Are Valuations Now Irrelevant?

Rob Arnott
Chairman & Founder
Research Affiliates, LLC
Valuing Equity Strategies: Past Is Not Prologue
Most Investors Are Trend Chasers!

Actively Managed Mutual Funds

...A Naïve Contrarian Strategy Can Work

This result is arguably created by our industry’s favorite decision rule: Three bad years and out!

Source: Research Affiliates, LLC, based on data from Morningstar Direct.
What Style Are Investors Chasing Today? Growth!

Annualized Trailing 10-Year Relative Total Return

- Russell 1000 Value vs. Growth
- Average
- 10th Percentile
- 90th Percentile

What Factor Is Priced—Relative to Its Own History—to Deliver the Best Future Returns? Value!

Source: Research Affiliates, LLC, using data from CRSP/Compustat and Datascope/Worldstream. Please see important information at the end of this presentation regarding simulated data. Return expectations as of June 30, 2019.
Equity Forecasts: Past Is Not Prologue... Again
What Were the Sources of Historical Returns?

US Large Cap Equity Historical Return Decomposition, 1871-Jun 2019

- Dividend Yield: 4.4%
- Real Fundamental Growth: 1.9%
- Inflation: 2.1%
- Valuation Change: 0.4%
- Compounding: 0.3%
- Realized Return: 9.1%

Equity Returns Are a Function of Dividend Yield, Earnings Growth, and Valuation Changes

US Large Cap Equity Return Building Blocks

- Dividend Yield: 1.9%
- Real Fundamental Growth: 1.2%
- Inflation: 2.1%
- Valuation Change: -2.7%
- Expected Return: 2.6%

Equity Returns Are a Function of Dividend Yield, Earnings Growth, and Valuation Changes.

Source: Research Affiliates, LLC, based on data from MSCI Inc., Bloomberg, and Barclays. Please see important information at the end of this presentation regarding simulated data. The 10-year return expectations are as of June 30, 2019.
CAPE Is Powerful at Forecasting Long-Horizon Returns, but Almost Useless for Market Timing

Correlation of CAPE Ratio with US Equity Market Real Return at 1-Year Horizons, Jan 1881–Oct 2017

Panel A

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Panel A

CAPE Is Powerful at Forecasting Long-Horizon Returns, but Almost Useless for Market Timing

Correlation of CAPE Ratio with US Equity Market Real Return at 1- and 5-Year Horizons, Jan 1881–Oct 2017

Panel A

Panel B

CAPE Is Powerful at Forecasting Long-Horizon Returns, but Almost Useless for Market Timing

Correlation of CAPE Ratio with US Equity Market Real Return at 1-, 5-, and 10-Year Horizons, Jan 1881–Oct 2017

Panel A

Panel B

Panel C

CAPE Is Powerful at Forecasting Long-Horizon Returns, but Almost Useless for Market Timing

Correlation of CAPE Ratio with US Equity Market Real Return at 1-, 5-, 10-, and 20-Year Horizons, Jan 1881–Oct 2017

Panel A

Panel B

Panel C

Panel D

The Link Between Starting Valuations and Subsequent Returns Is Robust Across Equity Markets

The regression of ln(CAPE) vs. subsequent 10-Year Stock Market Returns, 12 Countries

<table>
<thead>
<tr>
<th>Country</th>
<th>Slope</th>
<th>Correlation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Australia</td>
<td>-0.12</td>
<td>91%</td>
</tr>
<tr>
<td>Canada</td>
<td>-0.03</td>
<td>48%</td>
</tr>
<tr>
<td>France</td>
<td>-0.12</td>
<td>89%</td>
</tr>
<tr>
<td>Germany</td>
<td>-0.08</td>
<td>81%</td>
</tr>
<tr>
<td>Hong Kong</td>
<td>-0.10</td>
<td>75%</td>
</tr>
<tr>
<td>Italy</td>
<td>-0.11</td>
<td>62%</td>
</tr>
<tr>
<td>Japan</td>
<td>-0.09</td>
<td>68%</td>
</tr>
<tr>
<td>Spain</td>
<td>-0.13</td>
<td>79%</td>
</tr>
<tr>
<td>Sweden</td>
<td>-0.12</td>
<td>87%</td>
</tr>
<tr>
<td>Switzerland</td>
<td>-0.08</td>
<td>72%</td>
</tr>
<tr>
<td>United Kingdom</td>
<td>-0.15</td>
<td>90%</td>
</tr>
<tr>
<td>United States</td>
<td>-0.08</td>
<td>58%</td>
</tr>
</tbody>
</table>

Average Correlation = 75%

Source: Research Affiliates, LLC, using data from Robert Shiller database, Bloomberg, and MSCI. Note: Each country is measured over the time span for which earnings data are available through October 2007 in order to calculate 10-year returns ending in 2017. The start date for earnings data in the United States is 1871; in Australia, Canada, Germany, Sweden, Switzerland, and the United Kingdom is 1969; in France is 1971; in Hong Kong and Spain is 1980; and in Italy is 1984.
US Equities Are Poised for Lackluster Future Returns

Earnings Yield and Subsequent Returns, US, 1926–June 2019

Common Valuation Metrics Imply Overvaluation

Current Levels of US Valuation Metrics vs. Their Long-Term Averages

Source: Research Affiliates, LLC, based on data from Robert Shiller and the Federal Reserve Economic Data (FRED). US Valuation Metrics referenced above are presented as of the first date that data is available, as of June 30, 2019.
Low Macro Volatility Helps Explain High CAPE Ratios

Aked, Mazzoleni, and Shakernia (2017) find that today’s low volatility levels support an equilibrium CAPE of 26, about 10% below the current level of 29 as of June 30, 2019.

Source: Research Affiliates, LLC, using data from FRED at the Federal Reserve Bank of St. Louis, Robert Shiller’s database, and Ray C. Fair’s quarterly historical GDP Data (https://fairmodel.econ.yale.edu/rayfair/pdf/2002dtbl.htm). For quarterly real GDP growth, we use FRED data from 1947 to present, backfilled with data from Ray Fair’s website. Macro volatility is defined as the arithmetic average of the rolling three-year volatility of real GDP growth and the rolling three-year volatility of inflation.
Even After Making Multiple Adjustments, US Equities Face Headwinds from Valuation Contraction

What’s “Fair” Value?

What’s Today’s “Actual” Value?

1. Simple Average: 1926–6/30/2019


3. Adjusted for Business Cycle & Macro Vol

4. CAPE excluding highest & lowest earnings years

5. CAPE excluding lowest 12 months of earnings

Today's CAPE: S&P 500

Source: Research Affiliates, LLC. As of June 30, 2019.

Valuation differential still implies -3.0% annual return headwind over 10 years!
High Earnings Are Not Enough to Portend a High CAPE Ratio!

• For returns to remain elevated with a high CAPE, EPS growth must be high as well
  • EPS growth arguments¹ for elevated CAPE explain high past EPS growth, not high future EPS growth.
  • EPS growth rates are cyclical.

• Indeed, real earnings of the S&P 500 are only barely above 2014 peak. We are skeptical that earnings can grow much, relative to GDP, in the years ahead.

High EPS Growth Often Precedes Low EPS Growth

Past vs. Future 10-Year US Real EPS Trend Growth, Jan 1871–Oct 2017

\[ y = -0.23x + 0.02 \]
Correl. = -21%

Equities: Long-Term Return Expectations

Source: Research Affiliates, LLC, based on data from Ibbotson, Shiller, Bloomberg, MSCI, and FactSet. The bolded country indices are represented by the S&P 500, MSCI Germany, MSCI Japan, and MSCI UK. For more information, please visit http://www.researchaffiliates.com/en_us/asset-allocation.html. Please see important information at the end of this presentation regarding simulated data. The 10-year return expectations are as of June 30, 2019.
Mainstream Asset Classes Offer Less Than Most Investors Expect

*60/40 portfolios are represented as 60% core equity index and 40% Treasury 5-7 Year bond index for each specific country. For the US, the Barclays Aggregate is used in lieu of the 5–7 Year Treasury. Source: Research Affiliates, LLC, based on data from Ibbotson, Shiller, Bloomberg, FactSet, MSCI Inc., and Barclays. Please see important information at the end of this presentation regarding simulated data. The 10-year return expectations are as of June 30, 2019.
How Do the Largest Holdings of Index Funds Impact Performance?
How Expensive Are FANMAG (Facebook, Apple, Netflix, Microsoft, Amazon, & Google)?

Source: Research Affiliates, LLC, based on data from FactSet as of 6/30/2019. Market cap for countries represents the sum of the market caps for their constituents in the Morningstar Global Markets Index. Market caps for Facebook, Apple, Netflix, Microsoft, Amazon, & Google are excluded from the United States. The total market capitalization for the United States is $25.7 trillion, which is cut off at $6.0 trillion in this graph for scaling purposes.

Over $4.0T in combined market cap places these six companies above all but 2 of 61 countries in the Morningstar Global Markets Index.
How Expensive Are FANMAG (Facebook, Apple, Netflix, Microsoft, Amazon, & Google)?

Over $4.0T in combined market cap places these six companies above all but one sector in the US!

Source: Research Affiliates, LLC, based on data from FactSet as of 6/30/2019. Market cap for sectors represents the sum of the market caps for their constituents in the Russell 1000 Index. Market caps for Facebook, Apple, Netflix, Microsoft, Amazon, & Google are excluded from the Technology sector.
The “Top Dogs” Are Constantly Changing!

Since 1980, typically only 2 of the top 10 companies in the market remain among the largest companies 10 years later.

### Ten Largest Market Capitalization Stocks in the World, at the Beginning of Each Year

<table>
<thead>
<tr>
<th></th>
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</thead>
<tbody>
<tr>
<td>Microsoft</td>
<td>PetroChina</td>
<td>Microsoft</td>
<td>Nippon Tel and Tel</td>
<td>IBM</td>
</tr>
<tr>
<td>Apple Inc.</td>
<td>Exxon Mobil</td>
<td>General Electric</td>
<td>Bank of Tokyo-Mitsubishi</td>
<td>AT&amp;T</td>
</tr>
<tr>
<td>Amazon</td>
<td>Microsoft</td>
<td>NTT DoCoMo</td>
<td>Industrial Bank of Japan</td>
<td>Exxon Mobil</td>
</tr>
<tr>
<td>Alphabet Inc.</td>
<td>ICBC</td>
<td>Cisco Systems</td>
<td>Sumitomo Mitsui Banking</td>
<td>Standard Oil</td>
</tr>
<tr>
<td>Berkshire Hathaway</td>
<td>Wal-Mart</td>
<td>Wal-Mart</td>
<td>Toyota Motors</td>
<td>Schlumberger</td>
</tr>
<tr>
<td>Facebook</td>
<td>China Construction Bank</td>
<td>Intel Corporation</td>
<td>Fuji Bank</td>
<td>Shell</td>
</tr>
<tr>
<td>Tencent</td>
<td>BHP Billiton</td>
<td>Nippon Tel and Tel</td>
<td>Dai-Ichi Kangyo Bank</td>
<td>Mobil</td>
</tr>
<tr>
<td>Alibaba Group</td>
<td>HSBC</td>
<td>Exxon Mobil</td>
<td>IBM</td>
<td>Atlantic Richfield</td>
</tr>
<tr>
<td>Johnson &amp; Johnson</td>
<td>Petrobras</td>
<td>Lucent Technologies</td>
<td>UFJ Bank</td>
<td>General Electric</td>
</tr>
<tr>
<td>JPMorgan Chase</td>
<td>Apple Inc.</td>
<td>Deutsche Telekom</td>
<td>Exxon Mobil</td>
<td>Eastman Kodak</td>
</tr>
</tbody>
</table>

**Legend:**
- Black = US Company
- Teal = Emerging Markets
- Blue = European Company
- Green = Japan/Australia


*Year 2000 represents holdings as of March, three months late.*
“Top Dogs” by Year Over the Past Decade

Top Dogs have been unusually steady since 2018. This will change!

Ten Largest Market Capitalization Stocks in the World, at the Beginning of Each Year

Legend:
- Black = US Company
- Teal = Emerging Markets
- Blue = European Company
- Green = Japan/Australia

“Top Dogs” Vanish Because They **Underperform**!

The global top dog outpaced the global cap-weighted stock market only once in the last 36 years!

**Performance of Largest Market Cap Stocks, 1982–2018**

<table>
<thead>
<tr>
<th>Type of Top Dog</th>
<th>Subsequent Horizon</th>
<th>Relative Return vs. Sector, Average Across Sectors</th>
<th>Frequency of Win vs. Sector, Average Across Sectors</th>
</tr>
</thead>
<tbody>
<tr>
<td>Top Dog by Sector (Average, Developed World)</td>
<td>1yr</td>
<td>-10.1%</td>
<td>38%</td>
</tr>
<tr>
<td></td>
<td>5yrs</td>
<td>-9.5%</td>
<td>25%</td>
</tr>
<tr>
<td></td>
<td>10yrs</td>
<td>-9.7%</td>
<td>21%</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Top Dog, Developed World</th>
<th>Subsequent Horizon</th>
<th>Relative Return vs. Developed World</th>
<th>Frequency of Win vs. Developed World</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>1yr</td>
<td>-7.2%</td>
<td>38%</td>
</tr>
<tr>
<td></td>
<td>5yrs</td>
<td>-8.4%</td>
<td>21%</td>
</tr>
<tr>
<td></td>
<td>10yrs</td>
<td>-9.2%</td>
<td>4%</td>
</tr>
</tbody>
</table>

Source: Research Affiliates, LLC, based on data from Worldscope/Datastream. Based on research published in, “The Winner’s Curse: Too Big to Succeed?” by Arnott and Wu, 2012. “Top Dog” refers to the largest company in the index each year by market capitalization. Please see important information at the end of this presentation regarding simulated data.
How Do “Top Dogs” Impact Index Performance?

We compared the performance of four different portfolios:

<table>
<thead>
<tr>
<th>Portfolio</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Developed World</td>
<td>Cap Weighted (“World”)</td>
</tr>
<tr>
<td>Global Top Dog</td>
<td>The single largest market-cap stock in the developed world</td>
</tr>
<tr>
<td>Global Top Ten</td>
<td>The ten largest market-cap stocks in the developed world</td>
</tr>
<tr>
<td>Country Top Dog</td>
<td>The largest market-cap stock in each developed country</td>
</tr>
</tbody>
</table>
“Top Dog” Portfolios Underperform the Market

Performance of Top Dog Portfolios

<table>
<thead>
<tr>
<th></th>
<th>Developed World</th>
<th>Global Top Dog</th>
<th>Global Top Ten</th>
<th>Country Top Dogs</th>
</tr>
</thead>
<tbody>
<tr>
<td>Return</td>
<td>9.52%</td>
<td>1.38%</td>
<td>6.98%</td>
<td>5.75%</td>
</tr>
<tr>
<td>Std Dev</td>
<td>14.81%</td>
<td>27.05%</td>
<td>17.08%</td>
<td>17.11%</td>
</tr>
</tbody>
</table>

Source: Research Affiliates, LLC, based on data from Worldscope and Datastream. Data from 1/1/1980-6/30/2019. “Global top dog” refers to the largest company in the index each year by market capitalization. “Global Top Ten” refers to the top 10 companies in the index each year by market capitalization. Please see important information at the end of this presentation regarding simulated data.
Unconventional Assets Mostly Priced to Offer Better Returns

Unconventional Portfolio is an equal-weighted portfolio of the following asset classes: EM Equity, EM Currency, EM Local Debt, Bank Loans, US TIPS, High Yield, REITs, and Commodities. US 60/40 is represented as 60% in S&P 500 and 40% in Barclays U.S. Aggregate. Global 60/40 is represented as 60% in MSCI World and 40% in Citigroup WGBI.

Source: Research Affiliates, LLC, based on data from Shiller, Bloomberg, and FactSet. Please see important information at the end of this presentation regarding simulated data. As of June 30, 2019.
Key Takeaways

• The link between starting valuations and subsequent returns is powerful.
  » Valuation levels are not useful for timing market tops and bottoms.
  » Chasing returns can be very costly. High valuations can go higher, but not indefinitely.

• Across asset classes higher return potential exists in international and diversifying markets.
  » Investors should balance return maximization goals with risk relative to peer groups or conventional benchmarks.

• Within equities the value factor offers the highest return potential today.
  » A dynamic multi-factor approach may also balance alpha and tracking-error goals.

» The largest stocks in the market are often expensive and have historically underperformed after reaching the top 10.
Thank You

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