Important Information

This presentation represents the opinion of Jeremy Siegel and is not intended to be a forecast of future events, a guarantee of future results nor investment advice.

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## Definition of Major Asset Classes / Indexes

- 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: 1802-2015)
- **Bonds**: The total returns on an index on U.S. government bonds after inflation. (Bonds-real-total return index: 1802-2015)
- **Gold**: The value of 1 dollar of gold bullion after inflation. (Gold-real-price index: 1802-2015)
- **Dollar**: The purchasing power of one US dollar. (Money: 1802-2015)
- 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 2015

- **Stocks**: 6.7% Real
- **Bonds**: 3.5% Real
- **Bills**: 2.7% Real
- **Gold**: 0.5% Real
- **Dollar**: -1.4% Real

Source: Siegel, Jeremy, Stocks for the Long Run (2014) RIA updates to 2017

Past performance is not indicative of future results. For Financial Professional Use Only.
## Annual Stock Market Returns

<table>
<thead>
<tr>
<th></th>
<th>Updated through December 2015</th>
<th>Real Returns</th>
</tr>
</thead>
<tbody>
<tr>
<td>Long-term</td>
<td>1802-2015</td>
<td>6.7%</td>
</tr>
<tr>
<td>Major Sub-periods</td>
<td>I 1802-1870</td>
<td>6.7%</td>
</tr>
<tr>
<td></td>
<td>II 1871-1925</td>
<td>6.6%</td>
</tr>
<tr>
<td></td>
<td>III 1926-2015</td>
<td>6.7%</td>
</tr>
<tr>
<td>Post-War Periods</td>
<td>1946-2015</td>
<td>6.7%</td>
</tr>
<tr>
<td></td>
<td>1946-1965</td>
<td>10.0%</td>
</tr>
<tr>
<td></td>
<td>1966-1981</td>
<td>-0.4%</td>
</tr>
<tr>
<td></td>
<td>1982-1999</td>
<td>13.6%</td>
</tr>
<tr>
<td></td>
<td>2000-2015</td>
<td>2.6%</td>
</tr>
</tbody>
</table>

Source: Siegel, Jeremy, Stocks for the Long Run (2014) with updates to 2016

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## Worldwide Stock, Bond, and Bill Returns

**Average Annual Real Stock, Bond Bill Returns 1900-2015**

Source: Siegel, SLR 5th ed, updates to 2016

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Global Valuation

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Median PE over period = 16.9
Avg PE when Interest Rates <8% = 19

PE Ratio on S&P 500, 1954-2016

Source: Bloomberg 12/31/1954-5/5/16
You cannot invest directly in an index
Past performance is not indicative of future results. For Financial Professional Use Only.
Historical P-E of Nasdaq

600 Times Earnings
March 2000

Source: Bloomberg 12/31/1995-03/02/15
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When Was America’s Greatest Year?


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Definitions of S&P 500 Earnings

- **Firm Reported:** Most liberal, excludes asset impairments, severance costs, Cash plant closing costs, litigation expense, pension value changes, and stock option expenses. 2015 $109.03; Est. 2016 $118.50.

- **S&P Operating:** Excludes some asset impairments (except for financials) and severance costs. 2015 $100.45; Est. 2016 = $114.74

- **GAAP:** Includes all write-downs, expenses and asset impairments; Does not permit “write-ups.” 2015 $86.53; Est. 2016 $105.78.

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PE Ratio of S&P 500 1871-2016

Average P-E Ratio 15.
What do PE Ratios Mean for Returns?

- Earning Yield (E/P) is a good predictor of long-term real returns. That is why a 140 year average of 15 PE corresponds to 1/15, or 6.7% real rate of return on stocks.
- 2015 S&P 500 operating earnings at $100.45, about 11% less than 2014. Excluding energy sector, S&P operating earnings would be up 4% in 2015 and this includes the hit of 5% caused by the higher value of the dollar.
- With S&P at 2050 (May 16), stocks are selling for 20.3 times 2015 S&P 500 operating earnings.
- The loss in the energy sector biases the P-E ratio of the market upward.

Source: S&P May 9, 2016
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Beware the “Aggregation Bias”!

- Assume healthy firm A:
  - $10 billion earnings; 15 P-E ratio
  - $150 b market value
- Assume sick firm B:
  - $9 billion in losses;
  - $10 billion market value
- Cap-weighted Portfolio is 94% A and 6% B.
- P-E of Portfolio (A+B):
  - Earnings = +1 billion, Market Value $160b
  - P-E ratio 160.
  - This is a ridiculous valuation for the portfolio

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P-E Ratios and Future Returns

- The aggregation bias is currently about 2 points on the P-E ratio. Excluding the energy sector, S&P PE ratio is about 18.3 times last year’s operating earnings.

- 2016 S&P 500 earnings are estimated at $114.74. If this estimate materializes, it results in a 17.9 P-E ratio based on all sectors (including energy).

- A PE ratio of 18 forecasts a real return of 5.6% for stocks (and about a 7% -7.5%% nominal return). This is more than 5% over TIPS, a margin economists call the “equity risk premium.” This premium is also well above the historical average of 3% to 3 ½%.

- Even a P-E of 20 forecasts a 5% real return for stocks (6.5% to 7% nominal return). This is still well above the historical margin on equities.

Historical Equity Risk Premium 1979-2015

S&P 500 earnings yield minus real bond yield

Mean Equity Risk Premium


Source: S&P Dec 2015
Shiller CAPE ratio

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

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

- P-E ratio December 2015 was 25.75 55% above 16.58, the 140-year mean of the series.*

- CAPE methodology forecasts forward 10 year real returns on stocks of only 2%, about 4 ½ percentage points below long-run average.

Is the CAPE Ratio Too Bearish?

- In 416 of the 422 months from 1981 through 2015, the actual 10-year real returns in the market have exceed forecasts using the CAPE model.
- There have been only 9 months since January 1991 when the CAPE ratio has been below its mean.
- CAPE methodology called the US stock market “overvalued” in May 2009, when the Dow was 8500 (now 18,000) and the S&P 500 was 919 (now 2060).
Real Per Share Reported Earnings

1871-2015

Real Per Share Reported Earnings

---Real Per Share Reported Earnings

Great Depression

Reported, Operating Earnings and NIPA* Profits

1871 - 2015

Real Per Share Reported Earnings

- Real Per Share Operating Earnings
- Real Pre Share NIPA Profits

NIPA Profits

S&P Reported Earnings

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*Real Per Share Reported Earnings is the per-share reported earnings adjusted for inflation. Past performance is not indicative of future results. For Financial Professional Use Only.
CAPE Ratio Relative to Long-term Mean
Shiller Total Return Portfolio 1987-2015

Just Published May/June 2016  FAJ

The Shiller CAPE Ratio: A New Look
Jeremy J. Siegel

Robert Shiller’s cyclically adjusted price-earnings ratio, or CAPE ratio, has served as one of the best forecasting models for long-term future stock returns. But recent forecasts of future equity returns using the CAPE ratio may be overoptimistic because of changes in the computation of GAAP earnings (e.g., “mark-to-market” accounting) that are used in the Shiller CAPE model. When consistent earnings data, such as NIPA (national income and product accounts) after-tax corporate profits, are substituted for GAAP earnings, the forecasting ability of the CAPE model improves and forecasts of US equity returns increase significantly.
Collapse of Interest Rates

Ten-year TIPS yield 1997-2016

Source: Bloomberg as of 03/07/2016

You cannot invest directly in an index.
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Determinants of Real Rates

- Economic Growth and Risk Aversion are important determinants of real rates.
- Average GDP growth rate between 1960 and 2008 was 3.4% and that was TIPS yield. CBO Predicts annual GDP growth at about 2% or less over next ten years, subtracting nearly 1 ½% from yield.
- Little demand for funds by firms.
- Increased risk aversion, high demands for liquidity, and the de-risking of pension funds increases demand for bonds, could cut another 50 to 100bps from the bond yield.
- This means real bond yields will max out at 1% to 1.5%, real short-term yields at zero, at most.
- This argues for long-run nominal Fed Funds rate at 2%

Source: Congressional Budget Office as of January 2015

March Fed “Dot Plot” vs Markets

Source: Bloomberg and Fed Reports (US 30)
Negative Interest Rates

- If banknotes were freely available and costless to store, interest rates could never be negative.
- Limit to how negative rates can be is determined by the cost of storing banknotes.
- Fed is miles away from negative rates.
- Negative interest rates are a proper policy tool and should be employed when deflation is a threat.

Dividend Income beats inflation

![Dividend Income Graph]

- Consumer Price Index (CPI)
- S&P 500 Dividends

<table>
<thead>
<tr>
<th>Year Range</th>
<th>Dividends</th>
<th>Inflation</th>
</tr>
</thead>
<tbody>
<tr>
<td>1957-2015</td>
<td>5.65%</td>
<td>3.73%</td>
</tr>
<tr>
<td>1970-1989</td>
<td>6.46%</td>
<td>6.22%</td>
</tr>
<tr>
<td>1990-2015</td>
<td>5.40%</td>
<td>2.46%</td>
</tr>
</tbody>
</table>

Data as of December 31, 2015


Data to December 31, 2015

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The Shocking Productivity Collapse

2.2% per year Long Term Average

Why this Productivity drop?

- Increase in activities that do not add to GDP, such as compliance, overseeing new regulations.
- Decline in educational standards, poor preparation for job market.
- Are we computing GDP correctly?
  - How do you treat “free services” such as provided by smart phones or Google?
  - How do we compute output in many service sectors, particularly health care?
Total Real Return Indexes

January 1802 – December 2015

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STOCKS
BONDS
BILLS
GOLD
DOLLAR

Source: Siegel, Jeremy, Stocks for the Long Run (2014) With Updates to 2015

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