

THE TRUTH ABOUT P/Es

By Ed Easterling

August 15, 2006 (w/addendum December 1, 2006)

All Rights Reserved

History shows that the change in the market P/E ratio over decade-long periods often doubles or halves investor returns in the stock market. What is the P/E ratio and why is this significant driver not better understood? Let's explore the truth about the role of our hero, the P/E, in the market.

P/E SIMPLIFIED

The P/E is a ratio: price divided by earnings. So for a company, P/E is the price of each share of stock divided by the earnings per share (which is total profits divided by the total number of shares). Simply, P/E represents the number of years of today's earnings that investors are willing to pay for the stock. For example, if a company earns \$1 per share, sometimes investors are willing to pay \$10 for the stock (a P/E of 10) and other times they may pay \$20 (a P/E of 20). Likewise, when we look at the P/E ratio of the overall market, we are aggregating the price and the earnings of all companies and presenting a composite valuation for the market. As we'll see, there are times when the valuation has been relatively high and other times when valuations were in the proverbial ditch. In the text and graphs ahead, we'll explore the history of our hero and some of the factors that impact his value.

“There has been no greater factor to the variability of investors' returns over decade-long periods than the impact of the trend in P/Es...”

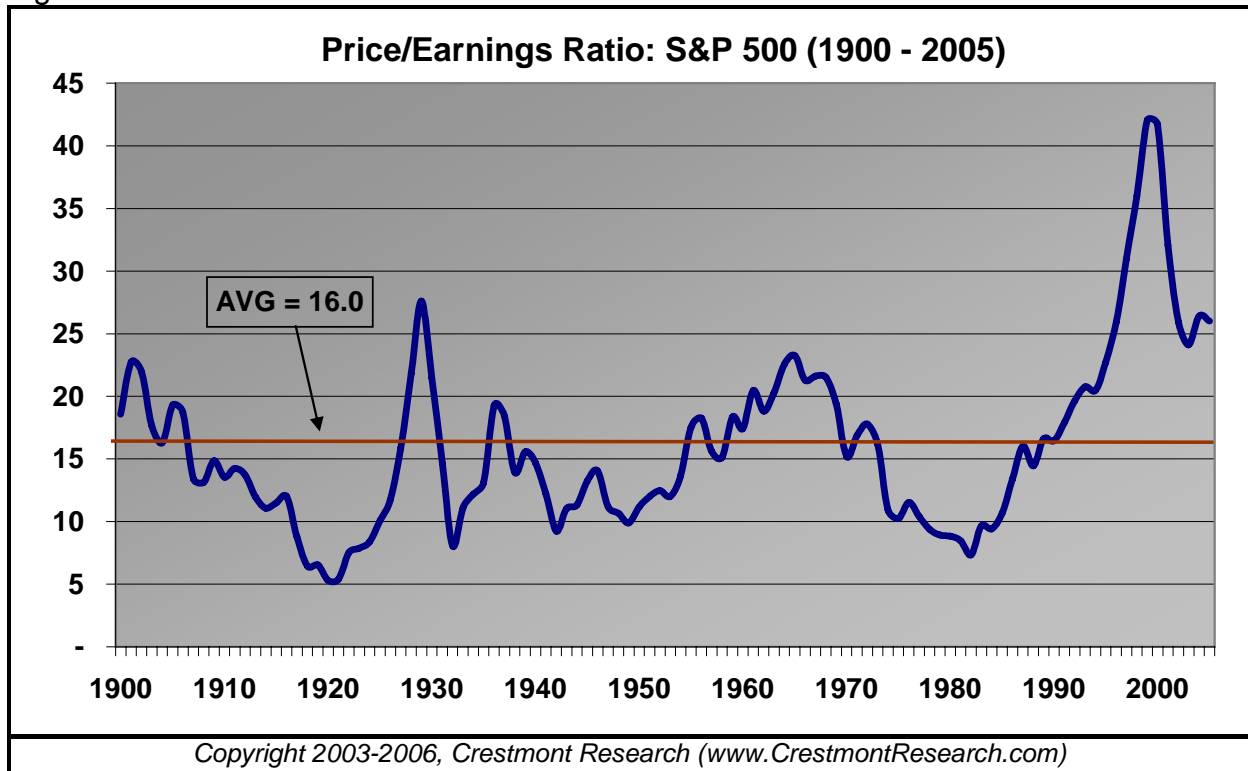
Please keep in mind that we intend to focus on the concept of the overall market P/E and not the P/E associated with individual companies. There are other factors that impact company P/Es, including the growth rate of earnings and new business innovation. Whereas individual companies will have their own circumstances, the overall growth rate and innovation impact for all companies in the aggregate tends to be much more consistent. As a result, we can focus on the key drivers of the overall market for insights about the past and future trends.

A STAR IS BORN

The history to P/E extends back to the start of the markets. It only takes two parts to make his whole. When the first stocks traded, the market P/E was born; for with those trades, we then had an overall price for the market. And by looking at the underlying

earnings for all the companies, we had earnings per share. As a result, we could then calculate P/E. When we look back across the past century in Figure 1, we see a rollercoaster cycle of the market P/E—vacillating from peaks above 20 to troughs below 10. Although the cycles are not symmetrical, they are pronounced and recurring. There has been no greater factor to the variability of investors' returns over decade-long periods than the impact of the trend in P/Es. Given his importance, let's explore him further to understand what may lie ahead for today's investors.

Figure 1. Market P/E Ratio Since 1900



Copyright 2003-2006, Crestmont Research (www.CrestmontResearch.com)

THE P/E CYCLE

Finance majors and financial advisors know P/E to be based upon the present value of future cash flows from companies. Rather than running down the rabbit trail of detailing “present value,” let's approach this concept with a more layman's explanation. There is a price that we will pay today for the right to receive future cash flows from an asset. With bonds, we translate this into a yield. Bonds are easier to understand because the cash flows are fixed by the bond document; therefore, the yield is a way we translate all the cash flows into a single price today. If investors' believe that a certain bond should provide a return of 5%, then they will pay a price today that allows the future interest and principal payments to provide a 5% return.

Stocks also have a “yield.” Ultimately, investors receive this yield either in the form of dividends (a partial payout of earnings) or as retained earnings in the company. Earnings yield is the percentage represented by current earnings as a percent of the current price. We can represent this relationship with the equation E/P . Now if we turn

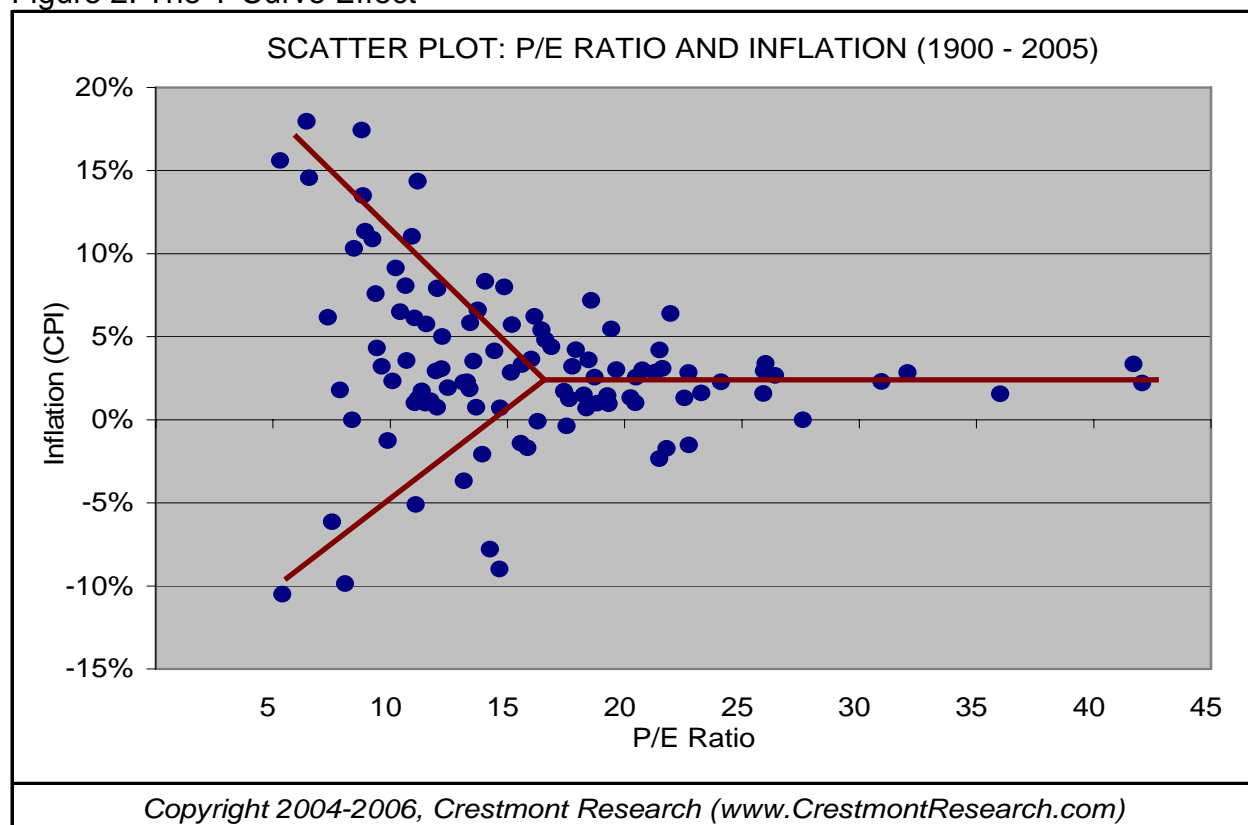
the earnings yield on its head, the earnings yield can be inverted to provide our hero the P/E. Thus, P/E represents a measure of valuation based upon investors' expectation or demand for future returns. When earnings yields are lower (i.e. investors accepting lower future returns), P/Es will be necessarily and mathematically higher. Likewise, when earnings yields are higher (i.e. investors demanding higher future returns), P/Es will be necessarily and mathematically lower.

What drives the level of investors' expectations for yields and valuations? Inflation! When inflation rises, investors demand higher yields from their bonds and investors demand higher returns from stocks too. So, higher inflation drives lower P/Es. When inflation is low, however, bond yields and stock returns become priced for lower returns, resulting in higher P/Es.

There is one subtle nuance for stocks that is different than bonds. Once inflation drops even further into deflation, the future reported earnings—on a nominal basis including deflation—begin to reflect a deflationary declining trend line. When that occurs, the price that we are willing to pay today becomes lower...thus reducing the P/E ratio.

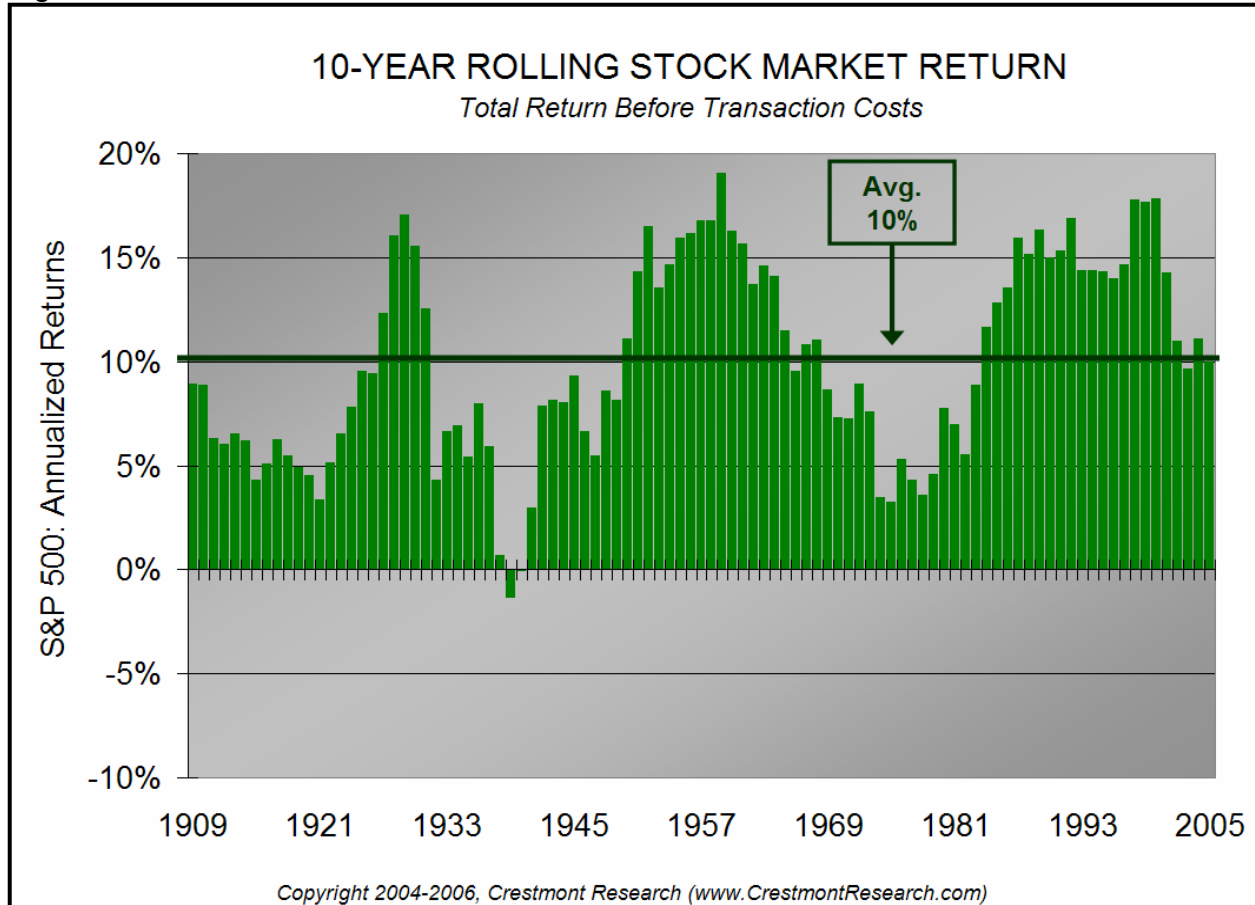
So, there is a pinnacle to P/Es. Higher inflation causes lower P/Es and deflation causes lower P/Es—P/Es peak at higher levels when inflation is low and stable. And sometimes, it looks so good that P/Es can extend out into irrational levels based upon the hope of “a new economy,” conditions being “different this time,” etc.

Figure 2. The Y Curve Effect



When we graph the relationship between P/Es and inflation over the past century in Figure 2, we see The Y Curve Effect: that lower P/Es are associated with higher inflation and deflation, while higher P/Es are associated with low inflation. The empirical evidence confirms our academically-based view of valuation in stocks and bonds.

Figure 3. Stock Market Returns Over Decade Periods



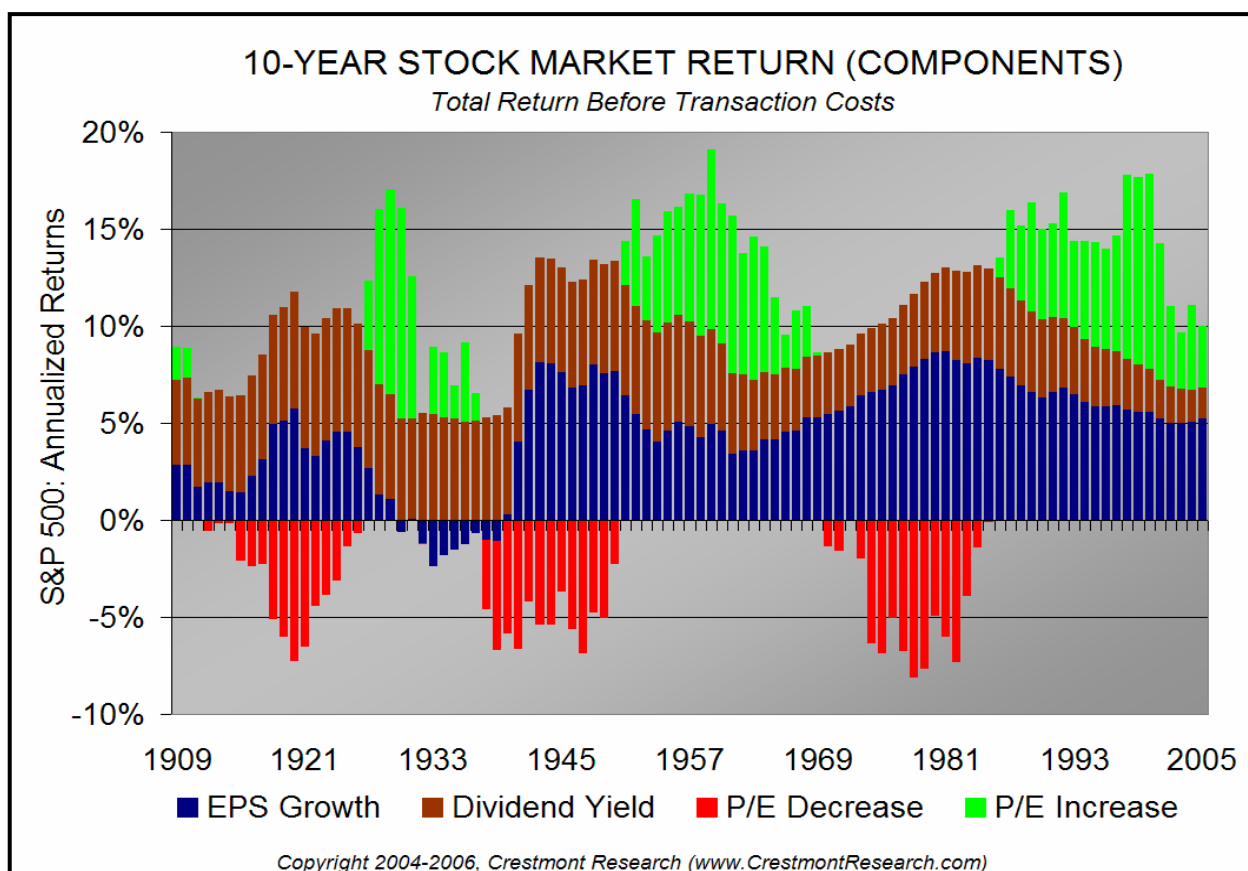
WHY P/Es MATTER

Earlier it was mentioned that the trend in P/Es is the most significant determinant of stock market returns. There are only three sources of returns from the stock market: earnings growth, dividend yield, and the change in P/E (the overall level of valuation in the market). To illustrate the impact of the P/E cycle, we can assess stock market returns over the past century by breaking the long-term into relevant periods for most investors—decades rather than centuries. Since 1900, there have been 97 ten-year periods (i.e. 1900-1909, 1901-1910, etc.). Figure 3 presents a bar for each period reflecting the total annualized return for each ten-year period. As most investors know, the average long-term return from the stock market has been 10%; and that is the average of all 97 decade-long periods. It is striking, however, that average rarely happens. None of the 97 periods were exactly 10%—all were either above-average or below-average. So the only wrong answer for investors is to assume the long-term

average. A wiser choice is to decide that it is more likely from today either to be an above-average decade or one that will be below-average.

For insights into which is more likely, we can explode Figure 3 into the three components of stock market return: earnings growth, dividend yield, and the change in P/E. Figure 4 is enlightening: our hero, the P/E, is the major driver of whether returns are above or below average. The generally more stable combination of earnings growth (blue) and dividend yield (brown) is pulled in both directions by the trend in P/E. When the P/E was trending upward, the green-shaded addition to the bars provides above-average returns; whereas, when the P/E was trending downward, the red-shaded pull mutes returns into a below-average result.

Figure 4. Details Within Decade Return Periods

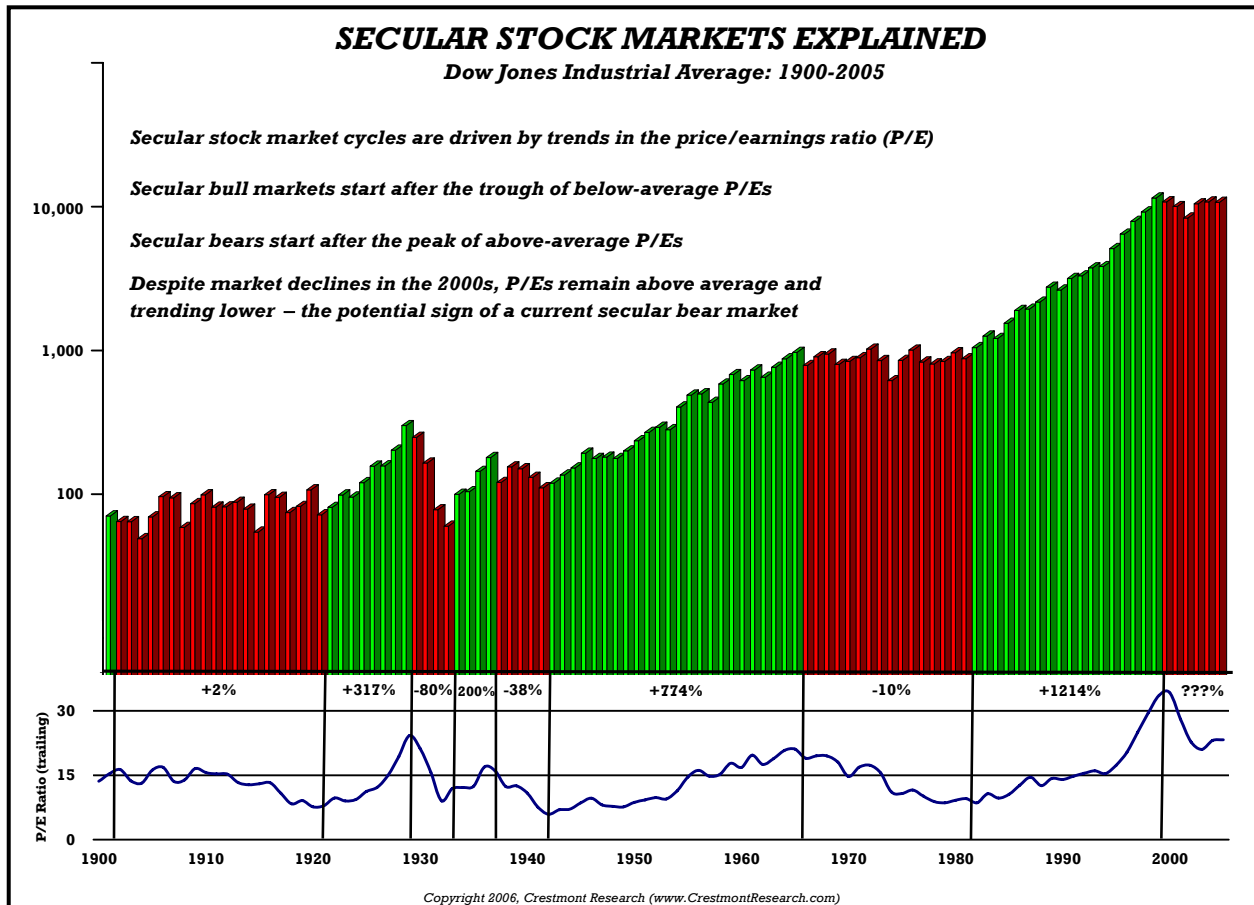


Presented differently, as a long-term view of secular stock market cycles, Figure 5 presents the level of the market each year since 1900. The periods of generally rising P/E's have been shaded green and the secular bear market periods of declining P/E's have been shaded red. Underlying the graph is our hero, the P/E ratio.

The green secular bull market periods start when investors are valuing the stock prices of companies at a relatively low level—paying around 10 years of today's earnings. The green periods end (and the red secular bear market periods start) when investors have decided to pay 20 or more years of today's earnings for companies. For those that

bought stocks when prices were lower, the change in valuation alone provides a doubling or tripling of their investment—plus the addition of earnings growth and dividends. Yet for those that purchase stocks at relatively high valuations, the decline in price during secular bear market periods offsets much of the benefit from earnings growth and investors are left holding a portfolio that makes little progress on its own.

Figure 5. Secular Stock Market Cycles Explained



WHERE ARE WE TODAY?

In the press reports, they usually state that the historical average P/E has been 15 or 16 and then they state that today's P/E is 26, 24, 18, 16, or 14. Huh...which is it? There are several factors that impact the calculation of the P/E. Although they may seem to be nuances, they are very important nuances that often have a significant impact. Before digging into the details, the answer is that today's P/E is much closer to 25 than to 15—especially when we are comparing it to the commonly-accepted historical P/E (as presented in earlier graphs).

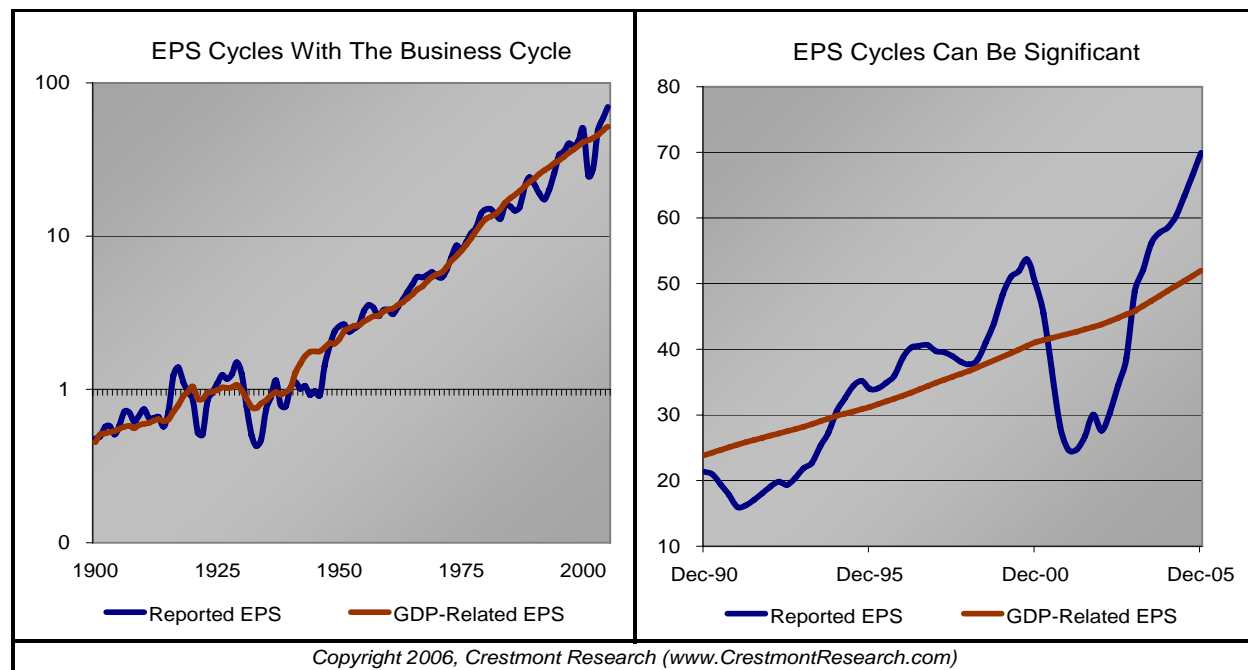
There are three major factors, or assumptions, toward determining the P/E. First, we must either decide whether to use actually realized earnings (historical and reported values) or whether to use projected or forecast earnings (next year's potential values).

Most market analysts use the more conservative and reliable historical value. Yet when the reported value is not representative of the future trend, it may be more appropriate to use the forecast value. Regardless of which value is used, it is important to be consistent by comparing the current P/E to an historical average that was calculated on the same basis. Bull pundits tend to distort relative valuation by comparing today's forward P/E with the historical average trailing P/E; bears also find their own distortions.

The differences are not insignificant. For example, earnings tend to grow annually at around 6% (yet most often it is either faster or slower, but we'll use the average for this example). Therefore, an historical P/E of 20 (based upon a hypothetical \$20 price and \$1 earnings) provides a forward P/E of 18.9 since the price remains \$20 and earnings becomes \$1.06 (by assuming that forward earnings is 6% higher than trailing earnings). So our first factor, the period of earnings, can have an impact of about 1 P/E multiple.

The second factor is whether we use net earnings or operating earnings—both are valid, yet produce quite different results. Net earnings are the “bottom line” reported profits, after all deductions of taxes, charges, etc. Operating earnings are adjusted by adding back certain deductions, even when they are actual cash costs. Since 1990, based upon data reported by Standard and Poor's (the folks that give us the S&P 500), operating earnings averaged about 16% more than net earnings. Using the hypothetical example of the \$20 price and \$1 net earnings, the operating earnings-based P/E would be 17.2 (\$20 divided by \$1.16 earnings). So the second factor, earnings level, tends to represent a P/E multiple difference of almost 3.

Figure 6. Earnings Cycle Since 1990



The third factor is a bit more involved; it relates to the business cycle. Earnings do not grow smoothly; rather they vary across a variety of economic conditions. As reflected in

Figure 6, earnings since 1990 have cycled fairly significantly (as reflected by the blue line). As a matter of fact, they have cycled over the past century as well. Yet across the past century, as well as during the past sixteen years, earnings have followed a centerline path that holds a very strong relationship to the overall economy. Yes, earnings growth has a very high correlation, or relationship, to economic growth. Figure 6 also includes a dark red line, reflecting the centerline relationship to economic growth. This brings us to the third factor—business cycle adjustments.

Some P/E calculations adjust for the business cycle, while others use only the current amount. These adjustments can take the form of averaging multi-year periods, using cycle peaks or troughs, or developing a centerline value based upon the level of the economy. The impact can be significant. In mid-2002, after the last recession and down-cycle in earnings, the reported earnings were close to \$25 per share when the S&P 500 was approaching 800. Was the P/E more than 30, reflecting a very high (even irrational) level in the market? Of course not, the true trend in earnings growth was distorted by the recession and business cycle. Using the centerline value at that time of \$42, the stock market was more modestly priced at a P/E of 19.

And today? Despite a record run of double-digit growth in earnings over the past several years, bull market pundits hope that future earnings will grow without adjustment from the current level and hope that the business cycle has been defeated. Thus, they use the reported \$70 per share to say that the market P/E is now less than 18 (based upon the S&P 500 at 1250). Yet, the more stable centerline value suggests that the value may be closer to 24—relatively high compared to the long-term average, but close to fairly-priced if we are still in a highly-stable, low-inflation environment.

Therefore, when you see the recent reports (mid-year 2006) about the market P/E falling below 15, it most likely refers to a P/E based upon: (1) future earnings, (2) operating earnings, and (3) earnings unadjusted for the business cycle. Based upon the discussion above about the impact of the factors, the relevant average to such an aggressive P/E would likely be a value of less than 10—reflecting that P/Es are still fairly high on an apples-to-apples basis.

THE GREAT RACE

So, now we can understand that our hero, the P/E, will again some day deliver above average-returns when he again gets to below-average levels. In the mean time, we can understand that he is due a long rest after having delivered so successfully during the past two decades. P/E was thought to be a plodding tortoise, as we were seduced by market pundits to believe in the long-term average return. We can now recognize, however, that P/E is the stop and stall hare that delivers secular stock market cycles.

Ed Easterling is the author of Unexpected Returns: Understanding Secular Stock Market Cycles, President of an investment management and research firm, and a member of the adjunct faculty at SMU's Cox School of Business where he teaches the course on alternative investments and hedge funds for MBA students. Mr. Easterling publishes provocative research on the financial markets at www.CrestmontResearch.com.

ADDENDUM TO “THE TRUTH ABOUT P/E’s”

ABOUT EVERY FIVE YEARS...

By Ed Easterling

December 1, 2006

All Rights Reserved

We might as well expect it and understand how to recognize it...about every five years or so...P/Es will not be as they appear. Right now, P/Es are distortedly low; in 2002, they were similarly distorted to the high-side. How can we make sense of all this?

The level of valuation in the stock market is measured by the Price/Earnings Ratio (so-called “P/E”). Essentially, P/E represents the number of years worth of today’s earnings that investors are willing to pay for a stock or the overall market. Historically, there have been periods of high inflation or deflation, when investors would pay only 10 years or less of annual earnings. Other times, when inflation was very low, investors would pay more than 20 years of earnings in advance. Valuation for stocks (much like interest rate yields for bonds) is their way of reacting to the effects of inflation and required returns. That is the nature of financial assets—including the stock market—and it represents very rational investment decision-making.

“Therefore, the two components of the P/E ratio—price and earnings—whip around like flags in the wind. This poses quite a challenge for those that seek a precise, or at least relevant, measure of valuation for the stock market.

In a theoretical and perfect world, the economy would grow smoothly, earnings would grow consistently, inflation would stay low and stable, and the financial markets would act rationally. In that world, yields on bonds would stay the same and stock prices would rise by the same amount each year based upon the growth in earnings (since P/Es would stay the same due to stable inflation and rational markets).

In reality, the economy has active cycles of expansion and recession, the business cycle causes earnings to surge and stall, and inflation seems to have its own cycle against which the Federal Reserve is constantly battling. Most of all, the financial markets are far from rational (there is now an entire body of study called “Behavioral Finance” that studies investor and market psychology...and it’s probably not a surprise to hear that investors and markets are sometimes irrational). Therefore, the two components of the P/E ratio—price and earnings—whip around like flags in the wind. This poses quite a challenge for those that seek a precise, or at least relevant, measure of valuation for the stock market.

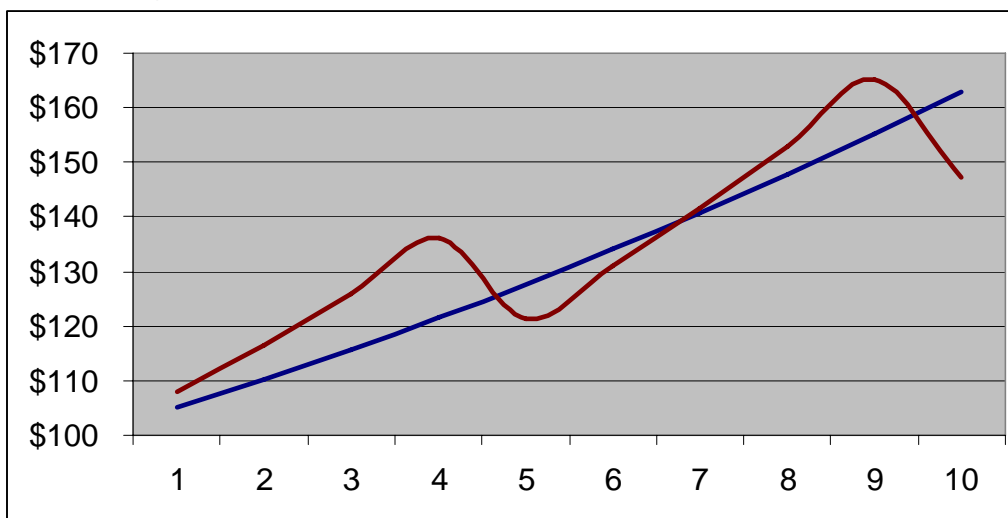
The change in price is the less concerning of the variables: It is actually the factor that we seek to measure. The purpose of the P/E is measure whether the current price is too high, too low, or just about right. The challenge is that the P/E can at times send mixed or false signals—not because the price (P) is distorted, but rather because the

earnings (E) component does not accurately reflect the base trend in earnings. The word “trend” should be emphasized...because it is not today’s earnings that matter; instead it is the future stream of earnings that is relevant. When we include earnings (E) in the ratio, there is a critical assumption: The earnings (E) amount that is included must be representative of the base trend for future earnings.

Let’s explore the notion of “base trend for future earnings.” For example, let’s say that our stock market index has earnings of \$100 per share for the past year. Further, we expect the growth rate to be 5% per year. In the theoretical world, as reflected by the blue line in Figure A1, the future earnings stream would be: \$105, \$110, \$116, \$122, \$128, \$134, \$141, etc. (nice and smooth at 5% per year). In that instance, for any year, we can use the reported earnings value to accurately measure the P/E ratio.

In reality, however, the earnings stream is never smooth—because of the economic cycle and the business cycle. As a result, the future earnings stream tends to surge for a number of years, then retreat for a year or two. (For more information about the earnings cycle and history, please see “Maybe It’s Different This Time” and “Beyond The Horizon” in the Stock Market section at www.CrestmontResearch.com.) Most importantly, the surge and retreat in annual earnings tends to vacillate around the base trend for future earnings. In the real world, as illustrated by the red line in Figure A1, the future earnings stream for our example could look more like \$108, \$117, \$126, \$136, \$121, \$131, \$142, etc.

Figure A1. Earnings Cycle Illustration



So rarely is the reported earnings value exactly on the base trend line, yet most of the time it’s fairly close. Then near the cycle peaks and troughs, about every five years or so, the value is far enough from the base line that a significant distortion occurs. The reported earnings are clearly not at a level that reflects the longer-term trend for earnings. When the P/E ratio is calculated using a value near the peak or trough, it will reflect a distorted perspective of valuation and will not be an indication of current value. For the P/E to be valid and representative, the requirement for the denominator of the ratio, earnings (E), is *that it reflects the base line trend for earnings*.

EARNINGS REALITY MEETS IRRATIONAL MARKETS

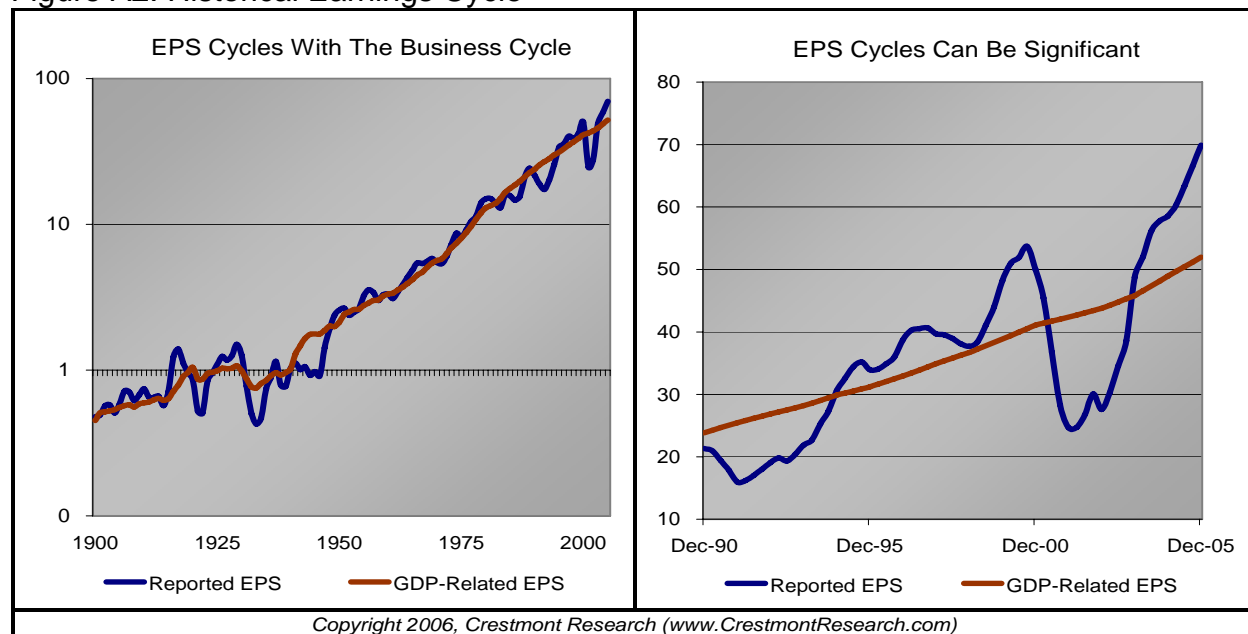
Whether it's part of the cause or an ultimate result, the combined effect of the earnings cycle and market swings at times provides interesting results. Looking back at 2002, the market fell dramatically as the economy suffered weakness. The S&P 500 Index fell below 800. At the same time, earnings declined during that recession to \$25. The result was a reported P/E of more than 30—irrationally high. Yet, using base line earnings, the P/E had fallen below 20—a somewhat low level for a relatively low inflation environment. Since the market tends to overreact to current information and sometimes loses sight of the overall trend, short-term distortions can and do occur.

Looking at 2006, the S&P 500 Index has roared ahead to near 1,400 in its excitement about earnings having grown to almost \$80. The result is a reported P/E of less than 18—relatively low for a low inflation environment. Yet, using base line earnings, the P/E is near 25—fairly fully-valued. It is clear that there are times when the combination of the business cycle swings in earnings and market psychology can present a distorted view of the conditions and, thus, exacerbate the short-term trends in the market.

SOLUTIONS

To adjust for the earnings cycle and provide a more accurate measure of earnings, there are various methodologies. Ibbotson uses a three-year average; Shiller uses a ten-year average that adjusts all past values for inflation; Crestmont uses both the Shiller approach and the earnings value that is derived from its normal relationship to the economy (EPS regressed to GDP; see *Unexpected Returns* or “Financial Physics” at www.CrestmontResearch.com). Others use a variety of approaches. Regardless of the approach used, some action is needed—especially near the peaks and troughs—to reduce the distortions that can lead to inaccurate conclusions.

Figure A2. Historical Earnings Cycle



TODAY

So where is the P/E now, after adjusting earnings for the business cycle? The current price level of the S&P 500 Index is near 1,400. As reflected in Figure A2 above (which was discussed earlier in “The Truth About P/Es” [Figure 6]), reported earnings were \$70 in 2005. Reported earnings for 2006 are expected to be near \$80. As a result, the reported P/E is less than 18. Yet, after adjusting earnings back to the base line, the P/E is near 25. The lower value only would be a fair representation of market valuation if earnings could be expected to grow over time from the \$80 level today. As discussed in “Beyond The Horizon”, the current level of earnings is near historically high levels in relation to the economy and profit margins. Most recognized economists do not believe that this level of relative profitability will endure. The economists generally expect that earnings are likely to return toward the historical baseline. Expecting otherwise would require believing that a new economic era has just started—one that dispels the economic relationships of the past century and more.

IN CONCLUSION

Price/Earnings ratios (P/E) for stocks or the stock market are dependent upon two variables: price (P) and earnings (E). Price is the readily available variable. The P/E ratio will also be used to show whether the price is appropriately valued.

There is a multi-year business cycle that drives earnings (E) to vacillate around a base line of growth. During many of the years within the cycle, the reported value for earnings (E) is either equal to, or relatively close to, the base line values. Near the peaks or troughs in the earning cycle, the reported measure is no longer generally representative of the base line value.

Since the P/E ratio is used as a measure of relative valuation, it is important that it be generally accurate. A key requirement is that the earnings (E) level used in the ratio accurately reflects the future trend in earnings. Near the peaks and troughs, some methodology is needed to adjust the value toward a more representative longer-term growth baseline. There are many methods available which can deliver reliable results.

Today, the business cycle-adjusted P/E ratio for the stock market (S&P 500 Index, as well as others) is much higher than the reported value. That distortion is leading analysts and investors to draw the wrong conclusions about current valuations in the stock market. Unless this time is different and we have entered a new era, economic and business cycles ultimately will show us again that solely using reported P/Es for 2006 was a bad assumption.

Ed Easterling is the author of Unexpected Returns: Understanding Secular Stock Market Cycles, President of an investment management and research firm, and a member of the adjunct faculty at SMU's Cox School of Business where he teaches the course on alternative investments and hedge funds for MBA students. Mr. Easterling publishes provocative research on the financial markets at www.CrestmontResearch.com.