfolio running low on ore? Will the software firm you own get its new operating system out on time? The answers to these questions matter for the dividend stream, and thus for stock

While the Dow Jones industrial average continues on its roller coaster course, one thing that remains constant is investors’ concern about whether current stock prices are justified by today’s economy or whether they are based on mere speculation. The optimist and pessimist camps are divided over the meaning of dividend and earnings growth, but they both often ignore the importance of time-varying expected returns. This article examines the primary factors driving stock market fundamentals and looks at how well those factors explain—or fail to explain—current market trends.

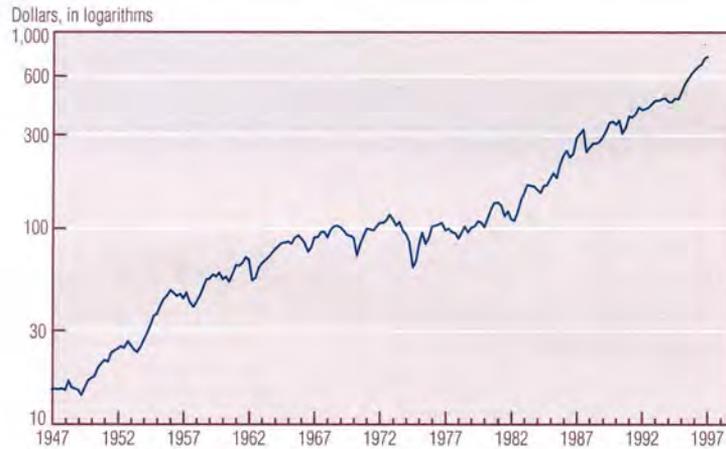
prices. More general macroeconomic factors, such as inflation, unemployment, or productivity, impact many firms and hence affect the market as a whole. For example, a general inflation would also boost dividends (in dollar, although perhaps not real, terms) and lead to an adjustment in stock prices.

Buying a stock is riskier, however, than putting your money in the bank. This means that investors will demand a higher average return on stocks to compensate for the greater uncertainty and chance of loss. People assign a lower value to a stock that is expected to pay \$1 per year than to a bank account that pays \$1 a year, because the stock dividend is uncertain. One way to express this is to say that the interest rate used to discount the dividend stream is higher.⁴ This interest rate is the second component affecting the value of the dividend stream.

The fundamental price of a stock may thus fluctuate for two reasons. Expectations about dividends may change, or the required rate of return may change. That is, future cash flows may vary, or the way investors value those flows may vary. It's common knowledge that slow dividend growth may depress a stock's price, but it is also true that uncertainty about those dividends or an increase in bond and bank rates can have the same effect.

Combining both of these factors allows us to calculate a "warranted" stock price, or one justified by market fundamentals. Such a calculation must be treated as a rough estimate because it purports to measure something unobservable: people's expectations. Seemingly small changes in the method could yield substantially different results. Still, the effort is instructive. By using a five-year average of dividend growth, we can obtain an estimate of expected dividend growth (under the potentially dangerous assumption that the future will be similar to the past). By using Moody's composite return on long-term bonds plus a risk premium of 2.5 percent, we can generate an estimate of the return investors demand on stocks.⁵

FIGURE 1 S&P 500 PRICE PER SHARE



SOURCE: Standard & Poor's Corporation.

Putting these two estimates together allows us to compare actual with warranted stock prices based on the estimated fundamentals. Figure 2 shows the pessimist's side of the story: Stocks look overvalued because dividend growth has been too slow to justify the recent surge in prices. This relationship is not perfect, of course, but the current gap seems particularly large. Recent dividend growth of less than 4 percent is far below the 8 percent posted in the early 1990s, let alone the 11 or even 12 percent growth of earlier years.

Optimists take a somewhat different view. Dividends do not appear out of thin air. Rather, they are one destination for a firm's earnings. This makes earnings growth more fundamental than dividend growth, and earnings growth has been explosive in recent years (see figure 3). The optimist maintains that increased earnings will eventually result in larger dividends, justifying today's high stock prices. The price-to-earnings (P/E) ratio, at a relatively high 19, seemingly contradicts this point, but it ignores the important distinction between the *level* and the *growth rate* of earnings. It's not the height but the speed of a rocket that keeps it moving forward. The optimist focuses on earnings growth. If growth remains strong, the P/E ratio may likewise stay at a consistently high

level, since investors expect earnings to continue rising.

The argument between optimists and pessimists also involves another statistic, the payout ratio, which tracks the fraction of earnings paid out as dividends. Historically, it averages around 50 percent, but the current figure is closer to 35 percent. Pessimists think that recent earnings growth is unsustainable and that firms, knowing this, have kept dividends stable. And shouldn't firms have the best forecast of their own earnings? The payout ratio will return to its long-run level when earnings fall. Optimists believe that firms have merely delayed dividend increases, and that the low payout ratio leaves a lot of room for dividend growth, even if earnings slow.

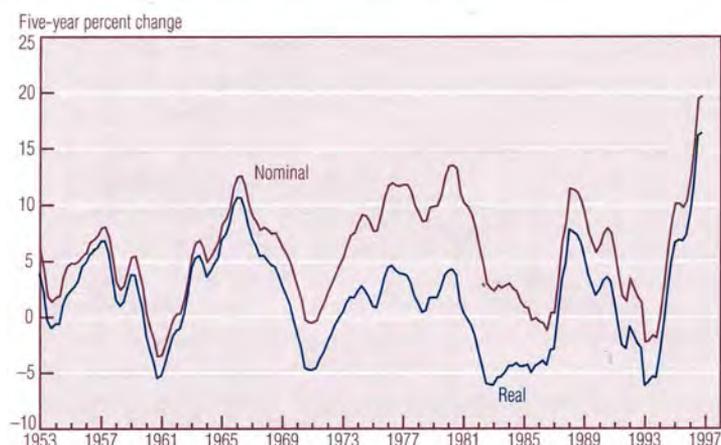
Optimists have one more reason to prefer the message from earnings: stock repurchases. Dividends are not the only way to get cash into the hands of shareholders. A company may also repurchase a portion of its shares. Even those stockholders who hang onto their shares benefit from a higher stock price, and perhaps from higher future dividends. Stock repurchases do not show up as dividends, and thus low dividends may reflect a shift to repurchases rather than a low payout to shareholders.

FIGURE 2 S&P 500 STOCK PRICES: WARRANTED VS. ACTUAL



SOURCES: Standard & Poor's Corporation; and author's calculations.

FIGURE 3 S&P 500 EARNINGS PER SHARE



SOURCE: Standard & Poor's Corporation.

As noted above, however, dividends, earnings, and repurchases represent only half the fundamental story. The risk factor, or the higher expected return that people demand on stocks, also changes over time. If that number falls, it pushes stock prices higher.

A generation ago, most people attributed shifts in stock market fundamentals to dividends or earnings, but one of the clearest messages coming out of the academic finance literature over the past 15 years is the importance of time-varying expected returns.⁶ That is, more varia-

tion in fundamentals, and hence in stock prices, results from variation in the risk factor and the expected return than was previously thought.

The return expected on stocks may vary for two reasons. The riskless interest rate, measured by insured bank deposits or default-free Treasury securities, may change along with the health of the economy, productivity, or Federal Reserve policy. Alternatively, the risk premium—that is, the extra return that people get for holding risky stocks—may change. A lower risk premium reflects either a less

risky market or investors who are more willing to bear such risk, much as a boom in skydiving might be attributed to either safer parachutes or a younger, more daredevil population.

From the pessimist's viewpoint, the evidence for both of these possibilities is at best mixed. Recall that figure 2 includes a changing interest rate in the calculation of the warranted price, yet still reveals a large gap between warranted and actual stock prices. By some measures, such as yearly standard deviation, market volatility has been relatively low over the past five years, but it has also been rising since 1994.

The optimists do have some evidence on their side. An excellent predictor of future stock market returns is the dividend-to-price (D/P) ratio. For returns based on holding a stock for five years, the D/P ratio accounts for more than 40 percent of the variation.⁷ This figure is now at a post-World War II low, which strongly suggests that investors are accepting a smaller return on stocks than in the past, for whatever reason.⁸

This phenomenon has consequences that both optimists and pessimists can appreciate. The optimist sees the low expected return as a justification for high stock prices; the pessimist sees the low expected return as exactly that and nothing more. But there is also a subtler effect concerning the influence of dividends. A lower expected return means that changes in dividend growth will have a greater impact on stock prices. It thus makes questions about dividends and earnings more important than before.

Conclusion

Asset pricing is not an exact science. The market has crushed the bones of many a sure-fire scheme under the iron heel of its random walk. This is not to deny that there are many good investment opportunities available, but only to emphasize that pitfalls exist as well. A better appreciation of the forces driving market fundamentals may give investors (and policymakers) the sagacity to find one and avoid the other.

■ Footnotes

1. This *Economic Commentary* went to press on May 8, 1997.

2. Nothing in this article should be construed as investment advice, either on behalf of particular stocks or in regard to overall investment strategies.

3. The classic discussion of this issue can be found in John Burr Williams (first published in 1938), "Evaluation by the Rule of Present Worth," in James Lorie and Richard Brealey, eds., *Modern Developments in Investment Management: A Book of Readings*, 2d ed., Hinsdale, Ill.: Dryden Press, 1978, pp. 471–91. (If the equations are not to your taste, memorize the poem.) A particularly clear and comprehensive modern treatment is presented in John Y. Campbell, Andrew W. Lo, and A. Craig MacKinlay, *The Econometrics of Financial Markets*, Princeton, N.J.: Princeton University Press, 1997, pp. 253–89.

4. For a helpful discussion of this point, see Timothy Cogley, "Why Do Stock Prices Sometimes Fall in Response to Good Economic News?" Federal Reserve Bank of San Francisco, Economic Letter No. 96-36, December 13, 1996.

5. The 2.5 percent equity premium represents a rough guess that is in line with historical measures and that also provides a sensible warranted-price series. For a more sophisticated approach, see R. Glen Donaldson and Mark Kamstra, "A New Dividend Forecasting Procedure that Rejects Bubbles in Asset Prices: The Case of the 1929 Stock Crash," *Review of Financial Studies*, vol. 9, no. 2 (Summer 1996), pp. 333–83.

6. See, for example, Robert F. Whitelaw, "Time Variations and Covariations in the Expectation and Volatility of Stock Market Returns," *Journal of Finance*, vol. 49, no. 2 (June 1994), p. 515.

7. See John Y. Campbell, Andrew W. Lo, and A. Craig MacKinlay, *The Econometrics of Financial Markets* (footnote 3), section 7.2.

8. For more evidence supporting this point, see Olivier J. Blanchard, "Movements in the Equity Premium," *Brookings Papers on Economic Activity*, vol. 2 (1993), pp. 75–118.

Joseph G. Haubrich is a consultant and economist at the Federal Reserve Bank of Cleveland.

The views stated herein are those of the author and not necessarily those of the Federal Reserve Bank of Cleveland or of the Board of Governors of the Federal Reserve System.

Economic Commentary is available electronically through the Cleveland Fed's home page on the World Wide Web: <http://www.clev.frb.org>.

Federal Reserve Bank of Cleveland
Research Department
P.O. Box 6387
Cleveland, OH 44101

Address Correction Requested:
Please send corrected mailing label to the above address.

Material may be reprinted provided that the source is credited. Please send copies of reprinted materials to the editor.

BULK RATE
U.S. Postage Paid
Cleveland, OH
Permit No. 385