

Investor Expectations and Fundamentals: Disappointment Ahead?

by John B. Carlson and Eduard A. Pelz

Although the stock market got off to a choppy start this year and investor confidence has fallen of late, recent surveys reveal that investors still expect stocks to yield returns of around 15 percent.¹ Accounting for expected inflation of about 2 to 3 percent, such anticipated returns remain significantly higher than historical average real returns of 7 percent.² What could explain such optimistic expectations?

One possibility is that survey respondents are following so-called momentum investment strategies. Momentum investors base their investment decisions on recent movements of stock prices, which, as measured by various indices, were trending upward until recently. Near-term optimism might represent an extrapolation of the high returns of recent years.³

Another explanation for survey respondents' optimism is that they expect fundamentals—expected earnings growth and the rate of return required by investors—to support a continued rise in stock prices. For example, respondents may expect the extraordinary earnings growth of recent years to continue indefinitely, fueling further stock-price appreciation. Stock prices may also be expected to appreciate if investors require lower returns. While it may seem paradoxical, lower required returns initially generate higher realized returns for those who already own stock, but this is a transitory (though perhaps persistent) state. If investors assess the path of future earnings correctly, their actual return would be expected to equal the rate at which they discount those earnings, that is, their required return. Discounting future cash flows from equities

using a lower required return implies that investors are willing to pay more for stocks, pushing up *current returns*. Higher *current returns* would thus be associated with *lower expected (future) returns*, contrary to the expectations of those investors surveyed.

Some advocates of the view that required returns are falling maintain that investors are becoming “calmer and smarter.” They argue that investors have come to recognize that *when held over long horizons*, a diversified portfolio of equities produces returns that are no more variable (hence no more risky) than those of any other “safe” market security.⁴ Consequently, investors now require a *smaller* premium to induce them to hold equities over essentially riskless alternatives such as U.S. Treasury securities. This is often called the *equity premium*.⁵ Their required rate of return on equities is smaller, reflecting the shrinking equity premium.

In this *Economic Commentary*, we focus on some implications of a shrinking equity premium in standard models of stock-price valuation. We examine the conditions under which the survey results can be reconciled with the view that the equity premium is falling. Our analysis illustrates a potential hazard of extrapolating recent returns indefinitely into the future—those who do so are likely to be disappointed.

■ Discounting Future Returns

The standard approach to valuing equities is straightforward and involves two basic elements—earnings growth and discounting. To appreciate the role of these elements, it is useful to ask why investors hold stocks. The answer, of

The average annual return of the S&P 500 index since 1994 has exceeded 25 percent. Confidence is high and investors are looking forward to continued above-average returns. In this *Economic Commentary*, we attempt to reconcile investors' expectations with a decline in the equity premium, using a standard approach to stock-price valuation.

course, is that they expect some future income, either in the form of dividends or through stock-price appreciation, that is, capital gains. Income depends clearly on the firm's ability to grow earnings. The higher its earnings growth, the greater its potential to pay dividends and the greater its stock-price appreciation. This all seems quite clear.

Central to the valuation problem, however, is the fact that an investor's income from holding stock accrues in the future and is uncertain. Given a choice, individuals would prefer to receive income sooner rather than later. To give up a dollar's worth of current income, investors demand more than a dollar in the future. The more impatient the investor, the less he is willing to pay for a stock with a given level of future income, that is, the higher his required return.⁶

Given a choice, individuals also prefer less uncertainty. Investors discount risky investments more than safe ones—equivalently, the more risk associated with a stock, the higher the attendant required return. Naturally, the equity premium is also affected by the degree to which an investor's portfolio is diversi-

fied. Individuals can reduce their overall exposure to risk by holding a portfolio of stocks in which risks are offsetting. Moreover, individuals will discount a stock less if they can add it to a portfolio that offsets the risk associated with that particular stock (idiosyncratic risk) and thereby reduce their total risk.

An important element of the equity premium often overlooked is shareholder cost.⁷ Investing in stock incurs time and money. What matters to the investor is income received after accounting for costs—the net return. The greater the costs, the higher the return required to maintain a given level of net return. For the small investor holding mutual funds, such costs historically accounted for more than two percentage points of returns (although there is evidence that this is declining).⁸ The historical average return of 7 percent on stocks is a *gross* real return. Hence, the *net* return for a typical mutual fund investor would have been less than 5 percent.

■ Implications of a Permanent Decline in the Equity Premium

Anyone exposed to U.S. television commercials must surely be aware of dramatic declines in the costs of trading stocks. We have witnessed a barrage of advertisements by dot-com brokers, stressing the low cost and convenience of making trades on the Internet. Moreover, the availability of new investment products such as low-cost index funds has increased the small investor's access to highly diversified portfolios.⁹

These trends, a result of technological innovations in information and communications technologies, clearly justify lower required returns. What's more, because these technologies are irreversible, the effect is permanent. The only issue is the size of the decline. Jeremy Siegel of the Wharton School estimates that lower shareholder costs and increased diversification have reduced the equity premium—and hence required returns—as much as two percentage points.¹⁰ If we assume that investors' earnings forecasts are correct on average, actual returns will equal required returns. Siegel believes that, looking forward, we might reasonably expect gross returns of 5 percent, down two percentage points from historical averages.

Figure 1 illustrates the implications of a smooth change in required returns from 7 percent to 5 percent over a period of

15 years. Panel A shows the assumed path for required returns. Panel B illustrates the corresponding impact on the level of the stock-price index under the assumption that dividend growth remains unchanged at an expected rate of 3 percent annually—the actual trend rate for earnings in the post-World War II period. Panel C shows the path of gross returns implied by this path of stock-price appreciation and 3 percent annual dividend growth.¹¹

In panel B we see how the estimated value of stocks would change if required returns drop, relative to a path assuming no change. A two-percentage-point decline in required returns yields a doubling of the index value. Since our hypothetical example assumes that the bulk of the change takes place over 15 years, average annualized gross returns over the period would be approximately 4.7 percentage points higher than they would have been otherwise.

Note that the increase in gross (realized) returns (panel C) occurs when required returns begin to fall. This reflects the fact that a decline in required returns implies investors are willing to pay more for equities than they were previously. Hence, in competitive markets, the price of the stock would be bid up.

The appreciation in stock prices is essentially a windfall return for current equity owners.¹² That is, gains from reduced required returns accrue to holders of equities as above-average returns. The extra returns that result from the fall in required returns persist only as long as required returns continue to decline. It is important to note that when required returns stop falling, the windfall ceases and realized returns end up at 5 percent, the new required return (barring, of course, surprises to earnings growth).

■ Reconciling High Expected Returns

This brings us back to the puzzle posed in the introduction. If recent high stock returns can be at least partly attributed to a decline in required returns, then we might expect future long-term returns to ultimately fall below their historical average, as in figure 1. Thus, at some point, rational investors should expect returns that are lower than the historical average. Yet we find that investor surveys reveal just the opposite. What can explain this discrepancy?

One possibility is that the equity premium continues to fall. The fact that the new transactions technology has been readily available does not imply that the benefits are currently enjoyed by all. We may still be in the midst of diffusing its benefits.

Another reason the equity premium may be continuing to fall is that, as we've noted, investors are increasingly taking the long view. That is, they are buying stocks and holding onto them to diversify risks across time. More precisely, if one buys a portfolio of stocks and holds it for, say, 40 years, then one might expect cyclical effects to be averaged out—good times will offset bad. James K. Glassman and Kevin Hassett take this view when they argue that the stock market continues to be undervalued.¹³

So far, we have largely ignored earnings growth, the other fundamental of stock valuation. In fact, our analysis assumes that earnings increase at some constant long-run rate.¹⁴ In a more general setting, it is reasonable to expect the required rate of return to rise when productivity (the engine of earnings growth) increases, as it has in recent years. Improved productivity creates more profitable investment opportunities, and these must compete for limited resources, a process which pushes up the real interest rate. Higher real interest rates raise the return on all investments (including risk-free Treasury bills) and hence the required rate of return on equities. Increased productivity can push up the price of a single stock, or even an entire sector, but broad-based increases in productivity will eventually affect required returns (through interest rates) and ease stock-price appreciation.

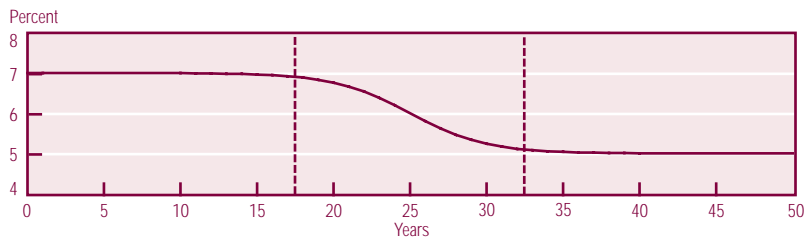
Is there evidence that improved productivity is stimulating higher required returns? Productivity has been rising, and real interest rates also seem to be higher than their historical averages. Yields on 10-year Treasury inflation-protected securities (TIPs), which Siegel argues are an appropriate benchmark for a risk-free return,¹⁵ are currently around 4 percent. What does all this mean for the equity premium? If we assume a required return of 5 percent for the reasons given earlier, the equity premium becomes only 1 percent.

■ Some Concluding Thoughts

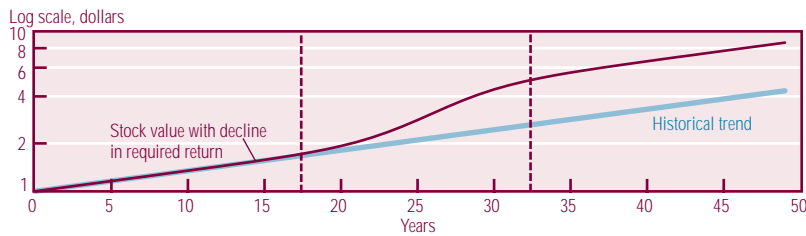
A good case can be made that permanent declines in shareholder costs and increased diversification have worked

FIGURE 1 THE EFFECT OF A DECLINING EQUITY PREMIUM

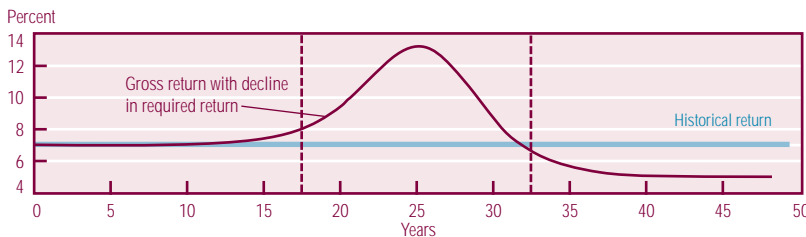
Panel A: Required Rate of Return^a



Panel B: Simulated Stock Values



Panel C: Gross Return



a. The dashed lines indicate the time period over which the equity premium falls.

SOURCE: Authors' calculations.

together to produce a substantial permanent increase in stock values. This, in turn, could explain why recent returns on equities have far exceeded their historical average. Whether this process justifies current stock prices or whether the market has overreacted, one cannot know. Equity prices could correctly reflect expectations of persistently high future earnings growth.

What concerns us is the possibility that momentum strategies could bid up the general level of stock prices beyond that supported by fundamentals. The financial literature establishes clearly that it is possible to earn higher returns than the market by investing in stocks whose values have recently increased faster than the market, but only over short horizons.¹⁶ In brief, it makes sense to jump on the bandwagon—at least in the near term. It is unclear to what extent this applies to the market in its entirety; recent empirical evidence suggests that the profitability of momentum strategies decreases with firm size.¹⁷ However, an unanticipated, permanent drop in the equity premium could lead individually rational momentum investors to overreact—that is, to bid

stock values past levels justified by the new fundamentals. Recent market movements, especially in technology-laden indexes like the Nasdaq, may reflect such an overreaction.

An important lesson of our analysis is that the extra returns generated by a drop in the equity premium disappear when required returns stop falling. Thus, even if investors correctly forecast higher-than-average cash flows from stocks, they should expect a lower-than-average historical return—reflecting a lower equity premium. To the extent that the recent surge in stock prices is the transitory result of a shrinking equity premium, investors expecting higher-than-average returns based solely on momentum will likely be disappointed—if they haven't been already.

Footnotes

1. See for example, Dennis J. Jacobs and David W. Moore, "Investor Optimism Falls," *The Gallup Organization*, Poll Releases, March 29, 2000, <<http://www.gallup.com/poll/releases/pr000329b.asp>>.

2. For a comparison of long-term returns equities versus returns on U.S. Treasury bills and bonds, see Jeremy J. Siegel, "The

Shrinking Equity Premium," *Journal of Portfolio Management*, vol. 26, no. 1 (Fall 1999), pp. 10–17.

3. Over short time horizons, stock-price increases tend to persist, and investment strategies designed to exploit this fact can be lucrative. Over extended horizons, momentum investing will be profitable only if supported by fundamentals. A theoretical justification for momentum-investment strategies is provided by Harrison Hong and Jeremy C. Stein, "A Unified Theory of Underreaction, Momentum Trading, and Overreaction in Asset Markets," *Journal of Finance*, vol. 54, no. 6 (December 1999), pp. 2143–84. A key assumption is that investors are boundedly rational, that is, rational, but with limits on how much they can know. This creates a tendency for prices to underreact in the short run, making trend-chasing profitable.

4. See James K. Glassman and Kevin A. Hassett, "Stock Prices Are Still Far Too Low," in American Enterprise Institute for Public Policy Research, *On the Issues*, April 1999. The authors develop these arguments in their book, *Dow 36,000: The New Strategy for Profiting from the Coming Rise in the Stock Market*, (New York: Times Business, 1999).

5. The equity premium over the last century was higher than can easily be explained by the increased risk associated with holding equities. See Rajnish Mehra and Edward C. Prescott, "The Equity Premium: A Puzzle," *Journal of Monetary Economics*, vol. 15, no. 2 (March 1985), pp. 145–61.

6. Present value calculations define the price of a stock in the current period (P_0) as the sum of the discounted values of all future dividends. Formally,

$$P_0 = \sum_{t=1}^n \frac{D_0 (1 + g_t)^t}{(1 + r_t)^t},$$

where D_0 is the initial dividend, g_t is the growth rate of dividends at time t , and r_t is the required return at time t . One can show that this simplifies to the well-known Gordon growth model,

$$P_0 = \frac{D_0}{r - g},$$

under the assumption of constant dividend growth (g) and constant required returns (r).

7. For a thorough discussion of costs borne by mutual fund investors, see John D. Rea and Brian K. Reid, "Trends in the Ownership Costs of Equity Mutual Funds," Investment Company Institute, November 1998, pp. 1–12.

8. The most obvious cost is the commission paid on the purchase of a stock. Less obvious (as well as difficult to measure) are costs associated with tax liability, market research, management, and loads. For a more detailed examination of the components of required returns, see the companion *Economic Commentary* by John B. Carlson and Edward A. Pelz on the decline in required returns, forthcoming.

9. John Heaton and Deborah Lucas, "Stock Prices and Fundamentals," *NBER Macroeconomics Annual*, vol. 14 (1999), pp. 213–42.

10. See footnote 2.

11. The simulated fall in required returns from 7 to 5 percent is specified by the function

$$f(x) = 6 - \tanh\left(\frac{t_i - 25}{5}\right).$$

This particular function was chosen to accommodate a diffusion process that first accelerates and then decelerates. The price level is normalized to 1 in the first period.

12. It is, of course, implicitly assumed that technological advances that reduce shareholder costs are a surprise. Had they been anticipated, the windfall would have occurred at an earlier date; that is, only the timing would have been affected. Moreover, we are ignoring potential general equilibrium effects on returns of other assets.

13. See footnote 4.

14. That is, we present a partial equilibrium analysis of the standard valuation method. We implicitly assume that in the long run, the required rate of return is greater than earnings growth. There may be good reason to believe

that a firm's earning potential may exceed the required return in the near term, but this implies an infinite stock price. Clearly, this cannot persist indefinitely—market forces will work to bring required returns and earnings growth back into line. For general equilibrium approaches, see Nathan S. Balke and Mark E. Wohar, "Why are Stock Prices So High? Dividend Growth or Discount Factor?" Federal Reserve Bank of Dallas Working Paper 00-01, and Michael T. Kiley, "Stock Prices and Fundamentals in a Production Economy," Finance and Economics Discussion Series Working Paper 2000-5, Federal Reserve Board.

15. See footnote 2.

16. See, for example, Mark Grinblatt, Sheridan Titman, and Russ Wermers, "Momentum Investing Strategies, Portfolio Performance, and Herding: A Study of Mutual Fund Performance," *American Economic Review*, vol. 85, no. 5 (December 1995), pp. 1088–105.

17. Harrison Hong, Terence Lim, and Jeremy C. Stein, "Bad News Travels Slowly: Size, Analyst Coverage, and the Profitability of Momentum Strategies," *Journal of Finance*, vol. 55, no. 1 (February 2000), pp. 265–95.

John B. Carlson is an economic advisor at the Federal Reserve Bank of Cleveland, and Eduard A. Pelz is a senior research assistant at the Bank.

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**Federal Reserve Bank of Cleveland
Research Department
P.O. Box 6387
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