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May 2011, Number 11-7

IS TODAY'S PRICE-EARNINGS RATIO TOO HIGH?

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Introduction

More than half of households' retirement savings are invested in stocks.[1] During the recent financial crisis, stocks lost more than one-half their market value from the fall of 2007 to their lows in the spring of 2009. Since the trough in the market, stock prices have risen to nearly 85 percent of their former peak. Despite this rebound, savers remain relatively wary about holding stocks, and many experts expect weak returns on stocks in coming years.[2]

According to one time-tested standard, the 10-year trend in companies' reported earnings, stock prices may have risen too rapidly to offer pension funds and other investors attractive returns in coming years.[3] In the past, when prices have been high relative to this measure of cyclically-adjusted earnings, stocks have generally paid investors subpar returns.

This *brief* takes a closer look at stock prices and companies' earnings. Although some analysts have proposed alternative ways of measuring cyclically-adjusted earnings, this *brief* uses the traditional 10-year trend for smoothing reported earnings.[4] It finds that the relationship between stock prices and the traditional trend in earnings has shifted recently as a result of the two recessions since 2000. As this temporary shift reverses, cyclically-adjusted earnings will likely grow sufficiently rapidly in the next several years to bring their relationship to prices back to the long-term average.

The first section of this *brief* discusses the case for comparing stock prices to the trend in cyclically-adjusted earnings, instead of current earnings. The second analyzes the relationship between the two price-earnings measures. The third section examines the outlook for cyclically-adjusted earnings and stock prices. The final section concludes that the distribution of future returns for stocks currently is aligned with their historical average returns.

The Logic of Cyclical Adjustments

The ratio of stock prices to companies' earnings is a broadly accepted measure of the value of stocks. When prices are high relative to earnings, stockholders tend to earn lower returns. Conversely, when prices are relatively low, stocks tend to pay higher returns.[5] Although the S&P 500 index of stock prices has risen substantially since its trough in March 2009,

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earnings growth has been even stronger. Accordingly, stock prices remain about 15 percent short of their previous peaks, while earnings now match their previous peaks. Therefore, despite the strength of the bull market, stock prices relative to earnings currently have not risen above their historical average.[6]

Yet, judging the likely return on stocks by the ratio of stock prices to current earnings can be misleading. Earnings can vary considerably from year to year. Consequently, stock prices that are supported by high earnings today can be undermined if earnings drop tomorrow. Not only do earnings vary with economic conditions, but they also vary as companies report gains and losses in their financial statements when they restructure their assets, their liabilities, or their lines of business.[7] Accordingly, financial analysts attempt to cut through the noise in reported annual earnings to derive a more fundamental measure of earnings for the purposes of valuing stock.

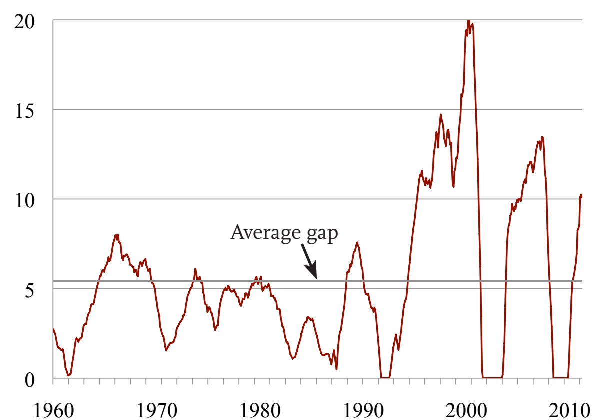
One long-standing method of taming this noise averages annual earnings over the last 10 years.[8] This measure of cyclically-adjusted earnings tends to smooth out the effects of "one-time" elements in companies' annual reports. It also tends to average out the uncommonly high and low earnings that companies report over the business cycle.

Relationship Between Price-Earnings Measures

Today, stock prices are almost 16 times annual earnings and 25 times cyclically-adjusted earnings. The ratio for cyclically-adjusted earnings ordinarily exceeds the ratio for annual earnings. The reason is that companies grow with the economy over time, so their average earnings over the previous 10 years are usually smaller than their current earnings – and the smaller the earnings, the larger the price-earnings ratio. Since 1960, earnings have grown on average 6 percent a year, which would tend to produce a five-point gap between the two measures of the price-earnings ratio.

The current difference between the ratios for cyclically-adjusted and annual earnings is about twice as large as the customary value of this gap since 1960 (see Figure 1).[9] In the past, such large gaps have often preceded the beginning of bear markets, as in 1999 and in 2007. From this perspective, even though stock prices currently are not unusually high relative to annual earnings, stocks appear to be precariously high compared to cyclically-adjusted earnings.

Figure 1. Gap between the Cyclically-Adjusted and the Annual Reported Price-Earnings Ratios, 1960-2010



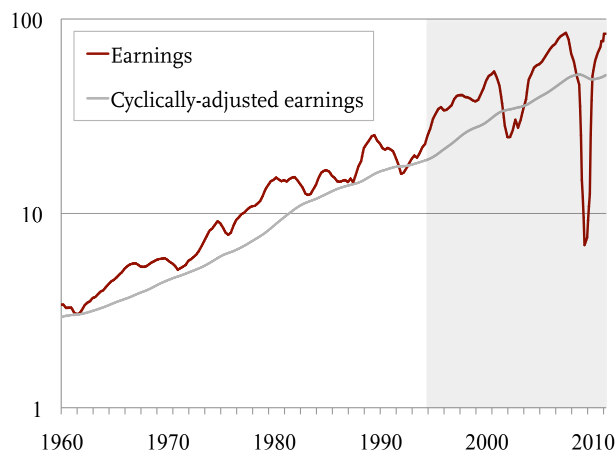
Note: This figure includes only positive differences – both in the year-by-year trend line and in the calculation of the average gap.
Sources: Shiller (2011); Standard & Poor's (2011); and authors' calculations.

Future Cyclically-Adjusted Earnings

Annual earnings have been very volatile, especially during the last 15 years. Cyclically-adjusted earnings, by contrast, have followed a relatively stable trend line, averaging out the peaks and troughs in annual earnings and seemingly providing a more reasonable basis for valuing stocks (see Figure 2 on the next page). Although the rate of growth of cyclical earnings varied from year to year, they grew consistently until 2008. During the recession that accompanied the recent financial crisis, cyclically-adjusted earnings fell slightly for the first time in 60 years and still have not regained their previous peak. In the past, this moving average of earnings covered a fairly reliable blend of rich and lean years for profits, which accounted for its relatively stable growth. But after 2008, its 10-year window included two substantial collapses in corporate earnings. The first in the early 2000s was broad; the second in 2009 was remarkably deep.

The close timing of these recessions altered the performance of cyclically-adjusted earnings, which in turn altered its ties to annual earnings and stock prices.[10] The current measure of cyclically-adjusted earnings reaches back 10 years to include the trough in annual earnings that occurred in late 2001 and

Figure 2. Annual Reported Earnings and Cyclically-Adjusted Earnings, 1960-2010 (dollars per Share)



Sources: Shiller (2011); Standard & Poor's (2011); and authors' calculations.

early 2002. Even if earnings do not increase from now to the end of 2012, cyclically-adjusted earnings will increase 12 percent, at an annual rate, as its moving 10-year window replaces the low earnings from 2001 and early 2002 with the much higher figures that will be reported this year and next.[11]

Companies' annual earnings also would grow rapidly in the coming years, but not as rapidly as cyclically-adjusted earnings. Assuming, as before, that quarterly earnings do not increase between now and the end of 2012, annual earnings will grow more than 8 percent on average during this period as the moving four-quarter window for annual earnings replaces the lower earnings of 2010 with the higher quarterly earnings of this year and next. If stock prices remain constant at 16 times annual earnings, stock prices also would rise more than 8 percent at an annual rate over these two years.

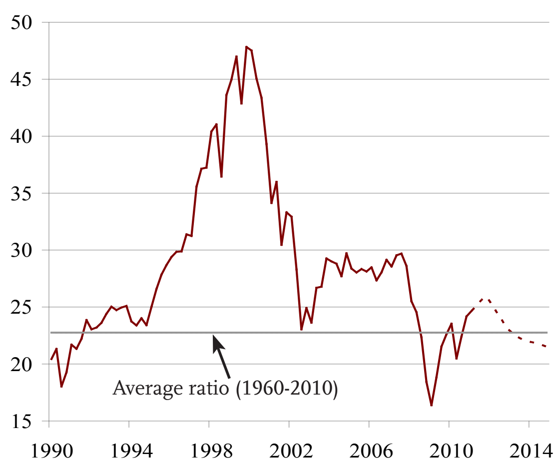
Overall, then, stock prices are likely to grow more slowly than cyclically-adjusted earnings, and the price-earnings ratio for cyclically-adjusted earnings will tend to drop to 23 – about 10 percent – by the end of 2012 (See Figure 3). Moreover, even if earnings grow 5 percent annually after 2012 and the annual price-earnings ratio remains at 16, stock prices relative to cyclically-adjusted earnings will continue to fall toward 21 in the following years, restoring the more customary five-point gap between the two price-earnings ratios.

Conclusion

Stock prices have recovered sharply since the financial crisis, rising to nearly 85 percent of their former peak. But many investors remain wary of the outlook for stock returns over the coming years. The jump in valuations seemingly squeezes the potential return on stocks in the future, while opening more room for downside losses in the event of a correction. According to one trusted measure of value, the ratio of stock prices to cyclically-adjusted earnings, prices are uncomfortably high today.

Yet, companies' earnings have recovered strongly, too. Consequently, cyclically-adjusted earnings will tend to increase at double digit rates this year and next, as its 10-year moving average replaces low earnings from 2001 and 2002 with today's much higher earnings. Accordingly, the currently lofty price-earnings ratio for cyclically-adjusted earnings will likely fall significantly as this measure of earnings grows more rapidly than stock prices during the next two years. By the end of 2012, the ratios of stock prices both to annual earnings and to cyclically-adjusted earnings are likely to match their long-term averages much more closely, thereby offering investors one of their highest earnings yields in two decades.

Figure 3. Cyclically-Adjusted Price-Earnings Ratio, 1990-2014



Sources: Shiller (2011); Standard & Poor's (2011); and authors' calculations.

Endnotes

1 Authors' calculations based on U.S. Board of Governors of the Federal Reserve System (2011) and Investment Company Institute (2011).

2 State Street (2011); Bogle (2010); GMO (2011); and Montier (2011).

3 Leonhardt (2011); Montier (2011); and Hulbert (2011).

4 Browning (2011).

5 Modigliani and Miller (1961); Malkiel (2007); and Campbell and Shiller (2001).

6 Kopcke and Karamcheva (2011).

7 Reported earnings often include one-time, temporary components due to plant closings, asset sales, restructuring, and other extraordinary events. Companies' operating earnings exclude these extraordinary items. Yet, when companies have substantial extraordinary items in most years – large enterprises frequently close plants or dispose of assets for example – these items become a continuing and ordinary part of doing business. In these cases, reported earnings rather than operating earnings can provide a clearer measure of profitability. The 10-year average of reported earnings dilutes the effect of true extraordinary items, while retaining the effect of recurring "extraordinary items."

8 Graham (1973); Shiller (2005); and Campbell and Shiller (2001).

9 The customary value excludes unusual periods in which the annual price-earnings ratio briefly exceeded the value of the cyclically-adjusted ratio, such as during the beginning of the two recessions that occurred in the past decade.

10 The 10-year moving average is a shock-absorber that smoothes the ride of earnings. Like all shock absorbers, it does a good job when the frequency of bumps is neither too high nor too low: it is tuned to cancel a specific range of frequencies well. The recent change in the frequency of bumps is now causing a sympathetic vibration in the shock absorber that is inducing a cycle in cyclically-adjusted earnings.

11 The forecasts of strategists as reported by Standard & Poor's (2011) show no growth in earnings through the end of 2012. If earnings are weaker than these forecasts, the cyclically-adjusted price earnings ratio would fall more rapidly than shown in Figure 3. With a constant price-earnings ratio, the slower growth of current earnings would reduce the growth of stock prices more than it would reduce the growth of cyclically-adjusted earnings.

References

Bogle, John C. 2010. *Common Sense on Mutual Funds*. Hoboken, NJ: John Wiley & Sons, Inc.

Browning, E. S. 2011. "Is the Market Overvalued?" *The Wall Street Journal* (April 9).

Campbell, John and Robert J. Shiller. 2001. "Valuation Ratios and the Long-Run Stock Market Outlook: An Update." Working Paper 8221. Cambridge, MA: National Bureau of Economic Research.

GMO. 2011. "GMO 7-Year Asset Class Forecast (4Q 2010)." January 14. Available at: http://bit.ly/hdoGIG.

Graham, Benjamin. 1973. *The Intelligent Investor*. New York, NY: Harper Collins Publishers Inc.

Hulbert, Mark. 2011. "History Bodes Ill for Stock Market." *MarketWatch* (April 12).

Investment Company Institute. 2011. "The U.S. Retirement Market, Fourth Quarter 2010" (April). http://www.ici.org/info/ret_10_q4_data.xls.

Kopcke, Richard W. and Zhenya Karamcheva. 2011. "Equity Returns in the Coming Decade." *Issue in Brief* 11-5. Chestnut Hill, MA: Center for Retirement Research at Boston College.

Leonhardt, David. 2011. "How Big Is the Pension Funding Gap?" *New York Times* (March 2). Available at: http://economix.blogs.nytimes.com/2011/03/02/how-big-is-the-pension-funding-gap/?scp=2&sq=leonhardt+pensions&st=nyt.

Malkiel, Burton. 2007. *A Random Walk Down Wall Street*. New York, NY: W.W. Norton & Company, Inc.

Modigliani, Franco and Merton H. Miller. 1961. "Dividend Policy, Growth, and the Valuation of Shares." *The Journal of Business* 34(4): 411-33.

Montier, James. 2011. "The Seven Immutable Laws of Investing." GMO White Paper. March 8.

Shiller, Robert J. 2005. *Irrational Exuberance*. 2nd ed. Princeton, NJ: Princeton University Press.

Shiller, Robert J. 2011. "Online Data: Long-Term Stock, Bond, Interest Rate, and Consumption Data." Available at: http://www.econ.yale.edu/~shiller/data.htm.

Standard & Poor's. 2011. "Benchmarks, Research, Data and Analytics: S&P 500." March 4. Available at: http://www.standardandpoors.com/indices/sp-500/en/us/?indexId=spusa-500-usduf--p-us-l--.

State Street. 2011. "Investor Confidence Index." Available at: http://www.statestreet.com/investorconfidenceindex/historicaldata.pdf.

U.S. Board of Governors of the Federal Reserve System. 2011. *Flow of Funds Accounts of the United States*, Federal Reserve Statistical Release, Z.1, Tables L.118.b, L.118c and L.225.i. Washington, DC.

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The Center for Retirement Research at Boston College was established in 1998 through a grant from the Social Security Administration. The Center's mission is to produce first-class research and educational tools and forge a strong link between the academic community and decision-makers in the public and private sectors around an issue of critical importance to the nation's future. To achieve this mission, the Center sponsors a wide variety of research projects, transmits new findings to a broad audience, trains new scholars, and broadens access to valuable data sources. Since its inception, the Center has established a reputation as an authoritative source of information on all major aspects of the retirement income debate.

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The Center for Retirement Research thanks AARP, Bank of America, Invesco^SM, LPL Financial, MetLife, MFS Investment Management, National Reverse Mortgage Lenders Association, Prudential Financial, State Street, TIAA-CREF Institute, T. Rowe Price, and USAA for support of this project.

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