What's Ahead for the Markets and the Economy?
Prof. Jeremy J. Siegel ~ The Wharton School
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The source data on the return series for the major asset classes can be found in Professor Siegel’s book *Stocks for the Long Run, 4th edition*. Professor Siegel compiled his own proprietary indexes on each asset class and updates each data series from the book to reflect most recent periods.

- **Stocks**: The total returns after inflation on the broadest index of stocks available at the time. (Stocks-real-total return index: 1802-2011)
- **Bonds**: The total returns on an index on U.S. government bonds after inflation. (Bonds-real-total return index: 1802-2011)
- **Bills**: Total returns on U.S. Treasury Bills after inflation. (Bills-real-accumulative index: 1802-2011).
- **Gold**: The value of 1 dollar of gold bullion after inflation. (Gold-real-price index: 1802-2011)
- **Dollar**: The purchasing power of one US dollar. (Money: 1802-2011)

Index performance assumes reinvestment of dividends, but does not reflect any management fees, transaction costs or other expenses that would be incurred by a portfolio or fund, or brokerage commissions on transactions in Fund shares.
Risks

Note: Stocks are typically subject to increased risks compared to U.S. Treasury Bills while bonds are subject to adverse consequences associated with rising interest rates that cause a decline in a bond’s price. A U.S. treasury bill has less risk than bonds because of its very short-term nature and the U.S. government is considered a good creditor. Gold is often invested in as a hedge for inflation, but there is market risk that gold prices fluctuate widely. The value of the U.S. dollar depreciates over time with inflation, so the primary risk is inflation risk.
Asset Returns
Total Real Return Indexes

January 1802 – December 2012

Stocks: 6.6% Real
Bonds: 3.6% Real
Bills: 2.7% Real
Gold: 0.7% Real
Dollar: -1.4% Real

STOCKS
BONDS
BILLS
DOLLAR

$706,199
$1632
$282
$4.50
$0.052

Source: Siegel, Jeremy, *Future for Investors (2005), With Updates to 2012*

Past performance is not indicative of future results.

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### Annual Stock Market Returns

<table>
<thead>
<tr>
<th>Updated through December 2012</th>
<th>Real Returns</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Long-Term</strong></td>
<td></td>
</tr>
<tr>
<td>1802-2012</td>
<td>6.6%</td>
</tr>
<tr>
<td><strong>Major Sub-Periods</strong></td>
<td></td>
</tr>
<tr>
<td>I 1802-1870</td>
<td>6.7%</td>
</tr>
<tr>
<td>II 1871-1925</td>
<td>6.6%</td>
</tr>
<tr>
<td>III 1926-2012</td>
<td>6.4%</td>
</tr>
<tr>
<td><strong>Post-War Periods</strong></td>
<td></td>
</tr>
<tr>
<td>1946-2012</td>
<td>6.4%</td>
</tr>
<tr>
<td>1946-1965</td>
<td>10.0%</td>
</tr>
<tr>
<td>1966-1981</td>
<td>-0.4%</td>
</tr>
<tr>
<td>1982-1999</td>
<td>13.6%</td>
</tr>
<tr>
<td>2000-2012</td>
<td>0.3%</td>
</tr>
</tbody>
</table>

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Worldwide Stock, Bond, and Bill Returns

Average Annual Real Stock, Bond, and Bill Returns of the 19 Countries Analyzed, 1900-2010

Source: Dimson, Marsh, Staunton, Triumph of the Optimists; authors’ updates
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### Annual Bond Market Returns

<table>
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<th>Real Returns</th>
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<tr>
<td><strong>Long-Term</strong></td>
<td></td>
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<tr>
<td>1802-2012</td>
<td>3.6%</td>
</tr>
<tr>
<td><strong>Major Sub-Periods</strong></td>
<td></td>
</tr>
<tr>
<td>I 1802-1870</td>
<td>4.8%</td>
</tr>
<tr>
<td>II 1871-1925</td>
<td>3.7%</td>
</tr>
<tr>
<td>III 1926-2012</td>
<td>2.5%</td>
</tr>
<tr>
<td><strong>Post-War Periods</strong></td>
<td></td>
</tr>
<tr>
<td>1946-2012</td>
<td>1.9%</td>
</tr>
<tr>
<td>1946-1965</td>
<td>-1.2%</td>
</tr>
<tr>
<td>1966-1981</td>
<td>-4.2%</td>
</tr>
<tr>
<td>1982-1999</td>
<td>8.5%</td>
</tr>
<tr>
<td>2000-2012</td>
<td>5.8%</td>
</tr>
</tbody>
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Ten-Year TIPs Yield 1997-2013

Tips Yield should approximate GDP Growth

December yield - 0.90%

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Source: Bloomberg
What Explains Strong Demand for Treasuries?

- Huge Appetite for Treasuries Fed by the belief that it represents the “flight to safety” asset that can diversify portfolios.
- In other words, when a negative shock hits equities, Treasuries usually rise.
- But this hasn’t always been the case.
Historical Correlations with S&P 500 1965 - 2012

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Global Valuation
P-E Ratio on S&P 500, 1954-2012

Average PE over period = 16.60

Avg PE when Interest Rates <8% = 19

Double Digit Interest Rates

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Price/Earnings Ratio (or P/E ratio) is a valuation metric of stocks and relates how much one is paying for a stock or an index for each dollar of earnings for that stock or index.

Average P-E ratio in last 130 years of S&P 500 Index = 15.

But just as important is the Earnings Yield, or \( \frac{1}{\text{Price–Earnings ratio}} \). The earning yield, or E/P has been an excellent long-term predictor of real stock returns.

The average earnings yield 6.7%, virtually identical to long-run real stock return.


Past Performance is no guarantee of future results
What is the S&P500 worth today?

- 2012 earnings of S&P 500 are estimated at $96.95. 2013 top-down earnings are estimated at $112.82. At February 28 close of 1515, the market is selling at a Price to Earnings Ratio of 15.6 times 2012 earnings and 13.4 times 2013 earnings.

- At 16.6 times 2013 earnings, the S&P 500 is 1873; 24% above Feb 26 levels; at 19 times earnings the S&P 500 is at 2143, 41% higher.

- Current earnings yields projects a 7.5% real return, more than 8 percentage points over TIPS, and more than twice the historical average.
### World P-E Ratios

#### Past performance is not indicative of future results.

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Big-Cap Tech Stocks Are a Sucker Bet

By JEREMY J. SIEGEL

Until yesterday’s sell-off the Nasdaq Stock Market had enjoyed quite a run, surpassing 5000 for the first time ever as the Dow Jones Industrial Average went through a correction. But are the high valuations of the tech stocks that drive the Nasdaq index justified? History suggests not.

In the late 1960s Polaroid was at the top of its game, dominating the photographic field and enjoying one marketing success after another. Investors bid the stock up to an unheard-of 95 times earnings. Never before had a large-capitalization stock been priced so high. But Polaroid’s earnings growth had exceeded 40% a year over the previous 14 years, and the future seemed even brighter.

Most Valued Stock

IBM became the most valued stock in the world in 1987 and held on to that position for more than six years. The dominant computer manufacturer enjoyed enviable margins and virtually no competition. Its stock value reached 50 times earnings, a striking multiple for the world’s largest company. But why not? IBM had regularly cranked out 20% annual increases in earnings from the early 1950s, and the future obviously belonged to technology.

Yet investors who purchased these and many other stocks when the future looked promising were not always rewarded. In fact, if you had paid attention to the price-earnings ratios of even the most successful companies in the tech sector, you might have thought they were significantly overvalued.

<table>
<thead>
<tr>
<th>Unsustainable Values</th>
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<tbody>
<tr>
<td>Large-cap companies with price/earnings ratios over 100</td>
</tr>
<tr>
<td>COMPANY</td>
</tr>
<tr>
<td>---</td>
</tr>
<tr>
<td>Cisco Systems</td>
</tr>
<tr>
<td>AOL/Time Warner</td>
</tr>
<tr>
<td>Oracle</td>
</tr>
<tr>
<td>Nortel Networks</td>
</tr>
<tr>
<td>Sun Microsystems</td>
</tr>
<tr>
<td>EMC</td>
</tr>
<tr>
<td>JDS Uniphase</td>
</tr>
<tr>
<td>Qualcomm</td>
</tr>
<tr>
<td>Yahoo!</td>
</tr>
<tr>
<td>16 non-tech</td>
</tr>
<tr>
<td>S&amp;P 500</td>
</tr>
</tbody>
</table>

Source: Bloomberg

But once a firm reaches big-cap status—ranked in the top 50 by market value—and is able to generate long-term double-digit earnings growth slows dramatically. Schlumberger, an oilfield-service company, was alone when it attained a 10-year growth rate of 35% in the 1970s, but no investor would have been happy picking this stock at the height of its earnings growth in 1980. Merck has been able to reach 10-year earnings-per-share growth rates near 20% in the 1980s. And yes, Microsoft has achieved a 10-year growth rate in the mid-40s. But Microsoft did not reach big-cap status until 1993.

Even if the fantastic long-term growth rates IBES predicts for the tech companies come true, they won’t be nearly good enough to sustain current values. I calculated what the P/E ratio of each stock would be, assuming that these earnings estimates not only are realized in the next five years but are even replicated in the following five. To determine the future price of these stocks, I assume that investors expect to receive an average 15% return on their large-cap stock ever to justify, by its subsequent record, a P/E ratio anywhere near 100. As the chart above shows, any large-cap stock ever to justify, by its subsequent record, a P/E ratio anywhere near 100 is far short of what shareholders can expect.

Past performance is not indicative of future results.

Source: Wall Street Journal

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Prof. Robert Shiller of Yale uses a “Cyclically Adjusted P-E ratio” to judge valuation of the market.

He averages past 10 years of Reported Earnings to compute his PE ratio.

Current P-E ratio, at 23.33, about 40% above 16.46 mean, shows market about 40% overvalued, predicting very poor returns going forward.
Shiller CAPE Ratio

Past performance is not indicative of future results.

Source: www.econ.yale.edu/~shiller/

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Past performance is not indicative of future results.

Source: Jeremy Siegel

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Shiller CAPE based on Reported Earnings

- Reported Profits are distorted by massive write-downs which bias earnings downward.
- Operating earnings give much better indicator of cash flows available.
- Also earnings growth biases Shiller Cape.
- Faster growth makes average of past ten years lower, producing a higher CAPE ratio for current prices.

Past performance is not indicative of future results.
Earnings Comparisons


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Prediction Based on Operating + trend

Past performance is not indicative of future results.

Source: Jeremy Siegel

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Value Stocks Have Historically Paid Dividends Over the Long Run
Each stock in S&P 500 is ranked from highest to lowest by dividend yield on December 31st of every year and placed into “quintiles,” baskets of 100 stocks in each basket. The stocks in the quintiles are weighted by their market capitalization. The dividend yield is defined as each stock’s annual dividends per share divided by its stock price as of December 31st of that year. Past performance does not guarantee future results.

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Source: Siegel, Jeremy, *Future for Investors* (2005), With Updates to 2012

Each stock in S&P 500 is ranked from lowest to highest by price to earnings ratio on December 31st of every year and placed into “quintiles,” baskets of 100 stocks in each basket. The stocks in the quintiles are weighted by their market capitalization. The price/earnings ratio is defined as each stock’s net income per share divided by its stock price as of December 31st of that year. **Past performance does not guarantee future results.**

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Dividend Income beat inflation

Data from June 30, 2012

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Most Important Development in Next 20 Years

- In the next 20 years, 40 million Americans will become 65 years old, putting unprecedented demands on Social Security and Medicare, setting our national debt on an unsustainable path.

- Even more strain on the older European and Japanese economies, as an additional 44 million will demand benefits.

- This increase will lead to a rapid increase in the number of retirees per worker.

1U.S. Census Bureau, 2012
2Congressional Budget Office, 2012

Past performance is not indicative of future results.
Ratio of Retirees (Age 65+) to workers (Age 20-64)

USA: .28 to .45
Euro: .32 to .50
Japan: .47 to .80

Sources: UN Demographic Commission

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Most Critical Question Facing Us

- Will there be enough *workers* to produce the goods that will be demanded by retirees, who consume but do not produce?
- Will there be enough *savers* to buy the literally trillions of dollars of assets that these retiree will sell into the market in order to finance their consumption?
Rising Life Expectancy and Declining Retirement Age

U.S. Life Expectancy and Retirement Age

Sources: U.S. Bureau of Labor Statistics and U.S. Census Bureau
Past performance is not indicative of future results.

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Ratio of Retirees (Age 65+) to workers (Age 20-64)

China: 0.15 to 0.32
India: 0.09 to 0.16
Africa:unch at 0.08
EM: 0.12 to 0.20

Sources: UN Demographic Commission
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World GDP

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Retirement Age against GDP growth in Less Developed Countries

U.S. Life Expectancy and Retirement Age

Sources: U.S. Bureau of Labor Statistics, U.S. Census Bureau; Projections (blue & red) are directly from Professor Jeremy Siegel. Past performance is not indicative of future results.

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Growth in Productivity

Past performance is not indicative of future results. Source: IMF and UN forecasts

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Total Real Return Indexes

January 1802 – December 2012

Stocks: 6.6% Real
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Source: Siegel, Jeremy, *Future for Investors (2005), With Updates to 2012*
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The S&P 500 Price/earnings ratio is defined as the S&P 500’s net income per share divided by its index level. The S&P 500 Index is a capitalization-weighted index of 500 stocks selected by the Standard & Poor's Index Committee designed to represent the performance of the leading industries in the United States economy.

NASDAQ is a computerized system established by the FINRA to facilitate trading by providing broker/dealers with current bid and ask price quotes on over-the-counter stocks and some listed stocks.

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