Portfolio Construction in a Fiduciary World

AJ Rea
Director, BlackRock iShares Sales Leader
Natural tension between objectives and risk

Model Asset Allocation Needed to Potentially Earn 7.5%

<table>
<thead>
<tr>
<th>Year</th>
<th>Hypothetical Return</th>
<th>Standard Deviation</th>
</tr>
</thead>
<tbody>
<tr>
<td>1995</td>
<td>7.5%</td>
<td>6.0%</td>
</tr>
<tr>
<td>2005</td>
<td>7.5%</td>
<td>8.9%</td>
</tr>
<tr>
<td>2015</td>
<td>7.5%</td>
<td>17.2%</td>
</tr>
</tbody>
</table>

Source: Callan Associates, Wall Street Journal, 5/31/2016 article titled “Pension Funds Pile On the Risk Just to Get a Reasonable Return” by Timothy W. Martin. This information is hypothetical. It is not intended to represent any specific return, yield or investment. It is provided for illustrative purposes only and does not constitute a recommendation to invest in any particular asset class or strategy and is not a promise of future performance or an estimate of actual returns a client portfolio may achieve. Past and hypothetical returns do not guarantee future results.
Asset Class and Portfolio Returns May Be Lower… and Riskier

Going Forward, 60/40 May Produce Less than Half the Return with 31% More Risk

Asset Class and 60/40 Portfolio Risk and Return from 12/31/2011 – 12/31/2016 (L5) and 5-Year BlackRock Investment Institute CMAs

<table>
<thead>
<tr>
<th>Asset Class</th>
<th>Vol Chg</th>
</tr>
</thead>
<tbody>
<tr>
<td>US Stocks</td>
<td>+49%</td>
</tr>
<tr>
<td>US Small Cap</td>
<td>+41%</td>
</tr>
<tr>
<td>Intl Stocks</td>
<td>+39%</td>
</tr>
<tr>
<td>Interm Bonds</td>
<td>+58%</td>
</tr>
<tr>
<td>HY Bonds</td>
<td>+65%</td>
</tr>
</tbody>
</table>

Asset Class and 60/40 Portfolio Risk and Return from 12/31/2011 – 12/31/2016 (L5) and 5-Year BlackRock Investment Institute CMAs

60/40 Portfolio:
- 35% US Stocks
- 10% Small Cap Stocks
- 15% International Stocks
- 30% Intermediate Bonds
- 10% High Yield Bonds

Asset Class and Portfolio Returns May Be Lower… and Riskier

Source: BlackRock Investment Institute, Morningstar Direct as of 12/31/16. Please see slide at the end of the presentation describing methodology and limitations of BlackRock Investment Institute’s firm-wide Capital Market Assumptions. US Stocks represented by the MSCI USA Index. Small Cap Stocks represented by the MSCI USA Small Cap Index. International Stocks represented by the MSCI World ex USA Index. Intermediate Bonds represented by the Barclays US Aggregate Bond Index. High Yield Bonds represented by the Barclays US Corporate High Yield Index. Indexes are unmanaged. It is not possible to invest directly in an index.
Trends in Advisor Models
Most Portfolios Are Riskier Than a Broad Benchmark

A Majority of Portfolios Exhibit More Risk than Broad Benchmarks*

90% of Conservative Portfolios
80% of Moderate Portfolios
70% of Aggressive Portfolios

Source: BlackRock Portfolio Solutions as of 9/30/2016; data from ~800 portfolio consulting engagements on portfolios in the range of 15-25% equities – Conservative/ 55-65% equities – Moderate/ 75-85% equities - Aggressive. Risk defined by estimated standard deviation derived from BlackRock’s proprietary holdings-based risk model in Aladdin with ‘Similar’ calculated as +/-3% of benchmark risk. *Benchmark for Conservative defined as 20% S&P 500 + 80% Barclays US Aggregate. *Moderate, 60% S&P 500 + 40% Barclays US Aggregate. *Aggressive, 80% S&P 500 + 20% Barclays US Aggregate. Estimated standard deviation is an estimate of a portfolio’s annualized standard deviation based on its exposure to 2,200 risk factors in BlackRock’s proprietary risk model. Risk factors are objective, measurable characteristics of a security that historically have had explanatory power of volatility. Exposures to these risk factors are aggregated, with correlations taken into account, to arrive at an estimate of total standard deviation at the portfolio level. Information is hypothetical and for illustrative purposes only. It is not an estimation of the volatility any client portfolio may experience which may be materially different and is based on assumptions, opinions and estimates which are subject to change without notice.
Volatility In Equities

65% of advisors say they are “concerned about equity market risk”

Equity Fund Assets Are Riskier vs. S&P 500

Higher Risk, 77%
Lower Risk, 15%
Same Risk, 9%

10 Years Ago – 6/2005

Higher Risk 44%
Same Risk 8%
Lower Risk 48%

A Majority of Equity Portfolios Exhibit More Risk than the S&P 500

Ex-ante standard deviation of equity sleeves of 60-40 advisor model portfolios analyzed by BlackRock’s Portfolio Solutions team

Source (left): 1. BlackRock Aladdin risk model analysis of advisor portfolios as of 12/31/15. Analysis includes portfolios collected by BlackRock from Q4 2015 and Q1 2016 with a capital allocation between 55% and 65% equities, and risk is an estimated standard deviation based on the Aladdin risk factor model. Estimated standard deviation is an estimate of a portfolio’s annualized standard deviation based on its exposure to 2,200 risk factors in BlackRock’s proprietary risk model. Risk factors are objective, measurable characteristics of a security that historically have had explanatory power of volatility. Exposures to these risk factors are aggregated, with correlations taken into account, to arrive at an estimate of total standard deviation at the portfolio level.

Right: Morningstar as of 12/31/15.
Credit Risk In Fixed Income

Advisor View of the Primary Portfolio Role of Fixed Income

- Diversification, 37%
- Income, 15%
- Stability, 48%

49% average credit risk exposure as % of total fixed income risk

Diversifying Equity Risk with Bonds
How Much Will Credit Risk Cost You?

- Aggregate Bond Index
  - Risk: 3.41%
  - Correlation: -0.06
  - S&P 500 Index
    - Risk: 14.87%
    - High Yield Bond Index
      - Risk: 7.96%

Estimated Annualized Standard Deviation (%)

- S&P 500 (50%) / Agg Index (50%)
  - 7.38%
- S&P 500 (50%) / HY Index (50%)
  - 9.71%

Source (left): Roughly 1,000 Advisor responses from 2015-2016 to BlackRock portfolio consulting engagement questionnaire. Right: Aladdin risk model analysis as of 12/31/16. Estimated standard deviation is an estimate of a portfolio's annualized standard deviation based on its exposure to 2,200 risk factors in BlackRock's proprietary risk model. Risk factors are objective, measurable characteristics of a security that historically have had explanatory power of volatility. Exposures to these risk factors are aggregated, with correlations taken into account, to arrive at an estimate of total standard deviation at the portfolio level.
Alternatives With Embedded Market Beta

Advisor View of the Primary Portfolio Role of Alternatives

- **Reduce Risk**: 83%
- **Enhance Returns**: 17%

83% of advisors who use alternatives use them as a risk reducer.

What Portfolio Benefits are Alternative Funds Providing?

- **Selecting Alternative Investments that correlate to equity risk reduces the ability to provide diversification**

![Graph showing 3-year Correlation, beta and category size for alternatives Morningstar Cats](image_url)

- **Long/Short Equity Category**: Average 3-year Beta: 0.78, Average 3-year Correlation: 0.42
- **Multialternative Category**: Average 3-year Beta: 0.42, Average 3-year Correlation: 0.43
- **Market Neutral Category**: Average 3-year Beta: 0.43

Green number represents correlation to equities. Size of bubbles represents category asset size.

Source (left): Roughly 1,000 Advisor responses from 2015-2016 to BlackRock portfolio consulting engagement questionnaire. Right: Morningstar as of 12/31/16. Asset weighted category average correlation of monthly returns to S&P 500 Index. Correlations represent past performance. Past performance is no guarantee of future results. There is no guarantee that future correlations will remain the same.
Home Country Bias

The average advisor portfolio we analyzed had only 26%* of equities in non-US stocks. Half the world’s equity market capitalization is outside the US.

Performance data quoted represents past performance and does not guarantee future results. 1 As of June 30, 2016. Source: BlackRock, Bloomberg, Lipper. U.S. stocks represented by the S&P 500 Index, international stocks represented by the MSCI EAFE Index. Hypothetical portfolio assumes 70% invested in U.S. stocks and 30% invested in international stocks on December 31, 2009. 2 US Stocks represented by the S&P 500 Index, International stocks represented by the MSCI EAFE Index. The indexes are unmanaged. It is not possible to invest directly in an index. *26% is reflective of average asset allocation from sample of 400 balanced models analyzed by BlackRock’s Portfolio Solutions team in 2016.
Crucial fiduciary advisor considerations

Building Portfolios as a Fiduciary

Objectives
Understanding client circumstances

Risks
Probability of meeting objectives

Costs
Fees and tax implications
The Portfolio Construction Process
Constructing a portfolio is like building a house
The steps of the “home construction” process

1. Preparation and Foundation
2. Design and Planning
3. Interior Design
4. Final Construction
**The Portfolio Construction Process**

Fiduciary advisor should follow a thoughtful, well-documented process for portfolio construction.

- Set the **foundation** of the portfolio – aligned closely with client **objectives**
- Decide where you want to incur **costs** and take **risk**
- Determine the most appropriate vehicles to **implement** your strategy
- Regularly **measure** success and **rebalance** with discipline
Step 1: Benchmark (Translate objectives to allocation)

1. **Benchmark**
   Translate objectives to allocation

2. **Budget**
   Evaluate risks and costs

3. **Invest**
   Explore and select strategies

4. **Monitor**
   Measure and rebalance with discipline

For illustrative purposes only.
Who’s the better runner?

Usain Bolt
“Fastest human ever timed”
200 meter sprint: 19.19 seconds
(28 mph)

Dennis Kimetto
World record holder for the marathon: 2:02:57
(13mph)
How do you select a benchmark?

1. What is your client’s required return? Is it realistic?
2. How much risk can your client tolerate?
3. What are your (or your firm’s) capital market assumptions?

40% US Equities
20% International Equities
40% Fixed Income
Balancing Required Return vs Acceptable Level of Risk

- 100% Stocks
- 80/20 Stocks/Bonds
- 60/40 Stocks/Bonds
- 40/60 Stocks/Bonds
- 30/70 Stocks/Bonds
- 100% Cash

Source: BlackRock. For illustrative purposes only
Using the Benchmark to set Baseline Return Expectations

Source: BlackRock Investment Institute, Morningstar Direct as of 12/31/2016. Please see slide at the end of the presentation describing methodology and limitations of BlackRock Investment Institute's firm-wide Capital Market Assumptions. US Large Cap represented by the MSCI USA Index. U.S. Small Cap represented by the MSCI USA Small Cap Index. International Stocks represented by the MSCI World ex USA Index. Emerging Markets represented by the MSCI Emerging Markets Index. Intermediate Bonds represented by the Barclays US Aggregate Bond Index. High Yield Bonds represented by the Barclays US Corporate High Yield Index. Indexes are unmanaged. It is not possible to invest directly in an index. 60/40 portfolio is a hypothetical blend of 30% U.S. large cap, 10% U.S. small cap, 15% international, 5% emerging markets, 30% intermediate bonds, and 10% high yield bonds. Capital market and asset class assumptions are estimates of how asset classes and combinations of classes may respond during various market environments. They are not promises of actual return or performance that may be realized. They are based on estimates and assumptions that may not occur. An index is unmanaged and not available for direct investment. There is no direct correlation between the performance of an index and the performance of a client portfolio. Past performance is no guarantee of future results.
Types of Benchmarks

A Good Benchmark is:

<table>
<thead>
<tr>
<th></th>
<th>Objective-Driven</th>
<th>Granular</th>
<th>Broad</th>
<th>Strategic</th>
</tr>
</thead>
<tbody>
<tr>
<td>Broad</td>
<td>✓</td>
<td>✗</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>Neutral</td>
<td>✓</td>
<td>✗</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>Investable</td>
<td>✗</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>Representative</td>
<td>✗</td>
<td>✓</td>
<td>?</td>
<td>✓</td>
</tr>
</tbody>
</table>

For illustrative purposes only.
A Case Study: Choosing the Right Benchmark

What is the long-term, neutral allocation for the model portfolio?

Sample Benchmark:

- 40% US Equities → S&P Total Market Index
- 20% International Equities → MSCI ACWI Ex-US IMI Index
- 40% Fixed Income → BBGBarc US Universal Index
Benchmarks put portfolios into context

- Set a reference point for expected portfolio returns
- Set a baseline for expected portfolio risk
- Serve as a baseline for measuring portfolio tilts
- Provide insight into efficacy of active bets
Step 2: Budget (Evaluate risk and cost)
What does “Budget” mean in portfolio construction?

BUDGET
RISK
- How much?
- What kind?

Importantly, all risk should be measured relative to a benchmark

Not about avoiding risk, but understanding it

BUDGET
COST
- Fees
- Taxes

Value, not price
Why focus on risk?

Returns are unpredictable, but risk can be managed

For illustrative purposes only
Why focus on risk?

<table>
<thead>
<tr>
<th>Year</th>
<th>REITs</th>
<th>REITs</th>
<th>REITs</th>
<th>US Small Cap</th>
<th>EM Equity</th>
<th>EM Equity</th>
<th>EM Equity</th>
<th>REITs</th>
<th>US Small Cap</th>
<th>EM Equity</th>
<th>EM Equity</th>
<th>EM Equity</th>
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</thead>
<tbody>
<tr>
<td>2007</td>
<td>20.84</td>
<td>47.69</td>
<td>49.95</td>
<td>23.02</td>
<td>24.50</td>
<td>19.68</td>
<td>15.14</td>
<td>14.68</td>
<td>17.67</td>
<td>17.78</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2008</td>
<td>18.42</td>
<td>37.46</td>
<td>30.83</td>
<td>22.99</td>
<td>23.02</td>
<td>16.68</td>
<td>12.15</td>
<td>13.59</td>
<td>15.88</td>
<td>17.33</td>
<td></td>
<td></td>
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<tr>
<td>2009</td>
<td>11.75</td>
<td>33.69</td>
<td>28.85</td>
<td>21.13</td>
<td>21.92</td>
<td>15.23</td>
<td>11.81</td>
<td>13.53</td>
<td>15.31</td>
<td>17.00</td>
<td></td>
<td></td>
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<tr>
<td>2011</td>
<td>10.04</td>
<td>27.20</td>
<td>24.72</td>
<td>20.46</td>
<td>19.52</td>
<td>11.91</td>
<td>10.12</td>
<td>11.65</td>
<td>13.65</td>
<td>13.43</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2014</td>
<td>6.16</td>
<td>21.02</td>
<td>15.06</td>
<td>11.73</td>
<td>10.77</td>
<td>7.43</td>
<td>8.48</td>
<td>7.13</td>
<td>8.13</td>
<td>8.29</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2015</td>
<td>5.63</td>
<td>18.56</td>
<td>13.03</td>
<td>7.17</td>
<td>6.94</td>
<td>6.55</td>
<td>6.24</td>
<td>5.70</td>
<td>6.41</td>
<td>6.94</td>
<td></td>
<td></td>
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<tr>
<td>2016</td>
<td>5.05</td>
<td>16.16</td>
<td>7.14</td>
<td>7.10</td>
<td>9.55</td>
<td>3.99</td>
<td>4.77</td>
<td>4.53</td>
<td>4.95</td>
<td>6.05</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Successful investing is about **MANAGING** risk, **NOT AVOIDING** it.

- Benjamin Graham

Source: Morningstar Direct; annualized standard deviations of monthly returns. 60-40 Portfolio represented by 39% Russell 3000/ 21% MSCI ACWI ex US/ 40% Barclays US Universal. Intl Bonds (Hdg) represented by BBgBarc Gbl Agg Ex USD TR Hdg USD; High Yield represented by BBgBarc High Yield Corporate TR USD; US Bonds represented by BBgBarc US Agg Bond TR USD; Commodities represented by Bloomberg Commodity TR USD; REITs represented by DJ US Select REIT TR USD; EM Debt ($) represented by JPM EMBI Plus TR USD; Dev Intl Equity represented by MSCI EAFE NR USD; EM Equity represented by MSCI EM NR USD; US Large Cap represented by S&P 500 TR USD; US Mid Cap represented by S&P Midcap 400 TR; US Small Cap represented by S&P SmallCap 600 TR USD.
The components of risk

**Macro Risks**
Non-diversifiable risks that have exhibited a positive expected return over longer periods

- Economic
- Credit
- Inflation
- Real rates
- Liquidity
- Emerging Markets

**Style Risks**
Have historically delivered return premium over long term – capturing a risk premium, behavioral anomaly or structural impediment

- Value
- Momentum
- Quality
- Size
- Low Volatility
- Carry
- Curve

**Active Risks**
Returns only consistently positive for managers with skill

- Security selection
- Country and industry selection
- Market and factor timing

Source: BlackRock; Morningstar; 9/30/2016 Portfolio A represents a hypothetical 70/30 growth portfolio; Benchmark is 35/35/30 split of Russell 1000 Growth, Russell 2000 Growth, and Barclays Aggregate Bond Indices
Risk Factors: The Building Blocks of Risk and Return

<table>
<thead>
<tr>
<th>Broad Universe</th>
<th>Traditional Categories</th>
<th>Most Basic Elements</th>
</tr>
</thead>
<tbody>
<tr>
<td>Meats</td>
<td>Grains</td>
<td>Nutrition Facts</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Calories Per Serving</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Total Fat: 1g</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Calories from Fat: 13g</td>
</tr>
<tr>
<td></td>
<td>Fruit</td>
<td>% Daily Value: 22%</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Saturated Fat: 9g</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Cholesterol: 55 mg</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Sodium: 75 mg</td>
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<tr>
<td></td>
<td></td>
<td>Total Carbohydrate: 26g</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Dietary Fiber: 0g</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Sugars: 26g</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Protein: 4g</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Vitamin A: 10%</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Vitamin C: 0%</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Calcium: 10%</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Risk Allocation</th>
<th>Total Portfolio Level</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total Risk: 10.69%</td>
<td>Active Risk: 1.74%</td>
</tr>
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</table>

<table>
<thead>
<tr>
<th>Equity Factors</th>
<th>Total Risk Contribution</th>
</tr>
</thead>
<tbody>
<tr>
<td>Equity Market</td>
<td>7.34%</td>
</tr>
<tr>
<td>Equity Style</td>
<td>-0.14%</td>
</tr>
<tr>
<td>Equity Sector</td>
<td>0.83%</td>
</tr>
<tr>
<td>Equity Country</td>
<td>0.16%</td>
</tr>
<tr>
<td>Equity Specific</td>
<td>0.02%</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Alternative Asset Classes</th>
<th>Total Risk Contribution</th>
</tr>
</thead>
<tbody>
<tr>
<td>USD Interest Rates</td>
<td>-0.26%</td>
</tr>
<tr>
<td>Non-USD Interest Rates</td>
<td>0.04%</td>
</tr>
<tr>
<td>IG Credit Spreads</td>
<td>0.97%</td>
</tr>
<tr>
<td>HY Credit Spreads</td>
<td>0.83%</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Alternative Strategies</th>
<th>Total Risk Contribution</th>
</tr>
</thead>
<tbody>
<tr>
<td>FX</td>
<td>1.14%</td>
</tr>
<tr>
<td>Alternatives</td>
<td>-0.33%</td>
</tr>
<tr>
<td>Commodities</td>
<td>0.12%</td>
</tr>
<tr>
<td>Other</td>
<td>-0.03%</td>
</tr>
</tbody>
</table>

1. Percent Daily Values are based on a 2,000 calorie diet.
Source: BlackRock, 12/2016. For illustrative purposes only.
How a risk budget comes together

Know where your risk comes from*…

** Source: Morningstar Direct. Asset class volatilities are representations of the upper and lower boundaries of one standard deviation from the mean of the distribution of historical rolling 12 month volatility figures from all of the 229 rolling 12-month periods for the 20-year period between 1/1/1995 and 12/31/2014. Alternative Strategies is represented by an equally weighted average of 21 Hedge Fund categories from Greenwich Alternative Investment Management. Fixed Income is represented by the Barclays US Aggregate Bond Index. Equities is represented by the S&P 500.

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…and how it all fits together**

* Source: Morningstar Direct. Asset class volatilities are representations of the upper and lower boundaries of one standard deviation from the mean of the distribution of historical rolling 12 month volatility figures from all of the 229 rolling 12-month periods for the 20-year period between 1/1/1995 and 12/31/2014. Alternative Strategies is represented by an equally weighted average of 21 Hedge Fund categories from Greenwich Alternative Investment Management. Fixed Income is represented by the Barclays US Aggregate Bond Index. Equities is represented by the S&P 500.

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A Case Study: Budget Risk

**How Much:** What is the appropriate level of risk?

**What Kind:** Where do I want to take or avoid risk?

<table>
<thead>
<tr>
<th>% Estimated Standard Deviation</th>
<th>Moderate Model</th>
<th>Benchmark</th>
</tr>
</thead>
<tbody>
<tr>
<td>10.08%</td>
<td></td>
<td>9.30%</td>
</tr>
</tbody>
</table>

Source: BlackRock; 12/31/2016 Moderate Model represents a hypothetical 60/40 Model; Benchmark is 40/20/40 split of S&P Total Market Index, MSCI ACWI ex US IMI Index, and BBG Barclays US Universal Index
Cost is Important... especially in a low-return world

8.79%
11% of past return

3.54%
28% of lower return

Last 5-Year Return

Next 5-Year Hypothetical Return

60/40 Portfolio:
- 35% US Stocks
- 10% Small Cap Stocks
- 15% International Stocks
- 30% Intermediate Bonds
- 10% High Yield Bonds

Source: BlackRock Investment Institute, Morningstar Direct as of 12/31/16. Please see slide at the end of the presentation describing methodology and limitations of BlackRock Investment Institute’s firm-wide Capital Market Assumptions. US Stocks represented by the MSCI USA Index. Small Cap Stocks represented by the MSCI USA Small Cap Index. International Stocks represented by the MSCI World ex USA Index. Intermediate Bonds represented by the Barclays US Aggregate Bond Index. High Yield Bonds represented by the Barclays US Corporate High Yield Index. Indexes are unmanaged. It is not possible to invest directly in an index.
Where is Cost Important?

Core Investments
- Broad building blocks for the core of clients’ portfolios
- Seek to lock in market returns at the lowest cost possible

Financial Instruments
- Highly liquid tools seeking to enable efficient trading and market access

Precision Exposures
- Easy access to targeted exposures to express a particular market view
- Short-term tactical bets
- Macro calls

Market exposures to fill in asset allocation buckets

Trading vehicles

Tactical macro calls
Where is Cost Less Important?

<table>
<thead>
<tr>
<th>Outcome-Oriented</th>
<th>Flexible / Unconstrained</th>
<th>Benchmark Plus</th>
</tr>
</thead>
</table>
| Designed to achieve a specific client objective with equity growth; e.g.:  
  • Income  
  • Protection  
  • Diversification  
  • Clear mandate and measure of success | “Go-anywhere” to take advantage of opportunities  
  • Maximize potential for manager skill to produce higher returns or lower risk | High conviction managers with a proven and repeatable process for delivering excess returns |

Offering clients solutions for their individual needs

Clearly differentiated products that are not beholden to a benchmark

Traditional actively managed, benchmark plus products

For illustrative purposes only.
A Case Study: Budget Cost

Distribution of Costs for Advisor-Run Models

Source: BlackRock Portfolio Solutions. Entire universe of 963 portfolios analyzed by BlackRock between February and August 2016 that contained allocations to mutual Funds, ETFs, and/or closed-end Funds (single stock portfolios excluded). 252 portfolios were 100% active (defined as having allocations to mutual Funds or closed-end Funds only). 481 had at least 75% allocated to active strategies, 136 were roughly 50/50 (defined as between 40-60% allocations to each), 162 had at least 75% allocated to ETFs, and 104 portfolios were 100% ETF. Expense Ratio is net weighted average of underlying Funds.
Step 3: Invest (Explore and select strategies)
Choosing Active vs. Index-based Strategies

- Is the asset class efficient?
- What decisions do I want to outsource?
- Do I have conviction in a skilled manager or strategy?
- How fee-sensitive are my clients?
Understanding Return Generators

Returns decomposition shows the net impacts of choices in the manager selection process as well as decisions individual managers make that may impact portfolio returns.

- Market Beta Return
- Static Factor Return
- Alpha

Cheap & Efficient

Rare & Valuable

For illustrative purposes only

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Defining the probability of success in active product selection

Manager’s ability to deliver above market experience \( \times \) Ability to select a skilled manager \( \times \) Ability to be patient = Probability of Success

For illustrative purposes only.
How Should You Evaluate Your Active Manager?

Rethink your path

Start

Manager How well do you know platform, people and process?

Active Exposure What has been the range of active share and tracking error over the years?

Risk Risk relative to the benchmark and peers rolling throughout time.

Total Cost Relative to the peer group and the passive alternative. Inclusive of expense and tax efficiency.

Performance Forget the snapshot (1,3,5,10)! Look to rolling returns and see the entire body of work for the fund team.

Finish

For illustrative purposes only
How Should You Evaluate Your ETF Manager?

Market Cap Weighted
Aim to deliver efficient market beta

- Exposure
- Consistency
- Portfolio Fit
- Tracking

All ETFs
1. Exposure
2. Cost
3. Tax efficiency
4. Liquidity
5. Structure

Non-Market Cap Weighted
Aim to seek superior risk-adjusted returns

- Goal
- Merit
- Performance
- Construction
- Portfolio Fit
A Case Study: Invest

Baseline Budget

- Non US Bond
- US Bond
- Non US Stock
- US Stock

Evaluate Portfolio

- Efficient Beta ETF
- Smart Beta ETF
- Flexible / Outcome Oriented
- High Conviction Managers

For illustrative purposes only.
Step 4: Monitor (Measure and rebalance with discipline)
What needs monitoring?

Every (Month, Quarter, 6 months, Year) assess....

Have your client’s objectives changed?

Have your views on the markets changed?

Have your views on your managers changed?

Does the portfolio need to be changed?
Does this portfolio still fit my clients needs?

For illustrative purposes only. Not meant to be investment advice. To demonstrate the differences in required IRR to meet target based on different hypothetical allocation strategies. Green lines representing hypothetical aggressive allocation, blue is moderate, purple is conservative. Actual outcomes may vary significantly.
Connecting Risk to Return: How do I expect the portfolio to perform going forward

Stress testing can help you determine if portfolio positioning is consistent with your market view.

Stress testing allows you to determine how effective the underlying investments align with your intended outcomes.
Enhancing your view can help you better manage a portfolio

**RETURNS-BASED ANALYSIS**

A dissection of the portfolio’s past return patterns

- Portfolio behavior in real markets
- Style consistency & alpha generation
- Risk contribution of portfolio constituents

**HOLDINGS-BASED ANALYSIS**

A decomposition of the portfolio’s current exposures

- Portfolio’s sensitivity to specific risk factors
- Each risk factor’s contribution to total risk
- Sources of active risk

Please note that BlackRock does not have complete insight into the timing of past portfolio decisions and does not have real-time information on the current portfolio.
A Case Study: Monitor

Current Allocation

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<thead>
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<th>Benchmark</th>
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<tr>
<td>FI Spreads</td>
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</tbody>
</table>

Action Items

1. Review client goal(s)
2. Incorporate market views
3. Manager check-up
4. Rebalance

Updated Model

<table>
<thead>
<tr>
<th></th>
<th>Moderate Model</th>
<th>Benchmark</th>
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<tr>
<td>% Est. Std Deviation</td>
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<tr>
<td>EQ Country</td>
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</tbody>
</table>

Updated Portfolio

Source: BlackRock; 12/31/2016 Moderate Model represents a hypothetical 60/40 Model; Benchmark is 40/20/40 split of S&P Total Market Index, MSCI ACWI ex US IMI Index, and BBG Barclays US Universal Index
The Portfolio Construction Process

Fiduciary advisor should follow a thoughtful, well-documented process for portfolio construction.

1. **Set the foundation of the portfolio** – aligned closely with client **objectives**
2. Decide where you want to incur **costs** and take **risk**
3. Determine the most appropriate vehicles to **implement** your strategy
4. Regularly **measure** success and **rebalance** with discipline
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Important additional information on BII Capital Market Assumptions

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Appendix: Glossary

**Alpha**
A fund's rate of return in excess of that which can be explained by its systematic risk, or Beta. It is a result of the analysis regressing a fund's returns against those of a benchmark index. A positive Alpha implies that a manager has added value relative to its benchmark on a risk-adjusted basis.

**Beta**
A manager's sensitivity to systematic, or market risk. Market risk is defined as the risk/return behavior of the benchmark. Beta is a result of regressing a fund's returns against those of a benchmark index. A fund with a Beta of 1 should move perfectly with the benchmark. A Beta of less than 1 implies that a fund's returns are less volatile than the market's. A Beta of greater than 1 similarly implies that a fund exhibits greater volatility than the market.

**Capture Ratio**
A measure of a fund's performance relative to its benchmark under different market conditions. It is defined as the average return of the fund relative to the return of the fund's benchmark in different return environments. Up market capture refers to relative performance in periods where the benchmark return is greater than 0. Down market capture is calculated over those periods where the benchmark return is less than 0.

**Correlation**
A measure of the strength and direction of a linear relationship between two variables. A positive Correlation indicates that the two variables tend to move in the same direction. A negative Correlation indicates that the two variables tend to move in opposite directions.

**Excess Return**
A fund's return in excess of its benchmark's return.

**Gain-Loss Ratio**
The ratio between the simple average gain and loss multiplied by the ratio between the number of months with gain and the number of months with loss.

**Information Ratio**
A measure of a fund's excess return per unit of Active Risk. It is the ratio of a fund's Excess Return over the benchmark divided by the fund's Tracking Error. A higher Information Ratio implies greater fund efficiency.

**Maximum Drawdown**
The fund's cumulative return from their peak (highest level of return) to trough (lowest level of return). The Maximum Drawdown should be compared to the fund's benchmark, to provide broader market context.

**Maximum Run Up**
The fund's cumulative return from their trough (lowest level of return) to peak (highest level of return). The Maximum Run Up should be compared to the fund's benchmark, to provide broader market context.

**R-Squared**
The portion of a fund's movements that are explained by movements in a benchmark index. R-squared values range from 0 to 100. An R-squared of 100 means that all movements of a fund are completely explained by movements in the index. The coefficient of determination from the same regression equation, a high R-Squared supports the validity of the Alpha and Beta measures.

**Semi-Standard Deviation / Downside Risk**
A measure of risk using only the returns below a target rate, typically zero.

**Sharpe Ratio**
A measure of a fund's return per unit of risk. It is calculated by subtracting the risk-free rate from the fund's total return and dividing the result by the fund's standard deviation. A higher Sharpe Ratio implies greater fund efficiency.

**Standard Deviation / Risk**
Standard Deviation is a measure of the extent to which observations in a series vary from the arithmetic mean of the series. This measure of volatility or risk allows the estimation of a range of values for a fund's returns. The wider the range, the more uncertainty, and therefore the riskier a fund is assumed to be.

**Tracking Error / Active Risk**
A measure of the extent to which a fund's returns diverge from its benchmark's returns. It is the Standard Deviation of the Excess Return series. The lower the Tracking Error, the more closely a fund tracks its benchmark index.

**Treynor Ratio**
A measure similar to Sharpe Ratio, except that it divides the fund's excess returns relative to the risk-free rate by the fund's systematic risk (Beta) rather than total risk (Standard Deviation). A higher Treynor Ratio implies a higher level of compensation for the level of systematic risk.

**Historical Value at Risk (VaR)**
A statistical technique that is used to measure downside risk within a portfolio by looking at the magnitude, probability, and frequency of a particular level of extreme loss events. For example, assume you own a portfolio with a daily Historical Value at Risk (95%) of 1% over the past 3 years. This measure says that in 5% of all the daily periods, that this portfolio has experienced a loss of 1% or worse. Said differently, in 1 out of every 20 days on average over the preceding 3-year period, the portfolio lost 1% or more of its value.