



# Contrary to Robert Shiller's Predictions, Stock Market Investors Made Much Money in the Past Decade: What Does This Tell Us?

J. BRADFORD DELONG AND KONSTANTIN MAGIN

**B**ack in 1996 many—if not most—careful and informed observers believed that the U.S. stock market was significantly overvalued. Billionaire Warren Buffett wrote to his shareholders at Berkshire Hathaway that good investment opportunities had become very difficult to find. Federal Reserve Chairman Alan Greenspan gave his “irrational exuberance” speech, which was broadly taken as a signal not just that the

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*Brad DeLong is a Professor of Economics at the University of California at Berkeley, former Co-Editor of the Journal of Economic Perspectives, a Research Associate of the National Bureau of Economic Research, and former Deputy Assistant Secretary for Economic Policy in the United States Treasury. He tries to maintain an uneasy balance in his interests between economic history, macroeconomics, and other topics. Ph.D., Harvard, 1987; B.A., Harvard, 1982. Konstantin Magin is a graduate student in Economics at the University of California, Berkeley.*

stock market was overvalued but that he was thinking of raising interest rates to do something about it. Price-earnings ratios on broad market indices were crossing 25 and reaching levels that they had rarely reached outside recession years. It smelled like the excited bull market of the 1960s and of the last year before the Great Crash of 1929.

## THE CASE IN 1996 FOR A FALL

**Y**ale economist Robert Shiller gave the most convincing statistical, quantitative shape to this point of view. In 1996, Shiller updated the regressions on predicting long-run moves in the stock market that he had done earlier with John Campbell and concluded that there was significant statistical evidence that the American stock market was overvalued. Prices on the

broad index of the S&P 500 stood at 29 times the geometric average of the past three decades' earnings.

Previously, whenever price-earnings ratios were high, future long-run stock returns would be low. Shiller pointed out that the updated Campbell and Shiller regressions predicted that the S&P 500 would be a bad investment during the decade starting in 1996. The regressions predicted that from 1996 to 2006 the real value of the S&P 500 would fall. Even after including dividends, the expected real inflation-adjusted returns investors holding the S&P 500 could expect to earn was zero—far, far below the 6.5 percent per year or so real return that investors in the American stock market typically earned over the previous century.

Shiller (1996) was cautious: he included the

caveat that past performance is no guarantee of future results. He told his readers “the conclusion of this paper ... has to be interpreted with great caution.” More precisely, he said that he “may have stumbled upon a chance relation with no significance ... a spurious relation ... data mining ... statistical tests [and] ... monte carlo experiments [do not] take account of the [specification] search ... dangerous to assume that historical relations are necessarily applicable ... fundamental structural changes ... [perhaps] the past of the stock market is no longer a guide to the future.”

Nevertheless, Robert Shiller’s arguments were convincing. They certainly convinced at least one of us: Brad DeLong. Plus, the overwhelming balance of probabilities seemed to be—and still seem to be—that the return predictability Shiller and Campbell had identified was a real property of the stock market data and not a statistical artifact of a small sample, as Jacob Boudoukh et al. and John Cochrane have argued.

#### A BULL MARKET NONETHELESS

However, it turns out—as of this writing, at least—that Shiller’s specific prediction

was wrong, and his warnings were prescient. The past decade has seen the stock market offer returns a little bit lower than historical averages, but much, much greater than zero. Those who invested and reinvested their money in America’s stock market over the past decade have nearly doubled their wealth, even after taking account of inflation.

#### WHY THE CONTINUED HIGH RETURNS?

Arithmetically, we can point to three factors, each of which can take roughly one-third the credit for real American stock returns (including dividends) of 5 percent per year over the past decade rather than zero, and each of which was not known as of 1996:

Approximately 2 percent per year because the acceleration of productivity growth produced by the high-tech revolutions behind the very real “new economy” has made American companies much more productive.

Approximately 2 percent per year because of shifts in the distribution of income away from labor and toward capital that have boosted corporate profits as a share of production.

Approximately 1 percent per year because

lower real bond yields and increasing investor risk tolerance have raised long-run price-earnings ratios by 20 percent or so.

Back in 1996, there were signs of the first factor and inklings of the third for those smart or lucky enough to read them, but nobody was forecasting an economy-wide productivity growth acceleration of the magnitude that we have in fact seen over the past decade. Indeed, economists like Steven Oliner and Can Sichel are still having a very hard time accounting for the magnitude of the productivity growth acceleration as a result of technological progress.

At most, analysts were forecasting high profits and rapid growth in the tech sector. As for the third factor, it seems like economists and financiers have been pointing out for an eternity that investors who shunned stocks were paying a huge price for little or no reduction in risk—they have done so at least since 1924 when Edgar Smith wrote “Common Stocks as Long-Term Investments.” It would have been hubris to predict that the 1996-2006 decade would be the one to see a significant fall in the size of the equity risk premium. (Our notion that the market rose because investors are now more tolerant of stock

market risk implicitly carries with it the idea that stock returns for the next two decades will be low unless there is more unexpected good news.)

### IS SHILLER RIGHT ANYWAY ABOUT MISPRICING AND MARKET INEFFICIENCIES?

We want to argue that the failure of Shiller's 1996 prediction—the fact that the advice his regressions implicitly gave about portfolio selection was wrong, at least ex post—is an interesting fact. Back in 1996, betting on Shiller's regression studies was an intelligent thing to do.

Betting on Shiller's regressions would have meant shorting the market and hoping that stocks fell. But, it turns out that such a strategy was also an overwhelmingly risky thing to do: investors who followed it for the past decade would have suffered dearly and would wish that they had not used aggregate price-earnings ratios to try to time the aggregate market.

The past decade's experience does not weaken but strengthens the case for Shiller's overall worldview. Since 1979, Robert Shiller has been arguing that the aggregate stock market does not do a good job at its task of feeding the

real economy estimates of the present discounted economic value of capital: stock index prices are bad forecasts of the present value of future dividends.

One powerful response to Shiller's arguments has been that if there are better indicators of the present value of future dividends than available stock indices, informed and aggressive speculators should have long ago found those better indicators and traded on them. The candidate indicator Campbell and Shiller (1988) proposed is the ratio of stock index values to a thirty-year lagged moving average of earnings. If this is a better indicator, investors should have bought when it was above current stock values, sold when it was below them, and so pushed prices to fundamental values.

Those arguing in support of Shiller's point of view (e.g., J. Bradford DeLong et al.) have waved their hands and made vague claims about how the institutional structure of financial markets does not allow individual portfolio managers to make very large long-run bets on fundamentals, because you have to show results indicating that you are a good portfolio manager able to spot disequilibria within a year or two.

The course of the stock market over the past decade provides another reason.

Economists muse about just why it is that stock markets around the world are subject to fits of “irrational exuberance” and “excessive pessimism.” Why don't rational and informed investors take more steps to bet heavily on fundamentals and against the enthusiasms of the uninformed crowd?

The past decade gives us two reasons. First, if we grant that Shiller's regression analyses had correctly identified long-run fundamentals a decade ago, betting on fundamentals for the long term is overwhelmingly risky. Lots of good news can happen over a decade, enough to bankrupt an even slightly leveraged bear when stocks look high, and lots of bad news can happen over a decade, enough to bankrupt an even slightly leveraged bull when stocks look low. Thus, even in extreme situations—like the peak of the dot-com bubble in late 1999 and early 2000—it is very difficult for even those who believe they know what fundamentals are to nerve themselves to make large long-run bets on them. Even if they can nerve themselves, it is even more difficult for those who claim they know what

long-run fundamental values are and want to make large long-run contrarian bets to convince others to trust them. Even if the smart-money fundamentalists force themselves to make large risky long-run bets, can they convince others to join them and back them sufficiently to move the market?

Perhaps this is how it has to be. If it were easy to pierce the veils of time and ignorance and to assess long-run fundamental values with a high degree of confidence, it would be easy and safe to make large contrarian long-run bets on fundamentals—but, it is not. Agents wishing to make large, long-run bets on fundamental valuation rules with their clients' money face many sources of risk. The Lucas Critique's implication that most "fundamental" price patterns are not really fundamental at all but instead are the reduced forms of poorly understood systems. The risk that those they are relying on to assess fundamentals is wrong; the risk that the fundamentals of profits and growth will change; the risk that the fundamentals of risk tolerance and of the mobilization of risk-bearing capacity will change; and, the risk that the clients will rethink the situation and pull the plug.

If these sources of risk were absent, prices would never deviate much from the long-run fundamentals. If the statistical evidence for Campbell and Shiller's fundamental price patterns were tightly estimated and significant not at the 95 percent but at the 99.9 percent level, agents might well find these sources of risk worth bearing, but neither of these are the case. So betting heavily and over the long term on a significant movement toward expected long-run fundamentals is a very risky strategy, thus a relatively unattractive strategy.

If prices are to typically deviate significantly from economists' accurate assessments of long-run fundamentals, this is how things should be: there must be these limits to arbitrage.

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Letters commenting on this piece or others may be submitted at [cgi?context=ev](http://cgi?context=ev)

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