Executive Summary

- Schwab believes that asset allocation and portfolio construction needs to evolve to meet the needs of investors.
- Schwab believes in the value of combining active and passive strategies.
- Schwab believes that fundamental strategies are an evolutionary step forward that capture attributes of both active and traditional passive strategies (market cap).
- Schwab believes that effective portfolio construction is both art and science, and needs to be carefully integrated with asset allocation decisions.
- Schwab believes that combining active management, market-cap strategies, and fundamental strategies can provide more diversified portfolios.
Asset Allocation

**Modern Portfolio Theory ("MPT")** - according to MPT, it's possible to construct an "efficient frontier" of optimal portfolios offering the maximum possible expected return for a given level of risk. This theory was pioneered by Harry Markowitz in his paper "Portfolio Selection," published in 1952 by the *Journal of Finance*. 
Evolutionary Timeline

- 1952: Markowitz (Modern Portfolio Theory)
- 1965: Sharpe (CAPM)
- 1986: Brinson, Beebower (Asset Allocation Study)
- 1987: Market Crash
- 1993: The First ETF Launched (SPY)
- 1996: Arnott (Fundamental Index® Methodology)
- 2000: Tech Bubble Burst
- 2008: Financial Crisis
- 2013: ETF AUM Surpass $1.6 Trillion (>1,500 ETPs)


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# Individuals and Institutions View Asset Allocation Differently

<table>
<thead>
<tr>
<th>Objectives</th>
<th>Time Horizon</th>
</tr>
</thead>
<tbody>
<tr>
<td>Preferences (Loss Aversion)</td>
<td></td>
</tr>
</tbody>
</table>

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## Industry approaches to asset allocation

<table>
<thead>
<tr>
<th>Approach</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Yale Model</strong> (Endowment Model)</td>
<td>High allocations to alternative investments, Alpha-centric</td>
</tr>
<tr>
<td><strong>Traditional Diversification</strong></td>
<td>Goal is to maximize expected return for a given level of risk</td>
</tr>
<tr>
<td><strong>Liability-Driven Investment (LDI)</strong></td>
<td>Cash flow matching based on investor’s unique liabilities</td>
</tr>
<tr>
<td><strong>Risk Parity</strong></td>
<td>Each asset class contributes equally to total portfolio risk (Generally involves leverage)</td>
</tr>
<tr>
<td><strong>Goal Driven</strong></td>
<td>Asset allocation is designed to achieve a specific goal</td>
</tr>
<tr>
<td><strong>Risk Diversification</strong></td>
<td>Similar to risk parity except that each asset class does not contribute equally to total risk</td>
</tr>
</tbody>
</table>
Asset Allocation & Portfolio Construction Evolution

**INTRODUCTION OF NON-TRADITIONAL ASSET CLASSES**
- Diversification benefits
- The ability to participate in rising & falling markets
- Introduction & expansion of liquid alternative strategies
- Utilization of liquid and illiquid strategies

**TACTICAL OVERLAY**
- Responding to changing market conditions
- Overweighting / Underweighting asset classes
- Incorporating forward looking insights

**PORTFOLIO CONSTRUCTION**
- Integrating asset allocation & portfolio construction
- Broader array of strategies
- Manager / vehicle selection

**ACTIVE & PASSIVE STRATEGIES**
- The growth of index-based strategies (ETFs & mutual funds)
- The introduction of alternative beta strategies
- Combining active & passive strategies

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Each Asset Class has a Specific Role in the Portfolio

<table>
<thead>
<tr>
<th>Growth</th>
<th>U.S. Large Co. Equity</th>
<th>U.S. Small Co. Equity</th>
<th>International Large Co. Equity</th>
<th>International Small Co. Equity</th>
<th>Emerging Markets Equity</th>
</tr>
</thead>
<tbody>
<tr>
<td>Income</td>
<td>Corporate Bonds</td>
<td>High Yield Bonds</td>
<td>Securitized Bonds</td>
<td>Emerging Markets Bonds</td>
<td></td>
</tr>
<tr>
<td>Inflation</td>
<td>TIPS</td>
<td>U.S. REITs</td>
<td>Int’l REITs</td>
<td>Energy</td>
<td>Metals</td>
</tr>
<tr>
<td>Defensive Assets</td>
<td>Cash</td>
<td>Treasuries</td>
<td>Gold</td>
<td>International Developed Bonds</td>
<td>Agency MBS</td>
</tr>
</tbody>
</table>
Portfolio Construction

“Alternative beta, advanced beta or smart beta is a response from the market to a question that forms the basis of modern portfolio theory since the work of the Nobel Prize winner Harry Markowitz: how to construct an optimally diversified portfolio.”

• Noël Amenc, “Beyond Smart Beta Indexation,” EDHEC-Risk, Nov. 29, 2012
Fundamental Strategies Are Designed to Capture Some of the Best Attributes of Active and Passive Investing

Fundamental Strategies

Traditional Passive Strategies

Rules-Based Strategies

Actively Managed Strategies
**Portfolio Comparisons**

<table>
<thead>
<tr>
<th></th>
<th>Market Cap</th>
<th>Fundamental</th>
<th>Active</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Portfolio Weighting</strong></td>
<td>Cap weighting</td>
<td>Economic Factors</td>
<td>Varies by manager</td>
</tr>
<tr>
<td><strong>Portfolio Construction</strong></td>
<td>Larger-cap bias</td>
<td>Value tilt</td>
<td>Varies by manager</td>
</tr>
<tr>
<td><strong>Portfolio Turnover</strong></td>
<td>Reconstitution</td>
<td>Reconstitution and rebalancing</td>
<td>Buy and sell discipline</td>
</tr>
<tr>
<td><strong>Tax Efficiency</strong></td>
<td>Typically</td>
<td>Typically</td>
<td>Not typically</td>
</tr>
<tr>
<td><strong>Cost Structure</strong></td>
<td>Lowest cost</td>
<td>Low cost</td>
<td>Varies by manager and structure</td>
</tr>
<tr>
<td><strong>Alpha/Beta</strong></td>
<td>Beta</td>
<td>Potential Alpha</td>
<td>Varies by manager</td>
</tr>
<tr>
<td><strong>Investment Process</strong></td>
<td>Passive</td>
<td>Rules-based</td>
<td>Active</td>
</tr>
</tbody>
</table>

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## Fundamental U.S. Large Company Index
### Top 10 Stocks with Weights vs. Russell 1000

<table>
<thead>
<tr>
<th>Company</th>
<th>Weight</th>
</tr>
</thead>
<tbody>
<tr>
<td>Exxon Mobil Corp</td>
<td>5.04%</td>
</tr>
<tr>
<td>Chevron Corp</td>
<td>2.42%</td>
</tr>
<tr>
<td>AT&amp;T Inc</td>
<td>2.02%</td>
</tr>
<tr>
<td>Microsoft Corp</td>
<td>1.95%</td>
</tr>
<tr>
<td>ConocoPhillips</td>
<td>1.92%</td>
</tr>
<tr>
<td>General Electric Co</td>
<td>1.56%</td>
</tr>
<tr>
<td>Bank of America Corp</td>
<td>1.44%</td>
</tr>
<tr>
<td>Proctor &amp; Gamble Co</td>
<td>1.44%</td>
</tr>
<tr>
<td>Wal-Mart Stores Inc</td>
<td>1.39%</td>
</tr>
<tr>
<td>JPMorgan Chase &amp; Co</td>
<td>1.30%</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>20.49%</strong></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Company</th>
<th>Weight</th>
</tr>
</thead>
<tbody>
<tr>
<td>Apple Inc</td>
<td>2.77%</td>
</tr>
<tr>
<td>Exxon Mobil Corp</td>
<td>2.37%</td>
</tr>
<tr>
<td>Microsoft Corp</td>
<td>1.65%</td>
</tr>
<tr>
<td>Google Inc</td>
<td>1.59%</td>
</tr>
<tr>
<td>General Electric Co</td>
<td>1.53%</td>
</tr>
<tr>
<td>Johnson &amp; Johnson</td>
<td>1.35%</td>
</tr>
<tr>
<td>Chevron Corp</td>
<td>1.27%</td>
</tr>
<tr>
<td>Procter &amp; Gamble Co</td>
<td>1.17%</td>
</tr>
<tr>
<td>JPMorgan Chase &amp; Co</td>
<td>1.16%</td>
</tr>
<tr>
<td>Wells Fargo &amp; Co</td>
<td>1.15%</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>16.02%</strong></td>
</tr>
</tbody>
</table>

*For illustrative purposes only*


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Apple Effect

Source: Morningstar Direct from March 1, 2011 to June 30, 2013
# Fundamental vs. Market Cap: Excess Returns

(Returns are from August 1996 to December 2013)

<table>
<thead>
<tr>
<th>Index</th>
<th>Annualized Return</th>
<th>Excess Return</th>
<th>Volatility</th>
<th>Sharpe Ratio</th>
<th>Tracking Error</th>
<th>Information Ratio</th>
</tr>
</thead>
<tbody>
<tr>
<td>Russell Fundamental U.S. Large Company Index</td>
<td>11.2%</td>
<td>2.7%</td>
<td>15.4%</td>
<td>0.61</td>
<td>5.6%</td>
<td>0.51</td>
</tr>
<tr>
<td>Russell 1000 Index</td>
<td>8.5%</td>
<td>16.1%</td>
<td>0.43</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Russell Fundamental U.S. Small Company Index</td>
<td>14.6%</td>
<td>5.4%</td>
<td>19.1%</td>
<td>0.68</td>
<td>7.6%</td>
<td>0.71</td>
</tr>
<tr>
<td>Russell 2000 Index</td>
<td>9.2%</td>
<td>20.6%</td>
<td>0.41</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Russell Fundamental Dev x U.S. Lg Co Index</td>
<td>9.6%</td>
<td>2.9%</td>
<td>17.4%</td>
<td>0.46</td>
<td>4.1%</td>
<td>0.69</td>
</tr>
<tr>
<td>Russell Developed x U.S. Large Cap Index</td>
<td>6.7%</td>
<td>17.5%</td>
<td>0.31</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Russell Fundamental Dev x U.S. Sm Co Index</td>
<td>9.0%</td>
<td>1.8%</td>
<td>17.3%</td>
<td>0.43</td>
<td>5.0%</td>
<td>0.36</td>
</tr>
<tr>
<td>Russell Developed x U.S. Small Cap Index</td>
<td>7.2%</td>
<td>17.9%</td>
<td>0.33</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Russell Fundamental EM Large Company Index</td>
<td>13.3%</td>
<td>6.1%</td>
<td>25.5%</td>
<td>0.52</td>
<td>7.8%</td>
<td>0.78</td>
</tr>
<tr>
<td>Russell Emerging Markets Large Cap Index</td>
<td>7.2%</td>
<td>25.1%</td>
<td>0.30</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Source: Russell Indexes and Bloomberg. The Russell Fundamental Indexes were created in 2011. Performance and statistical data on Russell Fundamental Indexes for periods prior to each index’s inception is hypothetical, but was calculated in the same manner as more recent, factual index data. Back-tested performance and risk statistics are hypothetical and done with the benefit of hindsight. Past performance of a back-tested model is not a guarantee that the model will produce similar results in the future.
Performance information for the Russell Fundamental U.S. Large Company Index includes back-tested performance up until 2/24/2011. Back-tested performance is hypothetical and done with the benefit of hindsight. Past performance of a back-tested model is not a guarantee that the model will produce similar results in the future.

<table>
<thead>
<tr>
<th>Peer Group Comparison: Active, Market Cap, and Fundamental Large-Cap Universe Comparison</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>As of 12/31/2013</strong></td>
</tr>
<tr>
<td>-----------------------</td>
</tr>
<tr>
<td>Russell Fundamental U.S. Large Company Index*</td>
</tr>
<tr>
<td>Russell 1000 Index</td>
</tr>
<tr>
<td>S&amp;P 500 Index</td>
</tr>
<tr>
<td>Peer Group 25th Percentile</td>
</tr>
<tr>
<td>Peer Group Median</td>
</tr>
<tr>
<td>Peer Group 75th Percentile</td>
</tr>
<tr>
<td>Peer Group 95th Percentile</td>
</tr>
</tbody>
</table>


* Performance information for the Russell Fundamental U.S. Large Company index includes back-tested performance up until 2/24/2011. Back-tested performance is hypothetical and done with the benefit of hindsight. Past performance of a back-tested model is not a guarantee that the model will produce similar results in the future.
Active Manager Selection

It has been well documented that many managers have had difficulties in consistently outperforming their benchmarks.* However, there are managers that have delivered excess return, and the challenge is identifying them. Active manager selection should focus on the following:

− Managers with sound and repeatable investment disciplines
− Strong organizations with a commitment to investment excellence
− Managers that have delivered strong risk-adjusted results over time
− Strategies with capacity for growth
− Managers that have a proven track record of outperforming in rising markets
− Managers that have done a better job protecting wealth in falling market conditions

Prospect Theory: Loss Aversion

- We believe that portfolio construction requires both art and science. Daniel Kahneman and Amos Tversky studied how people responded to risk. Their research on prospect theory serves as factor in our portfolio construction process.

One very important result of Kahneman and Tversky work is demonstrating that people’s attitudes toward risks concerning gains may be quite different from their attitudes toward risks concerning losses. For example, when given a choice between getting $1,000 with certainty or having a 50% chance of getting $2,500, they may well choose the certain $1,000 in preference to the uncertain chance of getting $2,500 even though the mathematical expectation of the uncertain option is $1,250. This is a perfectly reasonable attitude that is described as risk aversion.

Kahneman and Tversky, “Prospect Theory: An Analysis of Decision Under Risk,” 1979

- We believe that risk aversion/loss aversion should be incorporated into portfolio construction considerations.
## Portfolio Construction Levers

<table>
<thead>
<tr>
<th>Key Lever</th>
<th>Market Cap</th>
<th>Fundamental</th>
<th>Active</th>
</tr>
</thead>
<tbody>
<tr>
<td>Tracking error</td>
<td>Little or no tracking error</td>
<td>Higher tracking error</td>
<td>Varies by manager</td>
</tr>
<tr>
<td>Loss aversion</td>
<td>No downside protection</td>
<td>No downside protection</td>
<td>May provide a level of downside protection</td>
</tr>
<tr>
<td>Alpha</td>
<td>No</td>
<td>Potential alpha</td>
<td>Varies</td>
</tr>
<tr>
<td>Cost</td>
<td>Lowest Cost</td>
<td>Low Cost</td>
<td>Varies by manager and vehicle</td>
</tr>
</tbody>
</table>
Sharpe Ratio: Active, Market-Cap and Fundamental Strategies


The inception date for the Russell Fundamental Index® Series is 2/24/2011. All data before that date is back-tested. THE RUSSELL FUNDAMENTAL INDEX DATA PUBLISHED HEREIN IS SIMULATED, UNMANAGED AND CANNOT BE INVESTED IN DIRECTLY. PAST SIMULATED PERFORMANCE IS NO GUARANTEE OF FUTURE PERFORMANCE AND IS NOT INDICATIVE OF ANY SPECIFIC INVESTMENT. ACTUAL INVESTMENT RESULTS MAY DIFFER. Back-tested performance is hypothetical and done with the benefit of hindsight. Past performance of a back-tested model is not a guarantee that the model will produce similar results in the future.
Schwab believes that portfolio construction is a combination of art and science, and needs to incorporate insights in building better portfolios. The sample portfolios have allocated a higher percentage to index strategies in the most efficient markets (U.S.), and recommended a higher percentage to active strategies in the least efficient markets (international).

### Recommended Portfolio Allocations

<table>
<thead>
<tr>
<th></th>
<th>Domestic Large Co.</th>
<th>Domestic Small Co.</th>
<th>International Large Co.</th>
<th>International Small Co.*</th>
<th>Emerging Markets*</th>
</tr>
</thead>
<tbody>
<tr>
<td>Market Cap</td>
<td>30%</td>
<td>25%</td>
<td>20%</td>
<td>20%</td>
<td>20%</td>
</tr>
<tr>
<td>Fundamental</td>
<td>50%</td>
<td>50%</td>
<td>30%</td>
<td>30%</td>
<td>30%</td>
</tr>
<tr>
<td>Active</td>
<td>20%</td>
<td>25%</td>
<td>50%</td>
<td>50%</td>
<td>50%</td>
</tr>
<tr>
<td>Index (MC+FI)</td>
<td>80%</td>
<td>75%</td>
<td>50%</td>
<td>50%</td>
<td>50%</td>
</tr>
</tbody>
</table>

* Charles Schwab Investment Advisory, Inc. CSIA used the international large-cap allocations for all international categories, given that international small-cap and emerging markets have a much shorter data history.
Excess Return: Active, Fundamental and Recommended Portfolio

Rolling 12-Month Excess Return vs. Market Cap Benchmark


The inception date for the Russell Fundamental Index® Series is 2/24/2011. All data before that date is back-tested. THE RUSSELL FUNDAMENTAL INDEX DATA PUBLISHED HEREIN IS SIMULATED, UNMANAGED AND CANNOT BE INVESTED IN DIRECTLY. PAST SIMULATED PERFORMANCE IS NO GUARANTEE OF FUTURE PERFORMANCE AND IS NOT INDICATIVE OF ANY SPECIFIC INVESTMENT. ACTUAL INVESTMENT RESULTS MAY DIFFER. Back-tested performance is hypothetical and done with the benefit of hindsight. Past performance of a back-tested model is not a guarantee that the model will produce similar results in the future.

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Conclusion

With the growth of ETFs, and the evolution of alternative weighting strategies, advisors have more tools at their disposal. Fundamental strategies represent an evolutionary step forward, capturing positive attributes of both active and passive strategies.

• Fundamentally weighted indexes weight securities based on factors, rather than merely weighting based on market cap, leading to an intelligent allocation of capital.

• Fundamentally weighted indexes have demonstrated better risk-adjusted results than their market-cap equivalents.*

• Fundamentally weighted indexes have been able to outperform market-cap indexes and most active mutual funds.*

Schwab believes that sophisticated portfolios combining active, market-cap, and fundamental strategies have the potential to deliver better risk-adjusted results than those using active or market cap alone.

ANTHONY B. DAVIDOW, CIMA®
Vice President, Alternative Beta and Asset Allocation Strategist

Anthony Davidow is responsible for providing Schwab’s point of view on asset allocation and portfolio construction. He is also responsible for providing research and analysis on alternative beta strategies and how investors should incorporate them in their portfolios.

Before joining Schwab, Davidow was a managing director, portfolio strategist, and head of the ETF Knowledge Center for Guggenheim Investments. Before joining Guggenheim, Davidow was executive vice president and head of distribution for IndexIQ. Previously, he spent 15 years at Morgan Stanley, where he served as managing director and head of sales and training for the Consulting Services Group. While at Morgan Stanley, he worked with many of the firm’s largest clients in developing and implementing asset allocation strategies, incorporating active and passive strategies, and using alternative investments as risk management tools.

Davidow has authored several white papers and strategy pieces, and spoken at industry conferences on a range of topics, including: “The Merits of Core-Satellite Investing,” “Asset Allocation and Manager Selection: Adaptive Allocation,” “Alpha-Beta Separation,” “Alternative Weighting Strategies,” “The Role and Use of Alternative Investments,” “Currency as an Asset Class,” “An Evolutionary Approach to Portfolio Construction,” and “Alternative Beta Strategies,” among others.

Davidow holds a B.B.A. in finance and investments from Bernard M. Baruch College, and has earned the Certified Investment Management Analyst (CIMA®) designation from the Investment Management Consultant’s Association (IMCA) and the Wharton School of the University of Pennsylvania.

He sits on the board of directors for IMCA. He holds Series 7, 24, and 63 registrations.
Important Disclosures

Investment returns will fluctuate and are subject to market volatility, so that an investor’s shares, when redeemed or sold, may be worth more or less than their original cost. Unlike mutual funds, shares of ETFs are not individually redeemable directly with the ETF. ETF shares are bought and sold at market price, which may be higher or lower than the net asset value (NAV).

**Past performance is no guarantee of future results.** All expressions of opinion are subject to change without notice in reaction to shifting market conditions.

The information here is for general informational purposes only and should not be considered an individualized recommendation or personalized investment advice. The type of securities and investment strategies mentioned may not be suitable for everyone. Each investor needs to review a security transaction for his or her own particular situation.

International investments involve additional risks, which include differences in financial accounting standards, currency fluctuations, geopolitical risk, foreign taxes and regulations, and the potential for illiquid markets. Investing in emerging markets may accentuate these risks.

Fixed income securities are subject to increased loss of principal during periods of rising interest rates. Fixed income investments are subject to various other risks, including changes in credit quality, market valuations, liquidity, prepayments, early redemption, corporate events, tax ramifications, and other factors.

Diversification strategies do not ensure a profit and do not protect against losses in declining markets.

Indexes are unmanaged, do not incur management fees, costs, and expenses, and cannot be invested in directly.
Terms and Definitions

**Active management:** The use of a human element, such as a single manager, co-managers, or a team of managers, to actively manage a fund’s portfolio. Active managers rely on analytical research, forecasts, and their own judgment and experience in making investment decisions on what securities to buy, hold, and sell. The opposite of active management is called passive management, also known as “indexing.”

**Alpha:** A performance measure on a risk-adjusted basis. Alpha takes the volatility (risk) of a mutual fund, or other type of investment, and compares its risk-adjusted performance with a benchmark index. The excess return of the fund relative to the return of the benchmark index is a fund’s alpha.

**Beta:** A measure of the volatility, or systematic risk, of a security or a portfolio in comparison to the market as a whole. Beta is used in the capital asset pricing model (CAPM), a model that calculates the expected return of an asset based on its beta and expected market returns.

**Capture Ratio:** A statistical measure of an investment manager’s overall performance in up and down markets. The upside capture ratio is used to evaluate how well an investment manager performed relative to an index during periods when that index has risen. The ratio is calculated by dividing the manager’s returns by the returns of the index during the upside, and multiplying that factor by 100. A manager with an upside capture of greater than 100, means the manager outperforms in rising markets. A downside capture of less than 100 means the manager has loss less than the market when it falls.

**Correlation:** Correlation measures the relationship, and movement, of two or more securities, which ranges between -1 and +1. Perfect positive correlation (a correlation of +1) implies that as one security moves, either up or down, the other security will move in lockstep, in the same direction. Alternatively, perfect negative correlation means that if one security moves in either direction the security that is perfectly negatively correlated will move in the opposite direction. If the correlation is 0, the movements of the securities are said to have no correlation; they are completely random.

**Fundamental weighted indexing:** A type of equity index in which components are weighted based on fundamental criteria as opposed to market capitalization. Fundamentally weighted indexes may be based on fundamental metrics such as revenue, sales, dividends, earnings, or book value. Proponents of these indexes claim that they are a more accurate aggregate measure of the market because market capitalization tends to overweight companies that are richly valued while underweighting companies with low valuations.

**Information ratio:** A ratio of portfolio returns above the returns of a benchmark (usually an index) to the volatility of those returns. The information ratio (IR) measures a portfolio manager’s ability to generate excess returns relative to a benchmark, but also attempts to identify the consistency of the investor. This ratio will identify whether a manager has beaten the benchmark by a lot in a few months or a little every month. The higher the IR, the more consistent a manager is, and consistency is an ideal trait.

**Market-cap-weighted indexing:** Most of the broadly used market indexes today are “cap-weighted” indexes, such as the S&P 500, Russell, and MSCI indexes. In a cap-weighted index, large price moves in the largest components can have a dramatic effect on the value of the index. Some investors feel that this overweighting toward the larger companies gives a distorted view of the market.
Terms and Definitions (Cont.)

Passive management: A style of management associated with mutual funds and exchange traded funds (ETF) in which a fund seeks to track the return of a market index. Passive management offers little opportunity to outperform the index and is the opposite of active management, in which a fund’s manager(s) attempt to beat the market with various investing strategies and buying/selling decisions of a portfolio’s securities. Also known as “passive strategy,” “passive investing,” and “index investing.”

Prospect theory: A theory that people value gains and losses differently and, as such, will base decisions on perceived losses. Thus, if a person were given two equal choices, one expressed in terms of possible losses and the other in possible gains, people would choose the former. Also known as “loss-aversion theory.”

Russell 1000 Index: An index of approximately 1,000 of the largest companies in the U.S. equity markets, the Russell 1000 is a subset of the Russell 3000 Index. The Russell 1000 Index (maintained by the Russell Investments) comprises over 90% of the total market capitalization of all listed U.S. stocks, and is considered a bellwether index for large-cap investing.

S&P 500® Index: An index of 500 stocks chosen for market size, liquidity, and industry grouping, among other factors. The S&P 500 Index is designed to be a leading indicator of U.S. equities and is meant to reflect the risk/return characteristics of the large-cap universe.

Sharpe ratio: The Sharpe ratio tells us whether a portfolio’s returns are due to smart investment decisions or a result of excess risk. This measurement is very useful because although one portfolio or fund can reap higher returns than its peers, it is a good investment only if those higher returns do not come with too much additional risk. The greater a portfolio’s Sharpe ratio, the better its risk-adjusted performance has been. A negative Sharpe ratio indicates that a riskless asset would perform better than the security being analyzed.

Standard deviation: Standard deviation is a statistical measurement that sheds light on historical volatility. For example, a volatile portfolio will have a higher standard deviation than a less volatile portfolio. A large dispersion tells us how much the return on the fund is deviating from the expected normal returns.

Tracking error: Tracking errors are reported as a “standard deviation percentage” difference. This measure reports the difference between the return an investor receives and that of the benchmark he or she was attempting to imitate.

Volatility: A statistical measure of the dispersion of returns for a given security or market index. Volatility can be measured by using either the standard deviation or variance between returns from that same security or market index. Commonly, the higher the volatility, the riskier the security.
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