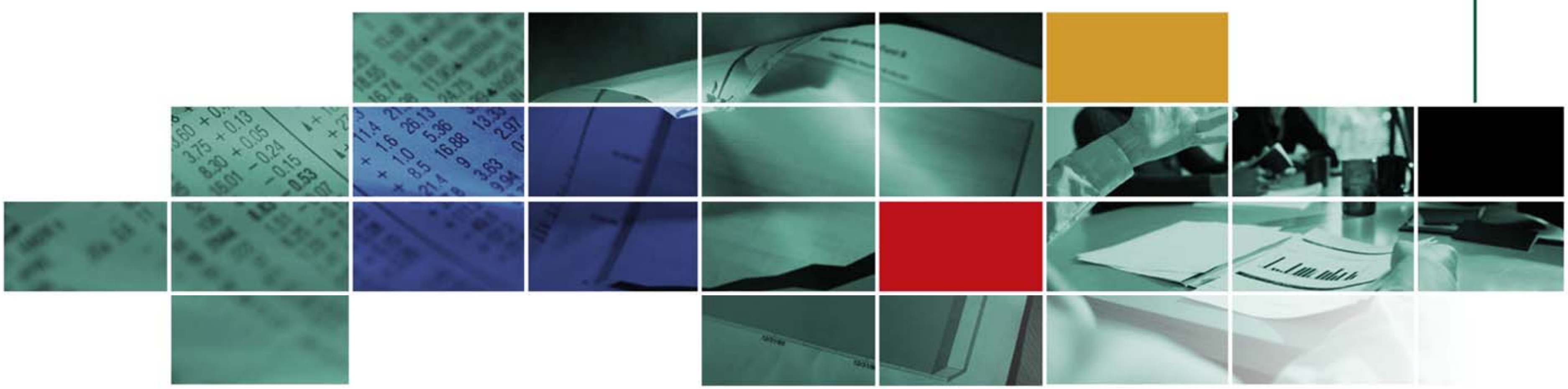
RVKuhns
& ASSOCIATES, INC.

Rate of Return Assumptions

Is 8% Still a Reasonable Long-term Assumption?

Becky Gratsinger, CFA

Chief Executive Officer



RVK Firm Overview

- The firm was founded in 1985 and has offices in Portland, Oregon, Chicago and New York.
- RVK is independent, employee-owned, and has 110 employees.
- The sole business of RVK is evaluating, implementing, and monitoring successful investment programs on behalf of our institutional clientele.
- RVK has a diversified client base of over 170 clients, including a number of large public funds.

Presenter Biography

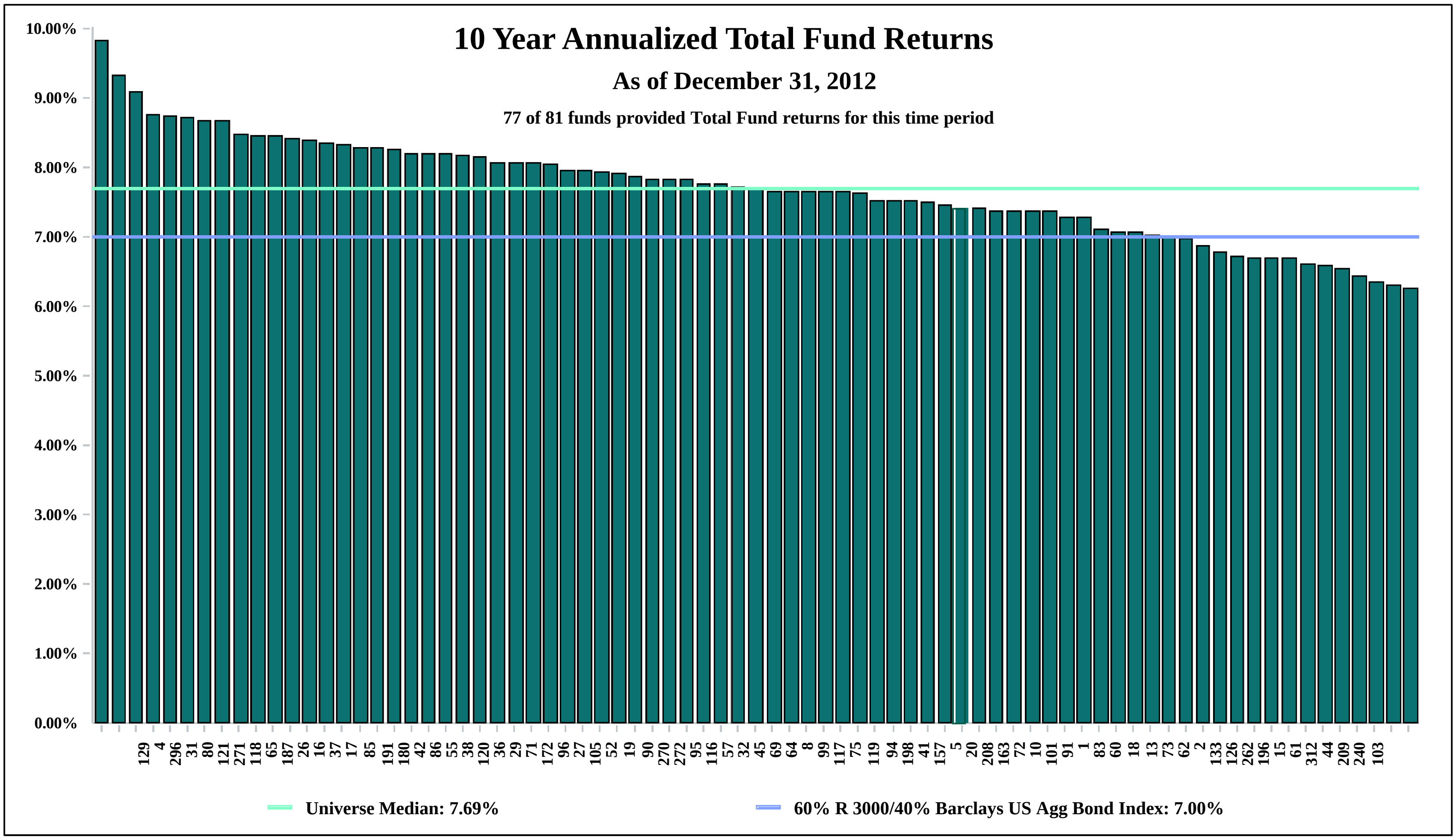
Rebecca A. Gratsinger, CFA – CEO, Senior Consultant, Principal

Becky Gratsinger is CEO and a Senior Consultant with R.V. Kuhns & Associates, Inc. and is located in our Portland office. She joined the firm in 1994 and has 20 years of experience in investment consulting and capital markets. Becky's consulting experience has spanned all institutional client types including public funds, defined benefit, defined contribution, endowment/foundation, corporate reserve, insurance, and high net worth. Her client list includes some of the firm's largest relationships. She has extensive experience in a broad range of consulting disciplines including investment policy, asset allocation, performance evaluation and attribution, investment manager searches, and asset class structure studies. In her work with some of the firm's larger clients, she has participated in innovative asset class research as well as new product and application initiatives.

Becky earned her Bachelor of Science degree in Finance from Portland State University and holds the Chartered Financial Analyst designation. She is a member of the CFA Institute and a member of the CFA Society of Portland. Becky is a shareholder of the firm.

Public Fund Comparison

- The median of 10-year annualized total fund returns was 7.69%.
- Over the same time period, SPTRFA returned 8.9%.

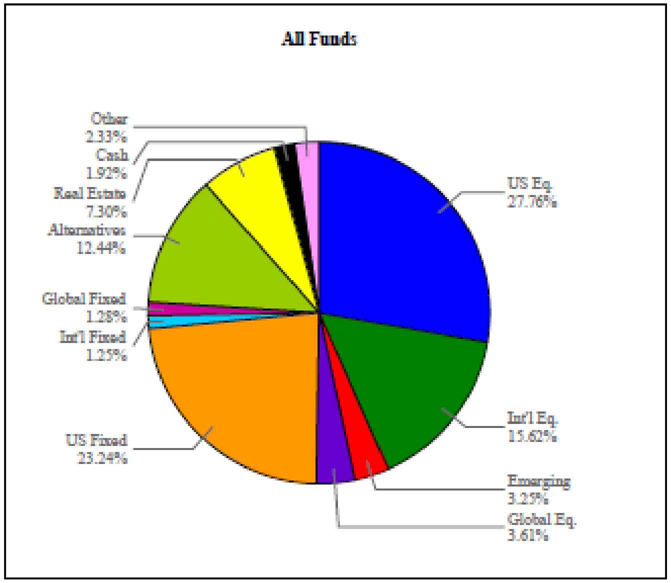


Source: RVK December 2012 Public Funds Survey. Funds with less history than the specified time period will not appear in the chart.

Public Fund Comparison

- Public Funds allocate on average 20-25% of their assets to actively managed investment strategies.
  - SPTRFA allocates approximately 80% of its portfolio to actively managed strategies.

- The average allocation was approximately:
  - 50% Equity
  - 26% Fixed Income
  - 12.5% Alternatives
  - 7% Real Estate
  - 4.5% Cash and Other

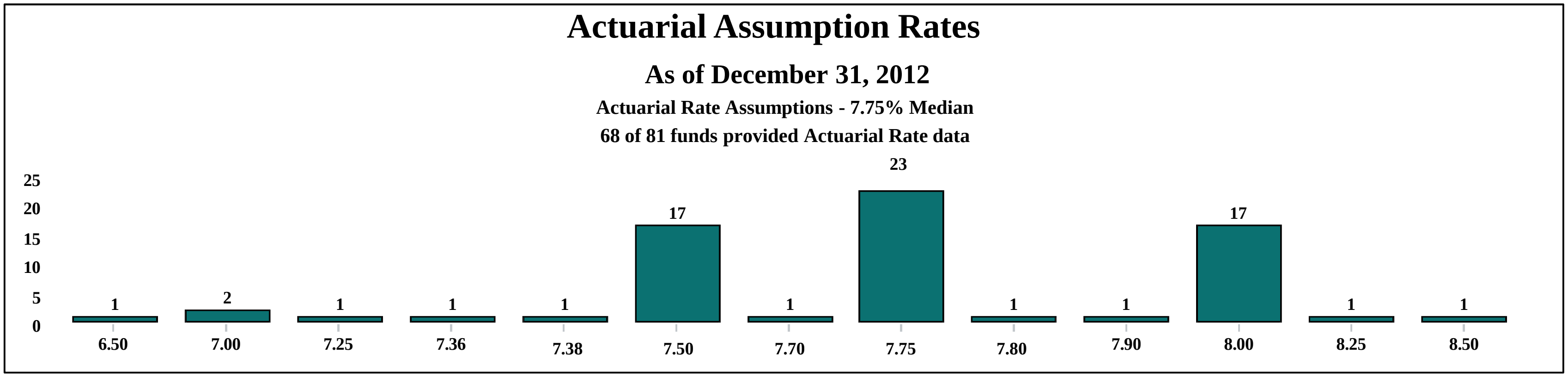


- More (or less) equity or equity-like asset allocation targets will impact the appropriate rate of return assumption.

Source: RVK December 2012 Public Funds Survey. Funds with less history than the specified time period will not appear in the chart.

Public Fund Comparison

- Median actuarial assumption rates remain at 7.75%, with a range of 6.50% to 8.50%.



- The implications of meeting or exceeding an assumed rate of return are significant for public funds. Future contributions are directly related to the success or failure of the investment program to meet return objectives.

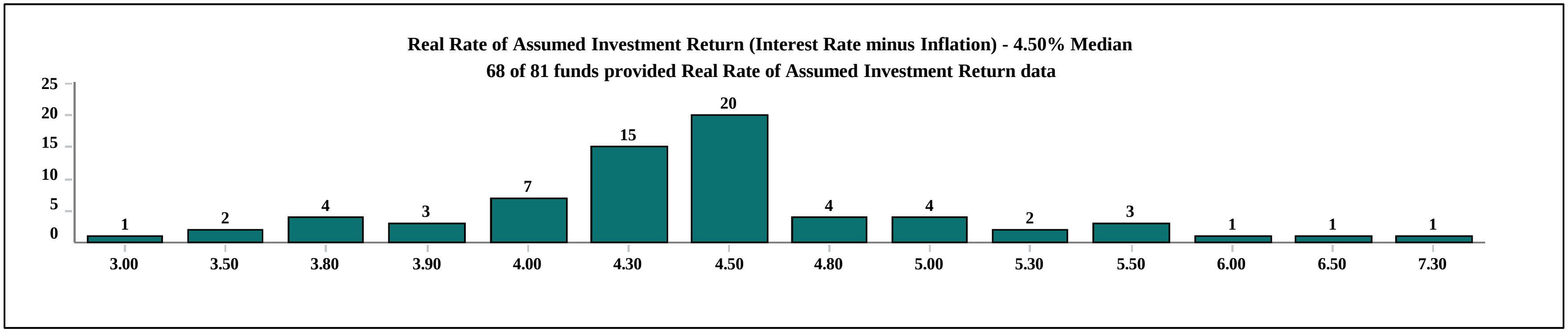
- However, simply lowering the assumed rate of return also increases contributions as the present value of liabilities increases.

Source: RVK December 2012 Public Funds Survey. Funds that did not provide data will not appear in the charts.

Assumed Rates of Return

Differences in Assumptions

- Consultants tend to express their long-term return expectations over periods of 10+ years compared to an actuarial evaluation focused on longer periods such as 30+ years.
  - Key assumptions such as inflation may significantly differ over those time periods. A current example is our 10+ year inflation assumption of 2.5% compared to longer term inflation assumptions of 3.5%.
- When expressed in real terms (as opposed to nominal), consultants and actuaries are much closer in return assumptions.



Source: RVK December 2012 Public Funds Survey. Funds that did not provide data will not appear in the charts.

RVK Capital Market Assumptions

Process

- RVK's capital market assumptions are long-term in nature.
  - Although long-term in nature, we update our capital market assumptions on annual basis to capture current market conditions.
  - Changes from year to year are usually small.
- We utilize historical and current market data, financial theory, economic forecasts, product performance, and other factors to create our forecasts.
- Capital market assumptions assume passive (index) asset class exposure and do not make any assumption for value-added through the use of active managers (with some exceptions such as private equity and absolute return).
- We believe opportunities do exist in several asset classes to expect long-term alpha from managers, allowing for potential increases in expected returns over passive assumptions.

RVK 2013 Capital Market Assumptions

Asset Class	2012 Return (Arithmetic)	2012 Standard Deviation	2012 Return (Compound)	2013 Return (Arithmetic)	2013 Standard Deviation	2013 Return (Compound)	Change (2013 - 2012) Return (Arithmetic)	Change (2013 - 2012) Standard Deviation	Change (2013 - 2012) Return (Compound)
Global Equity	8.35%	18.80%	6.75%	8.30%	18.75%	6.71%	-0.05%	-0.05%	-0.04%
Large/Mid Cap US Equity	7.75%	17.75%	6.32%	7.75%	17.75%	6.32%	0.00%	0.00%	0.00%
Small Cap US Equity	8.50%	21.25%	6.48%	8.50%	21.25%	6.48%	0.00%	0.00%	0.00%
Broad US Equity	7.90%	17.95%	6.44%	7.90%	17.95%	6.44%	0.00%	0.00%	0.00%
Dev'd Large/Mid Cap Int'l Equity	8.00%	19.00%	6.37%	8.00%	19.00%	6.37%	0.00%	0.00%	0.00%
Dev'd Small Cap Int'l Equity	8.75%	23.00%	6.40%	8.75%	23.00%	6.40%	0.00%	0.00%	0.00%
Emerging Markets Equity	10.50%	29.00%	6.88%	10.50%	29.00%	6.88%	0.00%	0.00%	0.00%
Broad International Equity	8.65%	20.80%	6.71%	8.65%	20.80%	6.71%	0.00%	0.00%	0.00%
Intermediate Duration Fixed Income	4.25%	5.75%	4.09%	3.50%	5.75%	3.34%	-0.75%	0.00%	-0.75%
Non-US Dev'd Sovereign Fixed Income UH	4.00%	10.00%	3.52%	3.25%	10.25%	2.74%	-0.75%	0.25%	-0.78%
TIPS	4.00%	5.75%	3.84%	3.50%	5.75%	3.34%	-0.50%	0.00%	-0.50%
Low Duration Fixed Income	2.50%	3.50%	2.44%	2.25%	3.50%	2.19%	-0.25%	0.00%	-0.25%
Long Duration Fixed Income	4.75%	11.50%	4.12%	4.25%	12.00%	3.57%	-0.50%	0.50%	-0.56%
High Yield	7.25%	15.00%	6.22%	6.25%	15.00%	5.21%	-1.00%	0.00%	-1.01%
Core Real Estate	7.00%	12.50%	6.28%	7.00%	12.50%	6.28%	0.00%	0.00%	0.00%
Non-Core Real Estate	10.00%	22.50%	7.77%	10.00%	22.50%	7.77%	0.00%	0.00%	0.00%
Global REITs	7.50%	18.00%	6.02%	7.50%	18.25%	5.98%	0.00%	0.25%	-0.04%
Absolute Return FoF - Multi Strategy	7.00%	9.50%	6.58%	6.75%	9.75%	6.31%	-0.25%	0.25%	-0.27%
GTAA	7.00%	11.00%	6.44%	6.75%	10.75%	6.21%	-0.25%	-0.25%	-0.23%
Private Equity	11.75%	30.25%	7.87%	11.75%	30.25%	7.87%	0.00%	0.00%	0.00%
Commodities	7.00%	19.75%	5.22%	7.00%	19.75%	5.22%	0.00%	0.00%	0.00%
Diversified Inflation Strategies	6.20%	11.40%	5.59%	6.00%	11.45%	5.39%	-0.20%	0.05%	-0.21%
Cash Equivalents	2.25%	3.00%	2.21%	2.25%	3.00%	2.21%	0.00%	0.00%	0.00%
US Inflation	2.50%	3.00%	2.46%	2.50%	3.00%	2.46%	0.00%	0.00%	0.00%

Blue highlighted cells indicate values are being calculated based on a roll up of underlying asset classes.

Global Equity is a combination of 46.1% Broad US Equity and 53.9% Broad International Equity.

Broad US Equity is a combination of 82.0% Large/Mid Cap US Equity and 18.0% Small Cap US Equity.

Broad International Equity is a combination of 66.9% Dev'd Large/Mid Cap Int'l Equity, 9.1% Dev'd Small Cap Int'l Equity, and 24.0% Emerging Markets Equity.

Convertibles is combination of 70.0% Broad US Equity and 30.0% Int. Duration Fixed Income.

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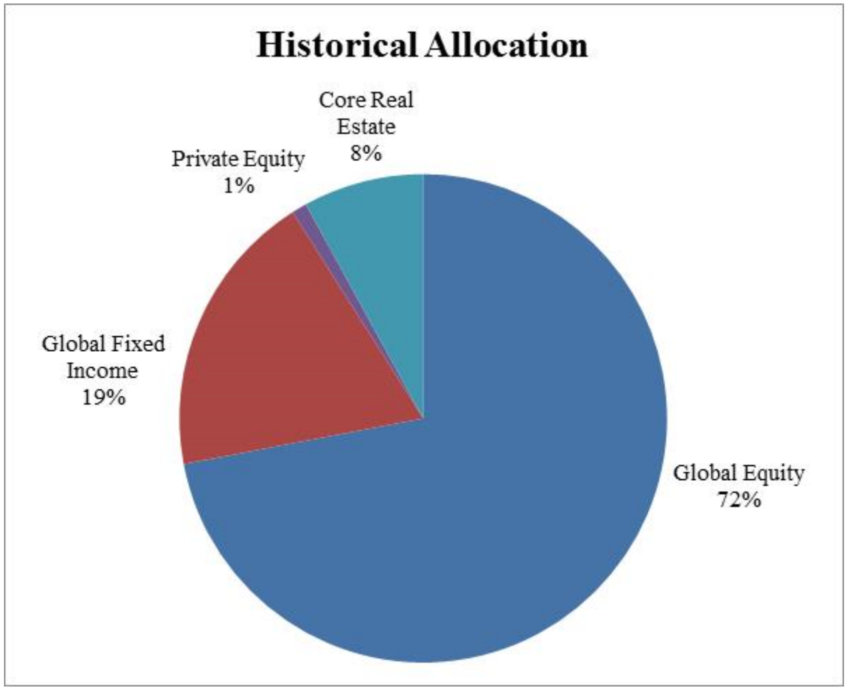
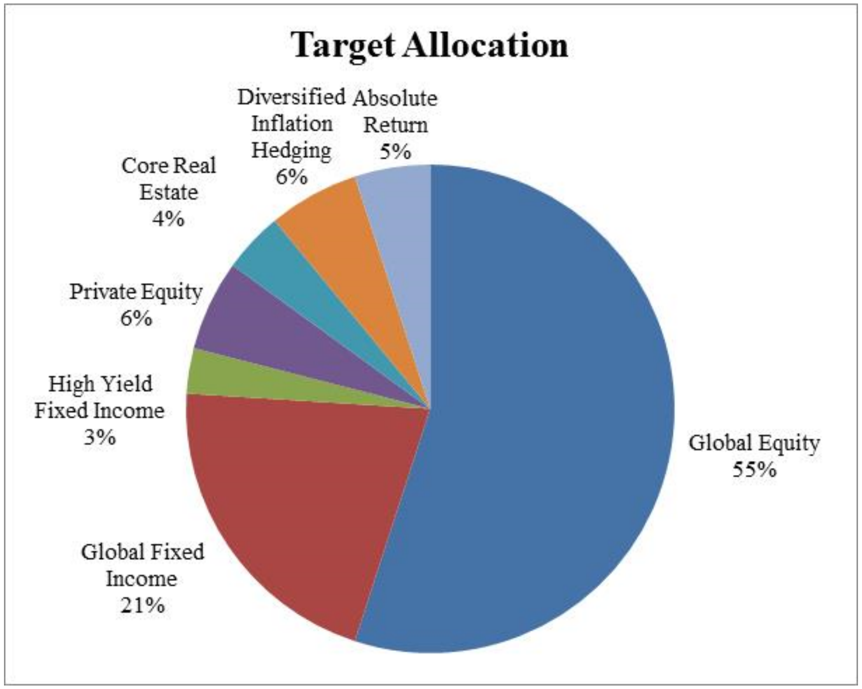
SPTRFA Allocation Targets

- SPTRFA has made significant asset allocation changes to reduce risk, while maintaining approximately the same level of long-term return assumptions.
- Additionally, SPTRFA has increased its use of active management in less efficient asset classes, and currently utilizes passive index exposure in only large cap equities.





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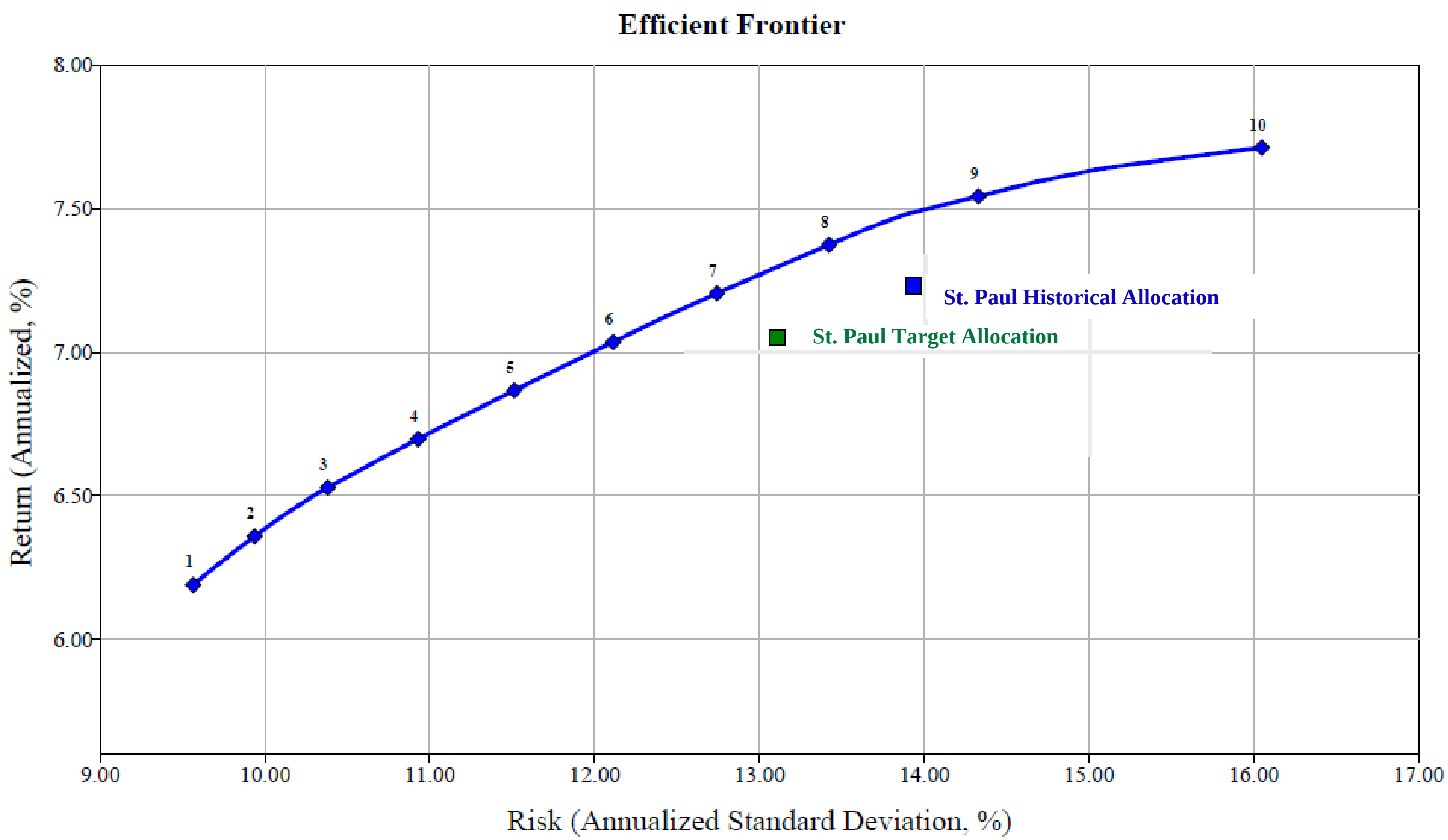
Sample SPTRFA Efficient Frontier

- SPTRFA utilizes active management for approximately 80% of their portfolio, which may increase return expectations above that suggested by assumptions of passive indices.



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Conclusions

- Choosing an assumed rate of return for a public fund has significant consequences, and drives and informs strategic asset allocation.
- Asset allocation is the most important determinant of total fund performance over time.
- Academic studies generally estimate that 90% of the volatility in annual fund returns is attributable to asset allocation, as opposed to individual manager selection.
- RVK has found that the prudent use of active management within a plan can increase the probability of achieving the return target.
- Maintaining a disciplined, long-term investment program remains important in any market environment.