

## Equity-Market Outlook

### Three-year median earnings: a more logical benchmark for market valuation

Although earnings per share are the most widely used basis for estimating “fair value” in the equity market, stock prices could equally well serve as a benchmark for earnings. A ratio can be high for two different reasons: a higher than usual numerator, or a lower than usual denominator.

A recent *Wainwright Economics* report demonstrated a strong positive relationship between the market’s ratio of price to current earnings and future earnings growth.<sup>1</sup> This means that wide swings in current earnings and unusual writeoffs can defeat the purpose of simple P/E ratios in valuing the stock market.

It would be particularly easy to mistake a high P/E ratio as a sign that prices are unsustainably “rich” in a situation where earnings have temporarily plunged. Nor does a low ratio necessarily imply a “cheap” market, because it can result instead from a jump in current earnings. In this report we compare different ways to modify the earnings benchmark so as to escape from this interpretation problem.

**Shiller’s cyclically adjusted P/E ratio.** Doubts arising from the volatility of current earnings data have led to the suggestion that earnings per share should be “cyclically adjusted” or replaced by an estimate of the long-term earnings trend. Careful investors have therefore turned to Robert Shiller’s proposal to use a ten-year moving average of earnings.

A multi-year average of past earnings per share would be most appealing as a benchmark if the mean growth rate of earnings were essentially constant. However, the growth rate of nominal earnings per share has changed over long periods of time, having been much faster in the second half of the available history than in the first half, as shown in Figure One.

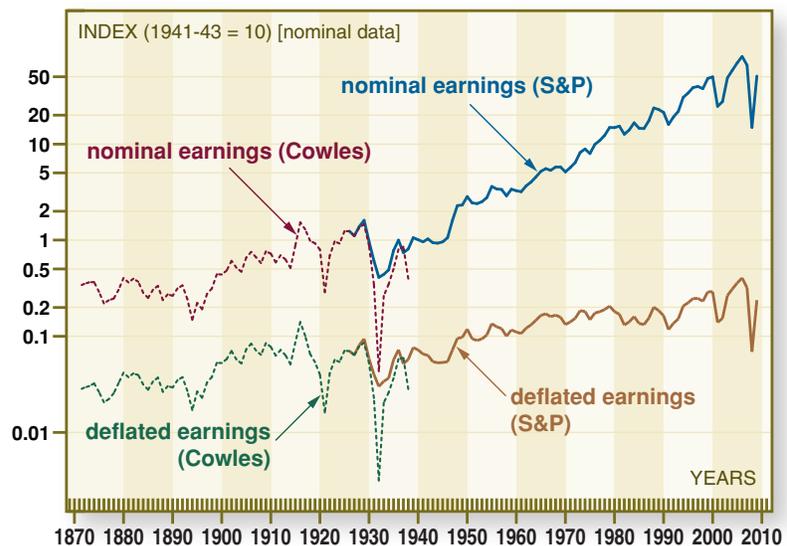
In constructing his cyclically-adjusted ratio, Shiller therefore deflates both price and the ten-year average of earnings per share by the consumer price

index. On that basis, as the chart shows, the rate of earnings growth appears to be roughly constant over the past nearly 140 years. That makes sense of our finding in another recent piece of work that Shiller’s ratio does work better to predict market performance than the simple P/E ratio, although the improvement is only modest.<sup>2</sup>

**The relationship between Shiller’s ratio and future price and earnings growth.** Ideally, the earnings benchmark for market valuation should show

Figure One

#### The Long-term History of Nominal and Deflated Earnings from 1871



Data: Calendar-year totals of earnings per share for all stocks (1871-1938, Cowles Commission; 1926-2009 Standard & Poor’s) and of the consumer price index for urban consumers (Bureau of Labor Statistics).

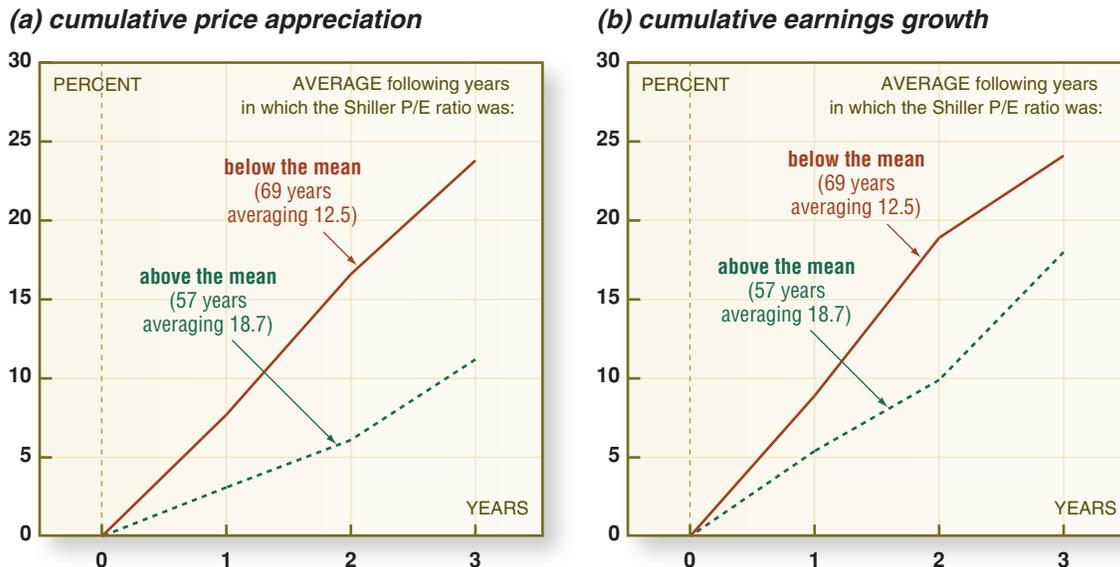
1. “The market’s P/E as an indicator of future earnings,” *Strategic Asset Selector*, H. C. Wainwright & Co. Economics Inc., July 24, 2010.

2. “Is Shiller’s cyclically-adjust P/E ratio a superior gauge of market valuation?” *Equity-Market Outlook*, Wainwright Economics, June 30, 2010.

Figure Two

**Shiller’s P/E Ratio as a Predictor of Both Price and Earnings Performance**

from 1881



Data: Calendar-year totals of prices and earnings per share for all stocks (Cowles Commission for the period 1871-1926, Standard & Poor’s thereafter) and of Shiller’s “cyclically adjusted” P/E ratio (Cowles Commission / Standard & Poor’s/Bureau of Labor Statistics / Robert Shiller at <http://www.irrationalexuberance.com/>).

no correlation between the P/E ratio and future earnings growth, but it should have good predictive power for future price performance or total return. Current-year earnings per share fails the first part of this test badly; in a report already cited, we estimated that its implications for future earnings growth are roughly twice as great as those for future price performance.<sup>3</sup>

Shiller’s P/E ratio fails the test in a different way. Figure Two illustrates the relationship between it and the subsequent growth of both earnings and price. As this chart shows, Shiller’s version replaces the troublesome positive correlation with an inverse correlation. A high Shiller ratio implies a lower-than-average growth path for earnings *as well as* price, while a low ratio implies a higher-than-average growth path for both. The use of ten years’ past earnings still leaves us with an ambiguous interpretation of high and low ratios.

Shiller’s ratio prompts further questions. Why rely on a government consumer price index that is so poorly reflective of market forces and whose methodology has changed drastically

over the years? Why average ten years of earnings results rather than eight—or five? Surely, information about earnings must be fully discounted in stock prices after so many years have passed.

If so, how could that still be relevant for judging whether current stock prices are cheap or dear? We need some other way of adjusting for current earnings volatility without relying on obsolete data. Equal weight should not be given to the distant past merely because current data are sometimes unstable.

**An alternative ratio based on the median of recent earnings growth.** It is easy to demonstrate, as expected, that the simple P/E ratio is closely related to changes in earnings that are recent, while changes five or ten years in the past have little or no influence on it (Table 1).

These calculations suggest using a moving average of earnings over a time frame that is much shorter than ten years: perhaps three years could be sufficient. But a three-year average would place significant weight on the most re-

Table 1

**The Simple P/E Ratio is Sensitive to Recent but not Long Past Movements in Earnings**

from 1881				
AVERAGES for years in which the P/E ratio was:	percentage change in earnings per share			
	simple P/E ratio	one year prior	five years prior	ten years prior
Above average (60 years)	20.9	1.3	6.5	7.1
Below average (68 years)	11.4	11.2	8.4	6.5

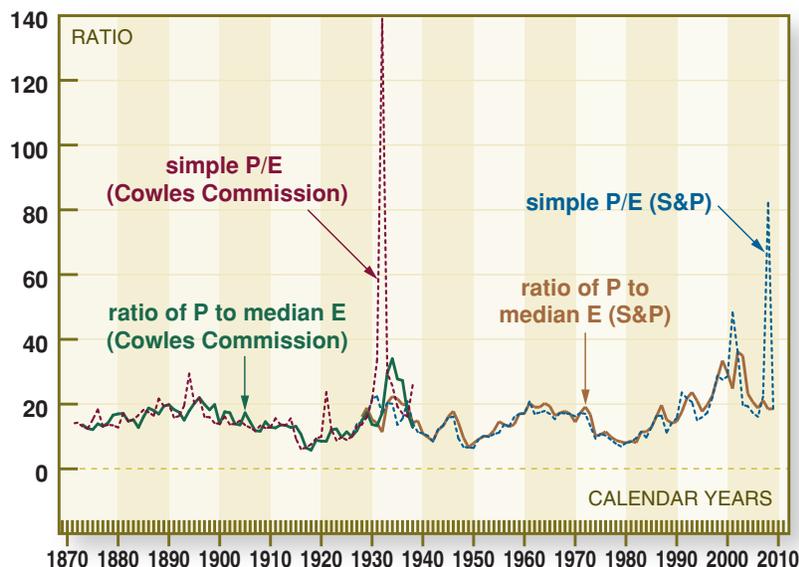
Data: Calendar-year totals of prices and earnings per share for all stocks (Cowles Commission for the period 1871-1926, Standard & Poor’s thereafter).

3. “The market’s P/E as an indicator of future earnings,” *ibid.*, Figure Two.

Figure Three

**The Ratio of Stock Prices to Current and Three-year Median Past Earnings**

from 1874



Data: As for Table 1.

cent earnings change, and that makes it vulnerable to unusual volatility. In order to remove more completely the influence of a highly unusual earnings result, it will be better to use the three-year median.

As a measure of stock-market valuation, we therefore propose the ratio

of price to the median of earnings per share for the three most recent years for which data are available. That would include earnings for one, two and three years prior to the current year's price average. Figure Three compares this ratio with the simple P/E ratio over long

periods of time, showing both Cowles Commission and S&P 500 variants of the data.

The ratio of P to median E, as we might call it, is obviously far more stable than the ratio of price to current earnings, most notably in exceptional years in which earnings have plunged, such as 1932, 2001 and 2008. The historical mean of this version of the P/E ratio over the full period 1874-2009 is 16.4, very close to the mean of the Shiller ratio.

The next step is to determine whether the ratio of P to median E has predictive power for price appreciation or earnings growth—or both. Figure Four repeats the test of the Shiller ratio shown in Figure Two. These charts show that the ratio of P to median E is virtually uncorrelated with future earnings growth, while as a predictor of price appreciation it is nearly as good as Shiller's version.

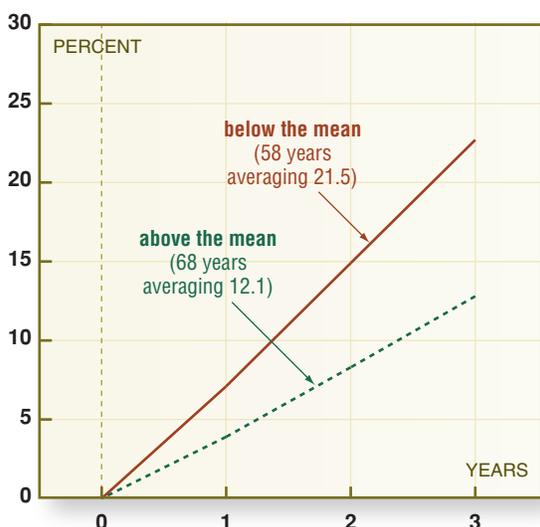
The median-earnings version of the P/E ratio has other advantages. It is easier to compute than Shiller's and there is no ambiguity of interpretation. It captures the valuational power of the Shiller ratio without using obsolete earnings results. And we have made no use of any price index, questionable or not, to deflate the historical data.

Figure Four

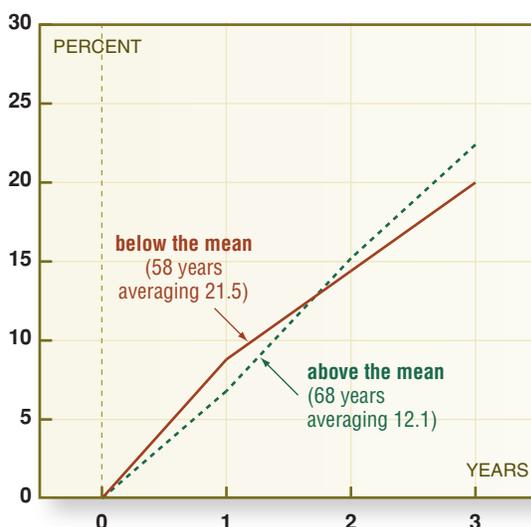
**Ratio of Price to 3-year Median Past Earnings as a Predictor of both Price and Earnings Performance**

from 1874

(a) cumulative price appreciation



(b) cumulative earnings growth



Data: As for Table 1

Table 2

**Computing the Ratio of Price to Median Past Earnings**

as of August, 2010		
quarter - year	reported earnings	4-quarter total earnings
II - 2007	21.88	
III	15.15	
IV	7.82	
I - 2008	15.54	60.39
II	12.86	
III	9.73	
IV	(23.25)	
I - 2009	7.52	6.86
II	13.51	
III	14.76	
IV	15.18	
I - 2010	17.48	60.93

Data: Standard and Poor's.

**Implications of the current ratio of P to median E.** In real time, up-to-date earnings information is never available, although the stock price index is known immediately. Currently, for example, the most recent S&P composite earnings per share data are for the first quarter of 2010. Both Shiller's ratio and our proposed version are therefore constructed to use earnings results that are about six months old and older.

As of August 6, when the S&P 500 index closed at 1124.64, Robert Shiller's website shows a cyclically-adjusted P/E ratio of 20.6, 25 percent higher than its historical mean. Even allowing for the subsequent fall in the index to around 1050, Shiller therefore regards stocks as highly over-valued currently—perhaps 20 percent above “fair value.” Table 2

shows how we calculate the current ratio of price to median past earnings.

The last three years of quarterly earnings per share are shown in the first column of the table, and the corresponding four-quarter sums in the second column. The median of these three four-quarter totals is 60.39, giving a P/E ratio of 18.6 as of August 6 or 17.4 as of August 25. As of the more recent date, the ratio is only about six percent higher than the long-term historical average ratio of P to median E. We conclude, therefore, that stocks are pretty much fairly priced according to our benchmark.

**Investment conclusion.** The ratio of stock prices to recent earnings per share is a tricky basis for estimating whether

the stock market is “cheap” or “rich.” Large year-to-year variations in earnings due to recessions or unusual writeoffs can create a situation where a high P/E ratio is more a function of abnormally low earnings than of unsustainably high prices. This is confirmed by a strong positive correlation between the simple ratio of price to current earnings and the future growth of earnings. Shiller's ratio of deflated price to deflated ten-year average earnings is widely used for this reason.

Ideally a ratio of price to “normalized” earnings should bear no correlation with future earnings growth even as it serves as a successful predictor of price appreciation. Shiller's ratio is an improvement. But it still bears a correlation with future earnings growth—this time, an inverse one—that introduces an ambiguity in interpreting the meaning of a high or low ratio. Currently Shiller's ratio suggests that the US stock market is something like 20 percent over-valued.

Taking into account various objections to Shiller's version of the P/E ratio we propose instead a ratio of current price to the median of the most recent three earnings years. On this basis the stock market currently is only about 6 percent over-valued—not significantly distinguishable from “fair value.”

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