



C A M B R I D G E A S S O C I A T E S L L C

## U.S. MARKET COMMENTARY

# SOME THOUGHTS ON “PERMA-BEAR” ADJUSTED RATIOS

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## Some Thoughts on “Perma-Bear” Adjusted Ratios

*“In our view, cyclical adjustments make no sense, since there is no reason to assume that profits will fall back to their level of ten years ago...we believe that the financial world has changed beyond recognition since the early 1990s; so we have little use for financial ratios based on the 1970s and 1980s...”*

– GaveKal Research

*“It is always a mistake to confuse a cycle with a trend. In the case of corporate earnings, it is worse than a mistake, it is a huge blunder. The intense cyclical nature of corporate earnings is the most important reason why the unadjusted P/E ratio is a worthless indicator of value.”* – Martin Wolf, *Financial Times*

*“Fluctuations in profits are totally ambiguous for share prices. It is interest rates that drive stock prices.”*

– Chen Zhao, BCA Research

In the wake of February’s global market sell-off and angst over sub-prime mortgage trouble in the United States, there has been much talk in the financial press recently concerning the general health of equity markets and the level of market valuations. Martin Wolf, a prominent columnist at the *Financial Times*, declared in early March that equity markets “look overvalued” based upon cyclically adjusted price-to-earnings (P/E) ratios, given that “we can be confident that profit growth will not continue at recent rates,” prudently conceding that “a sharp reversal, though possible, may not be imminent either.”<sup>1</sup> We agree with Wolf’s assessment and have long argued that the “Shiller P/E” (named after Yale professor Robert Shiller), is superior to P/E ratios based on 12-month trailing or 12-month forward earnings because it “normalizes” earnings over the profit cycle in an attempt to minimize earnings manipulation and provide a better gauge of sustainable earnings for which investors are paying.<sup>2</sup>

However, Wolf’s article sparked noticeable debate, especially in his use of cyclically adjusted P/E ratios, with commentators offering three primary critiques: (1) the Shiller P/E may not capture secular shifts in corporate profitability, (2) it has persistently pointed to overvaluation, and (3) it does not take into consideration the level of interest rates, which some analysts feel are the primary driver of stock market valuations. What follows is a series of ruminations sparked by this debate.

## Secular Shifts

It has been argued that over the past ten years that U.S. corporate profits (and global profits for that matter) have undergone a fundamental change, aided first by the widespread adoption of productivity-enhancing information technology, then by the cost-saving impact of globalization (off-shoring and the “China” factor), and possibly enhanced today by continued robust growth in emerging markets and the

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<sup>1</sup> “Equities Look Overvalued, but Where is the Turning Point?” Martin Wolf, *Financial Times*, March 6, 2007.

<sup>2</sup> The Shiller P/E is the ratio of current stock prices to the ten-year average of reported earnings per share, with both adjusted for inflation.

tentative resurgence of growth in Europe and Japan. Under this view, given that the world has changed, comparing today's earnings to the past misses the bigger picture.

Although there is no denying the impact of technology and globalization on the rebound in corporate earnings over the past four years or so, similar arguments were made to justify extreme valuations in 2000 right before earnings collapsed. For that matter, the same “it's different this time” rationale is applied at nearly all market tops, whether emerging markets in the early 1990s (faster economic growth deserves higher stock market valuations), Japan in the late 1980s (the Japanese economic miracle), “real assets” in the 1970s (inflation was to be a permanent phenomenon), U.S. stocks in the mid-1960s (the business cycle was dead), and even way back at the turn of the twentieth century (the advancements of science had ushered in an “Age of Progress”). History has shown that while every market environment has its own unique characteristics, rarely does the “new era” declared by investors actually signal the end of economic and market cycles. In short, we highly doubt the business cycle is dead, and it seems cavalier to assume the cyclical nature of profits is a thing of the past.

### **Normalized P/Es and Secular Markets**

There has been a sharp divergence of late between traditional trailing 12-month P/Es and (in Cambridge parlance) “real normalized P/Es,” with the former implying U.S. equities are fairly valued, while the latter points to lingering (and growing) overvaluation (Table A). Normalized P/E ratios have an excellent track record in identifying periods of extreme overvaluation (and subsequent secular bear markets) relative to traditional P/Es.<sup>3</sup> Indeed, “headline multiples” often serve as a poor guide, as they frequently appear low when profits are at peak levels, and high when earnings are cyclically depressed. For example, while the Shiller P/E peaked in fourth quarter 1999 and steadily fell until late 2002, headline P/Es soared well into fourth quarter 2001, as earnings collapsed faster than prices. While headline P/Es peaked in early 2002, normalized P/Es showed the market to be at its cheapest level since 1997. Similarly, normalized P/Es peaked in 1965-66 (prior to the start of the secular bear market that ran from 1966-82), while traditional P/Es were only 17—the same level as today!

The main critique of the Shiller P/E that resonates with most practitioners is that it has shown U.S. equities to be overvalued since about 1995, and that normalized P/Es did little good in identifying the sharp rebound in markets over the past four years or so; spurring GaveKal Research, for example, to refer to normalized P/Es as “perma-bear adjusted ratios.” In other words, there is too little “reversion to the mean” in this metric for it to be useful.

Talk of “paradigm shifts” aside, history (and behavioral finance) has taught us that investors consistently over-extrapolate the recent past, and that recent conditions weigh far more on market psychology than historical precedent. With that in mind, we looked at the Shiller P/E compared to its *rolling*

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<sup>3</sup> This is somewhat intuitive, as the prolonged losses seen over a “secular bear” are partly a result of the market “wringing-out” the valuation excesses of the previous run-up, while a “secular bull” is driven in part by a massive re-rating of the stock market from a depressed level.

ten-year history, rather than its static long-term averages.<sup>4</sup> We found that all the secular peaks and troughs still occurred outside the 1-standard deviation band around the moving average. In other words, *even compared to the recent past*, normalized real P/Es showed markets to be expensive at market peaks and outright cheap at market troughs. Furthermore, this analysis shows that in late 2002 the market *was* cheap relative to the recent past (as bloated as that past was), with the P/E falling more than 1 standard deviation below its recent mean, suggesting stocks were due for a cyclical rebound (Table B).

Yet even under this modified methodology, U.S. markets were consistently overvalued from 1987-2001, longer than the 12-year (and counting) period of overvaluation suggested when using a static long-term mean. This brings up an interesting observation. During the early stages of secular bull markets, the Shiller P/E takes a while to rise above the moving average plus 1-standard deviation line, but then tends to remain above that line for the rest of the bull cycle. During the early stages of secular bears, the P/E ratio often falls below its moving average minus 1-standard deviation line, sometimes rising sharply during cyclical bull market rallies, but then falling back as the secular bear market drags on.<sup>5</sup> P/E ratios trend downward during bear markets and strongly upward during secular bulls, as it takes time for investors to re-adjust their perception of valuations; shaking off persistently low multiples from a depressed base or downgrading expectations following an overvalued past. In short, there is much more “reversion” in this picture.

For those who argue that normalizing earnings over a ten-year period filters out too much current information, we have run the same analysis (normalizing earnings and calculating moving averages and standard deviations) for rolling seven- and five-year periods<sup>6</sup> (Table C). Intriguingly, the patterns remain the same, and while valuations have rebounded more sharply using shorter normalization periods, they still remain within 1 standard deviation of their “new” mean.

### **What About Interest Rates?**

Given that a central tenet of finance theory is the price of an asset should equal the sum of the present values of discounted cash flows produced by that asset, many argue any measure of equity market valuation must consider the prevailing level of interest rates. In essence, earnings (or dividends, or cash flows) need to be capitalized to reflect the current cost of capital, often approximated by long-term government or corporate bond yields plus an equity risk premium. Using a dividend discount model framework, the higher the level of interest rates, the lower the valuation placed on equities (all else being equal) as the cost of capital rises. For example, some argue the low equity market multiples seen in the late

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<sup>4</sup> It is powerful in our eyes that the long-run normalized P/E is the same as the long run “traditional” P/E, roughly 15x. Normalized real P/Es have a long-term average of roughly 15x whether calculated using our U.S. equity market data, which begin in 1900, or Professor Shiller’s data that extend back to 1881.

<sup>5</sup> The periods from 1920-29, the early 1940s to 1966, and 1982-2000, are generally considered to be “secular bull markets” while secular bears took place from 1901-22, 1929-41, 1966-82, and in theory, from 2000 to the present.

<sup>6</sup> Based on S&P earnings cycles since 1900, the average period of rising earnings last 16 quarters (four years) while the average earnings downturn lasts 11 quarters (roughly three years). Therefore, normalizing earnings over a seven-year period could arguably be used as a proxy for the full earnings cycle, while five years would really only capture the majority of either the upswing in earnings or the downswing, but not both.

1970s/early 1980s were a direct result of the abnormally high level of interest rates at that time, and that the secular decline in inflation and interest rates since then allows a higher level of stock market valuation than in the past.

While we fully agree declining interest rates were a major tailwind to equities during the secular bull market from 1982-2000, and that *real* interest rates play an important factor in the pricing of assets, the link between stock market valuations and interest rates is not quite this clear cut. Namely, while bond yields and earnings yields (the inverse of the P/E ratio) were positively correlated from the late 1960s until about 2001, the relationship did not hold during the low inflation/low interest rate period of 1926-65, and has also broken down somewhat since 2001 (Table D). Valuation models based on capitalizing dividends or earnings tend to break down when discount rates are low (roughly below 5%), as relatively tiny changes in the discount rate result in exponential movements in valuations.

Those who argue interest rates drive stock prices either believe small changes in interest rates *should* have an outsized impact on valuations when interest rates are low, or are confusing correlation with causality. Although lower real interest rates *may* result in higher P/E ratios, this may simply be due to the “E” falling much faster than the “P,” and not a market re-rating driven by a lower discount rate/cost of capital. Low real yields can also signify low expected returns on capital, which suggests expectations for earnings, dividends, etc. should be revised downward as well. Furthermore, although there is intuitive logic to the argument that lower interest rates boost equity markets, in practice this has had a spotty track record. Lower rates did not stop markets from falling during the Depression, neither in Japan during the 1990s, nor immediately after 2000, and there is no guarantee they will do so in the future.

### **Squinting Too Hard?**

Does this analysis of normalized P/E ratios employ too much benefit of hindsight and squinting at charts? Perhaps, but real normalized P/Es have clearly identified secular lows and highs in overall market valuations much more accurately than have trailing 12-month multiples, with important consequences for investors. Indeed, real normalized P/Es have exhibited a negative relationship with returns—i.e., the higher the normalized P/E ratio, the lower the subsequent real return, on average (Table E). While not quite “predictive,” this link is conceptually robust, as buying overvalued assets (no matter the asset class) has time and again led to disappointing performance over the long term, even if over the short- to intermediate-term markets can fall when they are cheap and rally when they are expensive.

Valuations by themselves are not useful as a market timing tool, but rather serve as a barometer to gauge the overall risk in the market, should price momentum change course. At present, demand remains robust, liquidity is plentiful, and no catalyst for a market reversal appears imminent. Yet the rolling ten-, seven-, and five-year average real normalized P/Es are already beginning to roll over, as they have done in the last three secular bear markets. If you believe we are in a secular bear market, as we do, then the rise in the Shiller P/E since 2002 is consistent with the markets being “undervalued” compared to recent history. However, we should expect this metric to begin a period of trending lower. While from time to time

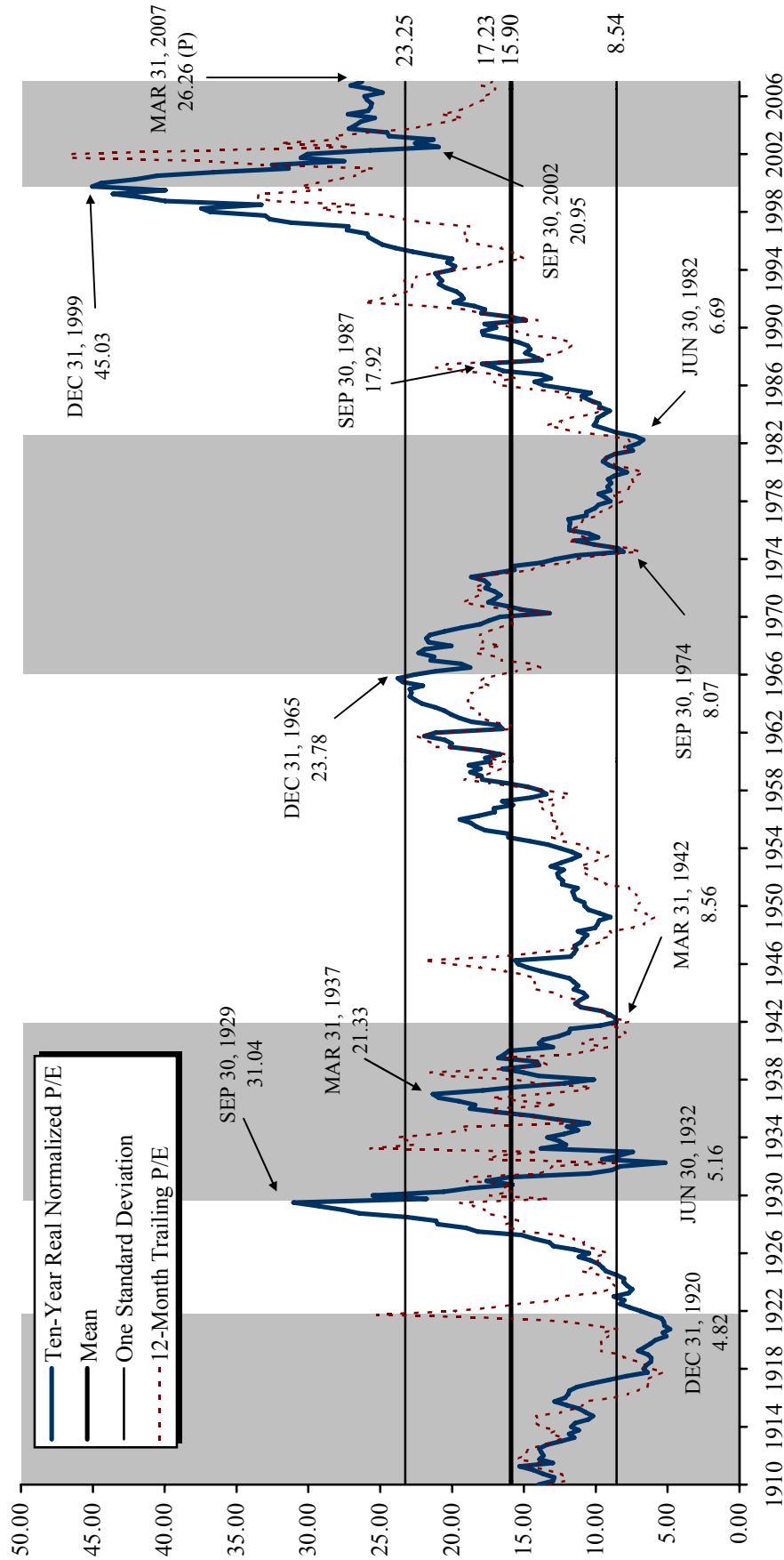
valuations may try to break above their “recent mean,” ultimately the markets will begin to realize the recent past represents a period of massive overvaluation and that we are in store for a period of consistently lower P/E multiples, especially relative to those which investors have become accustomed. Already analysts are referring to a trailing P/E of 17x (and forward consensus estimate of 15x) as *cheap*, whereas in the not-too-distant past (albeit more than ten years ago) such levels would have been viewed as fairly to slightly overvalued.<sup>7</sup> In short, whether the current rally has more to run before the resumption of the downtrend is anyone’s guess, but assuming we have not indeed entered a “brave new world” where profit and market cycles are a thing of the past, then what some investors regard as cheap valuations today should ultimately get cheaper in the future, and be viewed as rather expensive in hindsight.

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<sup>7</sup> With surprising regularity we encounter investment research wherein “long-term averages” are referred to, only to discover that said “historic period” is only ten to 15 years in length. Wall Street has a short memory indeed.

Table A

S&P 500 PRICE-EARNINGS RATIOS SINCE 1910

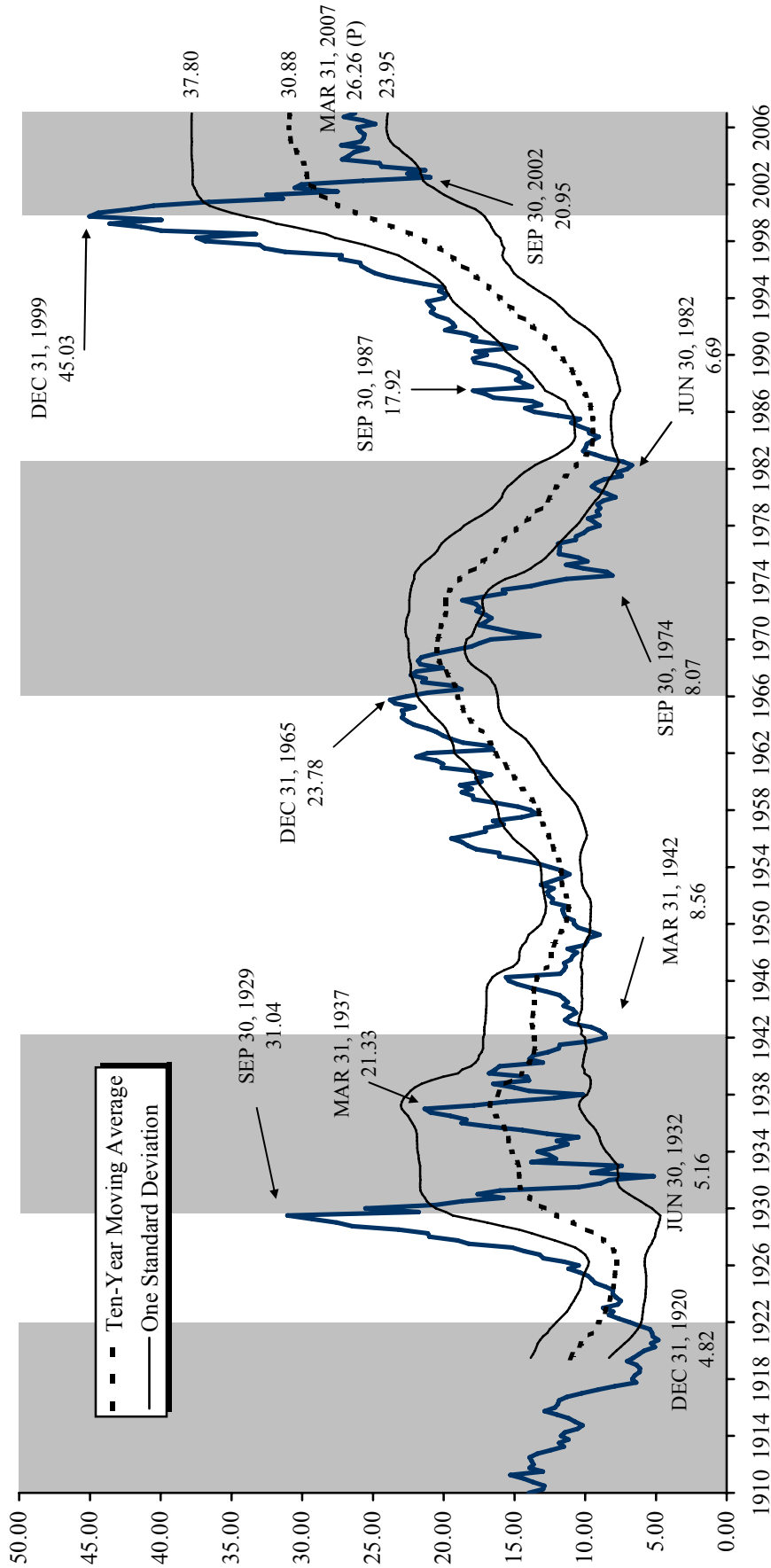


Sources: Calculated from data provided by Bureau of Labor Statistics, Standard & Poor's, Standard & Poor's Compustat, Ned Davis Research, Inc., and *The Wall Street Journal*.

Notes: (P) Preliminary. Normalized real price-earnings ratios for the S&P 500 are calculated by dividing the current index value by the average earnings for the trailing ten years, both adjusted for inflation. Shaded regions represent secular bear markets. Graph represents quarterly data through March 31, 2007.

**Table B**

**S&P 500 TEN-YEAR REAL NORMALIZED PRICE-EARNINGS RATIOS SINCE 1910**



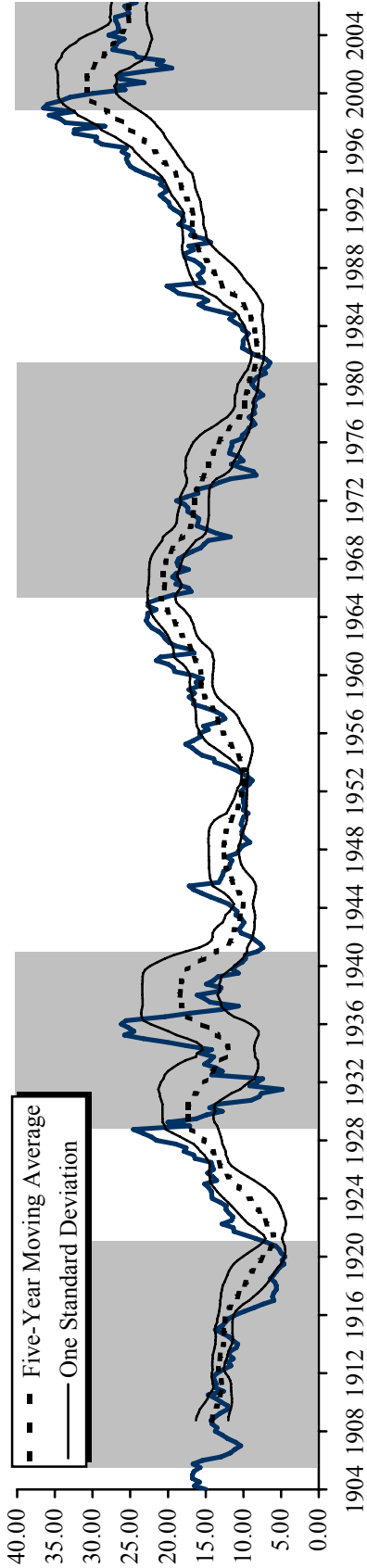
Sources: Calculated from data provided by Bureau of Labor Statistics, Standard & Poor's, Standard & Poor's Compustat, Ned Davis Research, Inc., and *The Wall Street Journal*.

Notes: (P) Preliminary. Normalized real price-earnings ratios for the S&P 500 are calculated by dividing the current index value by the average earnings for the trailing ten years, both adjusted for inflation. Shaded regions represent secular bear markets. Graph represents quarterly data through March 31, 2007.

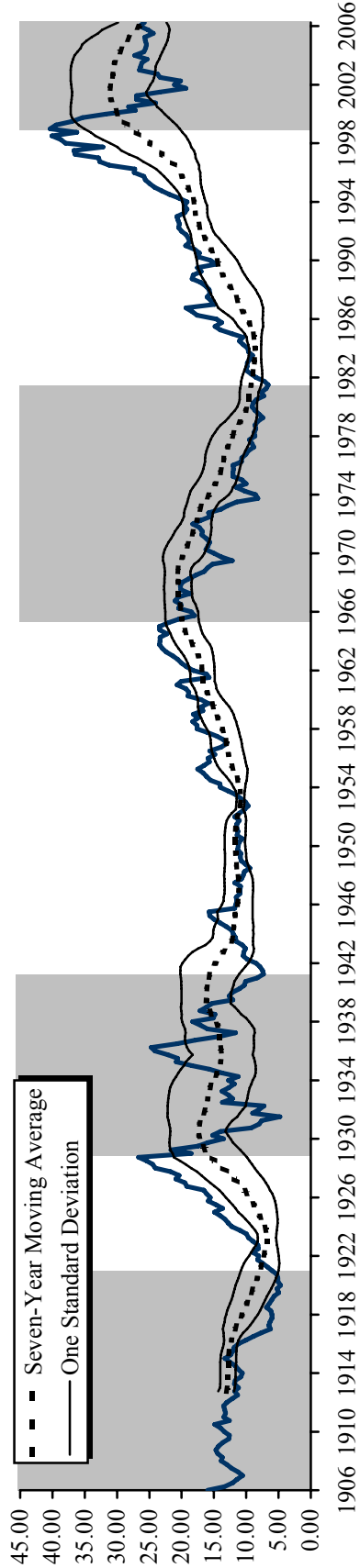


Table C

**S&P 500 FIVE-YEAR REAL NORMALIZED PRICE-EARNINGS RATIOS SINCE 1904**



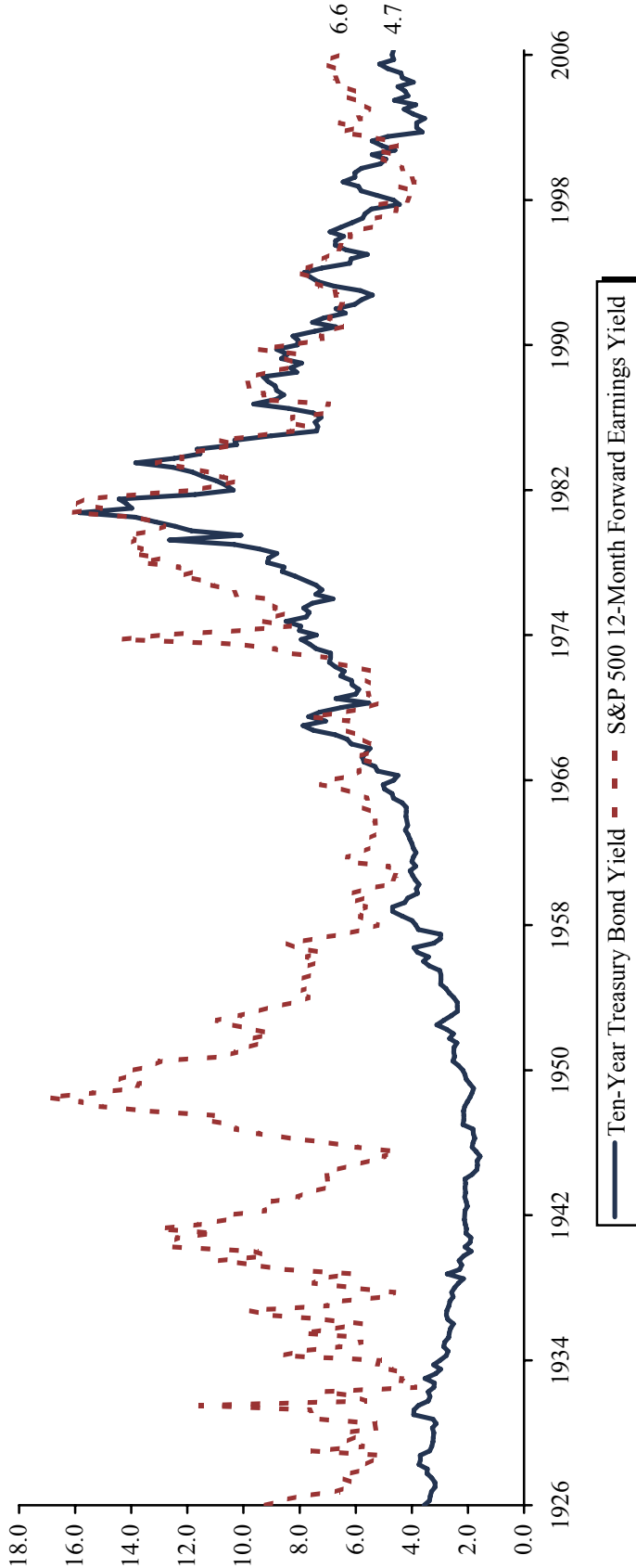
**S&P 500 SEVEN-YEAR REAL NORMALIZED PRICE-EARNINGS RATIOS SINCE 1906**



Sources: Calculated from data provided by Bureau of Labor Statistics, Standard & Poor's, Standard & Poor's Compustat, Ned Davis Research, Inc., and *The Wall Street Journal*.

Notes: (P) Preliminary. Normalized real price-earnings ratios for the S&P 500 are calculated by dividing the current index value by the average earnings for the trailing five years and trailing seven years, respectively, both adjusted for inflation. Shaded regions represent secular bear markets. Graphs represent quarterly data through March 31, 2007.

**Table D**  
**HISTORICAL RELATIONSHIP BETWEEN BOND YIELDS AND FORWARD EARNINGS YIELD**  
 As of March 31, 2007



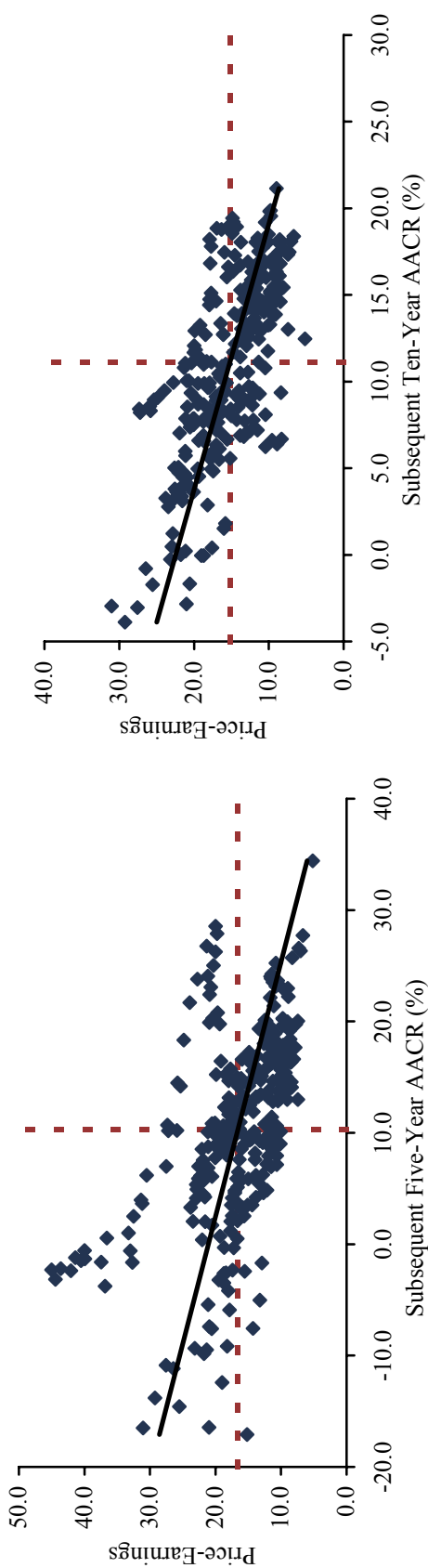
Sources: Global Financial Data, Standard & Poor's Compustat, Thomson Financial, and *The Wall Street Journal*.

Notes: Given that Thomson Financial forward earnings estimates are not available prior to 1978, we used trailing reported earnings yields prior to that date as a proxy for forward earnings yields. The common convention is to assume that forecasters had perfect foresight and to use actual earnings over the next 12 months as a proxy for the forward estimate. However, between 1978 and 2001, earnings yields based on trailing earnings had a higher correlation to Thomson Financial's 12-month forward earnings yield than did the conventional calculation. I/B/E/S earnings estimates have historically been twice as high as actual earnings.

Table E

**RELATIONSHIP BETWEEN S&P 500 TEN-YEAR REAL NORMALIZED PRICE-EARNINGS RATIOS AND SUBSEQUENT FIVE-YEAR AND TEN-YEAR AACR**

**First Quarter 1926 - First Quarter 2007**



	Beginning Period				Subsequent Five-Year AACR (%)				Subsequent Ten-Year AACR (%)			
	S&P 500 P/E Ratio		Mean	Std Dev	Mean	High	Low	Std Dev	Mean	High	Low	Std Dev
P/E Ratio Quartiles	Mean	High	Low									
First	9.6	11.3	5.2	16.8	34.4	7.1	5.0	9.4	11.1	5.2	15.3	3.2
Second	13.0	15.4	11.4	11.8	24.2	-17.1	7.0	12.6	14.6	11.2	13.2	3.4
Third	17.5	19.8	15.6	7.5	27.9	-12.4	7.1	16.8	18.7	14.7	10.3	4.7
Fourth	26.1	45.0	19.9	5.2	28.6	-16.5	10.7	21.8	31.0	18.7	5.7	4.3
Total	16.6	45.0	5.2	10.3	34.4	-17.1	8.9	15.2	31.0	5.2	11.1	5.3

Sources: Calculated from data provided by Standard & Poor's, Standard & Poor's Compustat, Bureau of Labor Statistics, and *The Wall Street Journal*.

Note: Normalized real price-earnings ratios for the S&P 500 are calculated by dividing the current index value by the average real earnings for the trailing ten years, both adjusted for inflation.