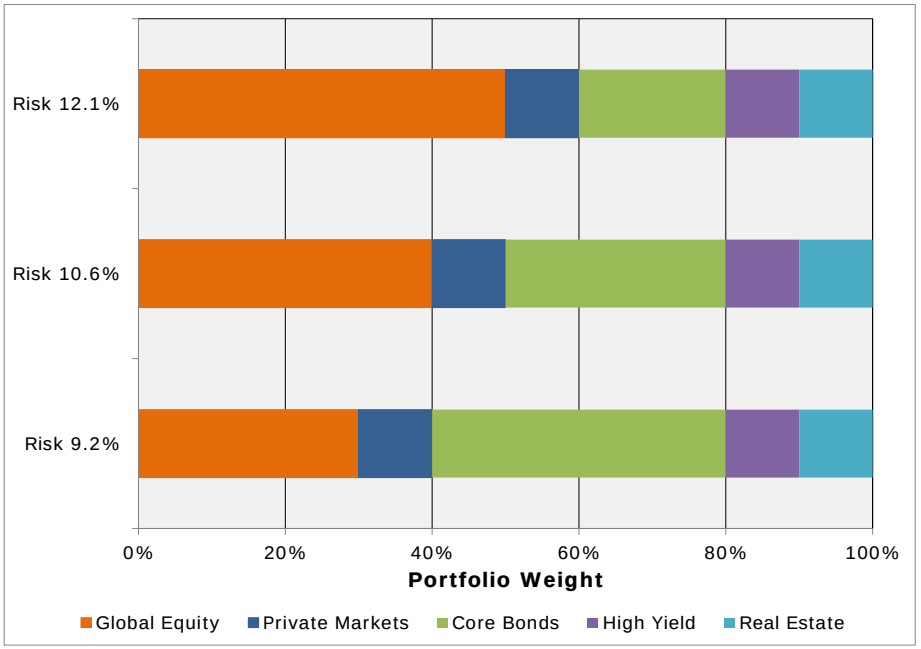
Risk Mitigation Strategies

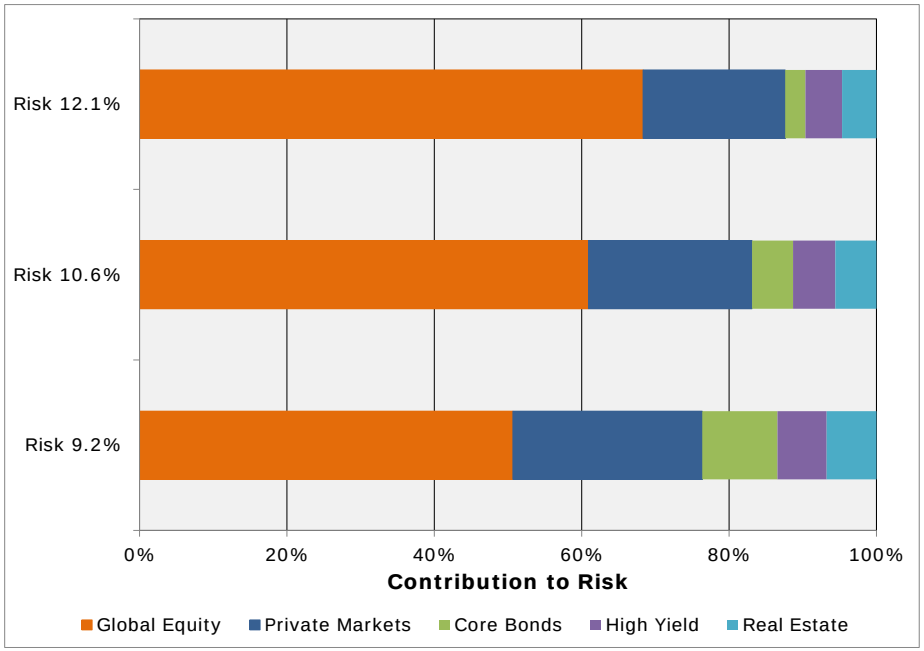
October 2016

Thomas Toth, CFA, Managing Director
Ali Kazemi, Vice President

Background

- At an asset allocation level, equities are the primary contributor to risk
- Differentiated strategies are emerging with potential to help mitigate some of the downside risk of an equity centric portfolio





Introduction to Risk Mitigating Strategies

- The drive to maintain required return targets while avoiding large drawdowns has led institutional investors to consider alternative strategies
- Each approach is designed to diversify or mitigate risk for the total portfolio
- The importance of protecting the portfolio from material drawdowns increases for investors like ERF with fixed obligations that are not tied to the market value of the plan
- Strategies
  - Risk Parity
  - Long Duration Fixed Income
  - Hedge Funds / Risk Premia
  - Low Volatility Equity – already implemented by Dallas ERF
  - Tail Risk Hedging – cost and complexity make successful implementation prohibitive

Risk Parity

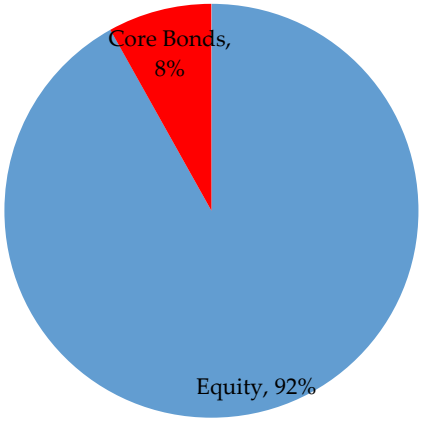
- Risk Parity asset allocation is balanced by **risk**, not by **dollars.**
  - Unleveraged risk parity allocation might offer a nice risk-adjusted return, but it generally does not provide an adequate absolute level of return.

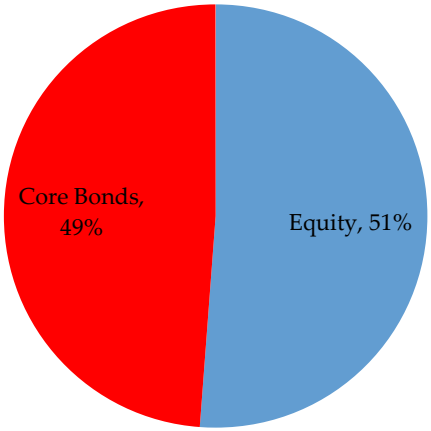
- If, after balancing risk across the asset classes, the portfolio expected return is too low, investors have two courses of action:

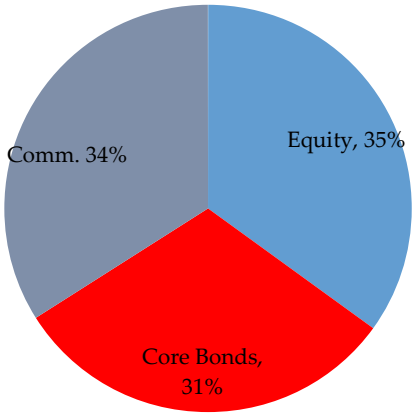
  1. Leverage can be applied to the risk balanced portfolio to increase its expected return, OR
  2. Get less diversified and more concentrated in the riskier asset classes to hit targeted return levels

Risk Parity Utilizing Three Asset Classes

	Traditonal Portfolio		Risk Parity Porfolio		Risk Parity Porfolio inc. Commodities	
	Dollar %	Risk %	Dollar %	Risk %	Dollar %	Risk %
Equity	60%	92%	40%	51%	30%	35%
Core Bonds	40%	8%	134%	49%	110%	31%
Commodities	0%	0%	0%	0%	40%	34%
Cash	0%	0%	-74%	0%	-80%	0%
Total	100%	100%	100%	100%	100%	100%
Expected Return	5.7		6.3		6.5	
Expected Risk	10.9		10.8		10.7	
Expected Sharpe	0.45		0.51		0.53	







Equity
Core Bonds
Commodities

Risk Parity

Risk Parity is about achieving a better balance of risk across a portfolio, admitting that we do not know what the future holds.

- Risk parity portfolio will be diversified to withstand unpredictable changes in market regimes when they occur
- Risk parity portfolio won't necessarily do worse if rates rise… it depends on how and why rates rise, vs. market expectations

- Adopting Risk Parity requires stakeholder buy-in
  - Risk Parity is an approach that requires a long-term perspective
  - Risk Parity portfolios will look different than traditional portfolios
  - All stakeholders need to understand and support the concept to avoid mis-timing decisions

- Proceed with realistic expectations
  - Level of leverage may/will change over time
  - Long-term focus: There will be periods of relative underperformance (some will be lengthy)

Long Duration Bonds

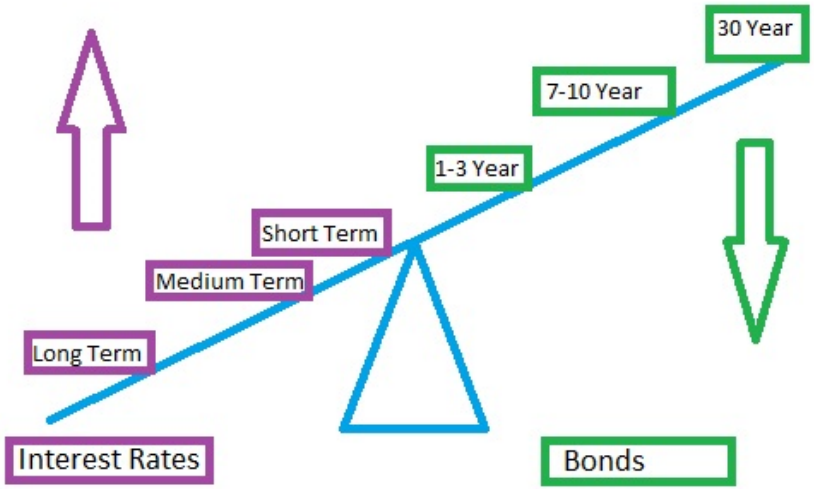
Long Duration Bonds will provide a buffer in times of stressed markets but increases interest rate risk.

Negatively correlated to equities and could be challenged going forward given the current low rate environment.

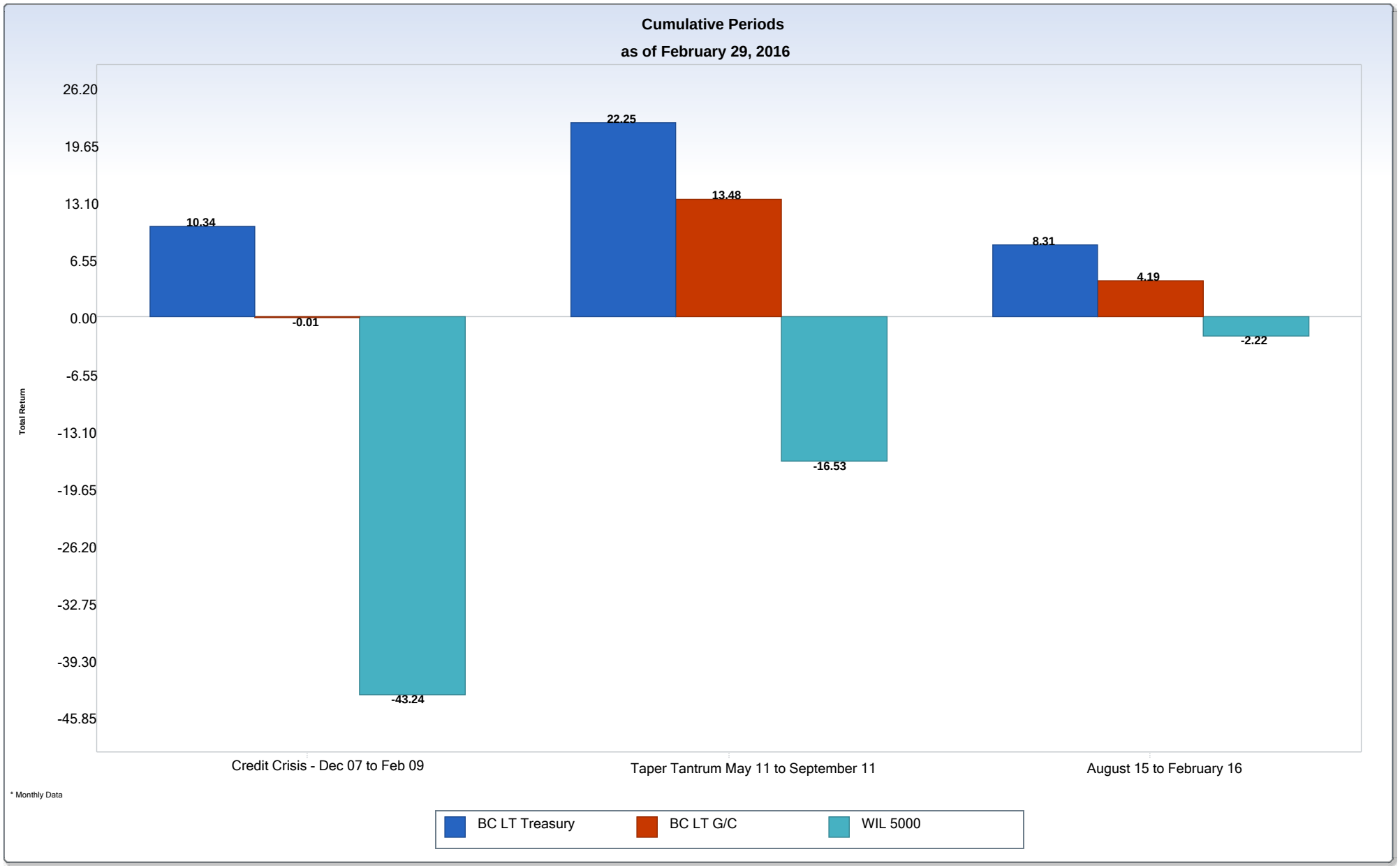
- Dependent on the path and speed of rising interest rates

Broadly, fixed income volatility is likely to be lower than riskier asset classes such as Equities and MLP's even in a rising rate environment

Liquidity – fixed income portfolio is liquid and used to fund benefit payments



Long Duration Bonds – Crisis Performance



Rising Interest Rate Analysis

Following analysis was done in June 2013, but can still serve to illustrate the longer term return impact of increasing interest rates

- 10-year Treasury reached 1.43% on July 25, 2012
- Rates began to reverse course in late-2012 and jumped 65 basis points during the second quarter of 2013, remarkably similar to the past few quarters

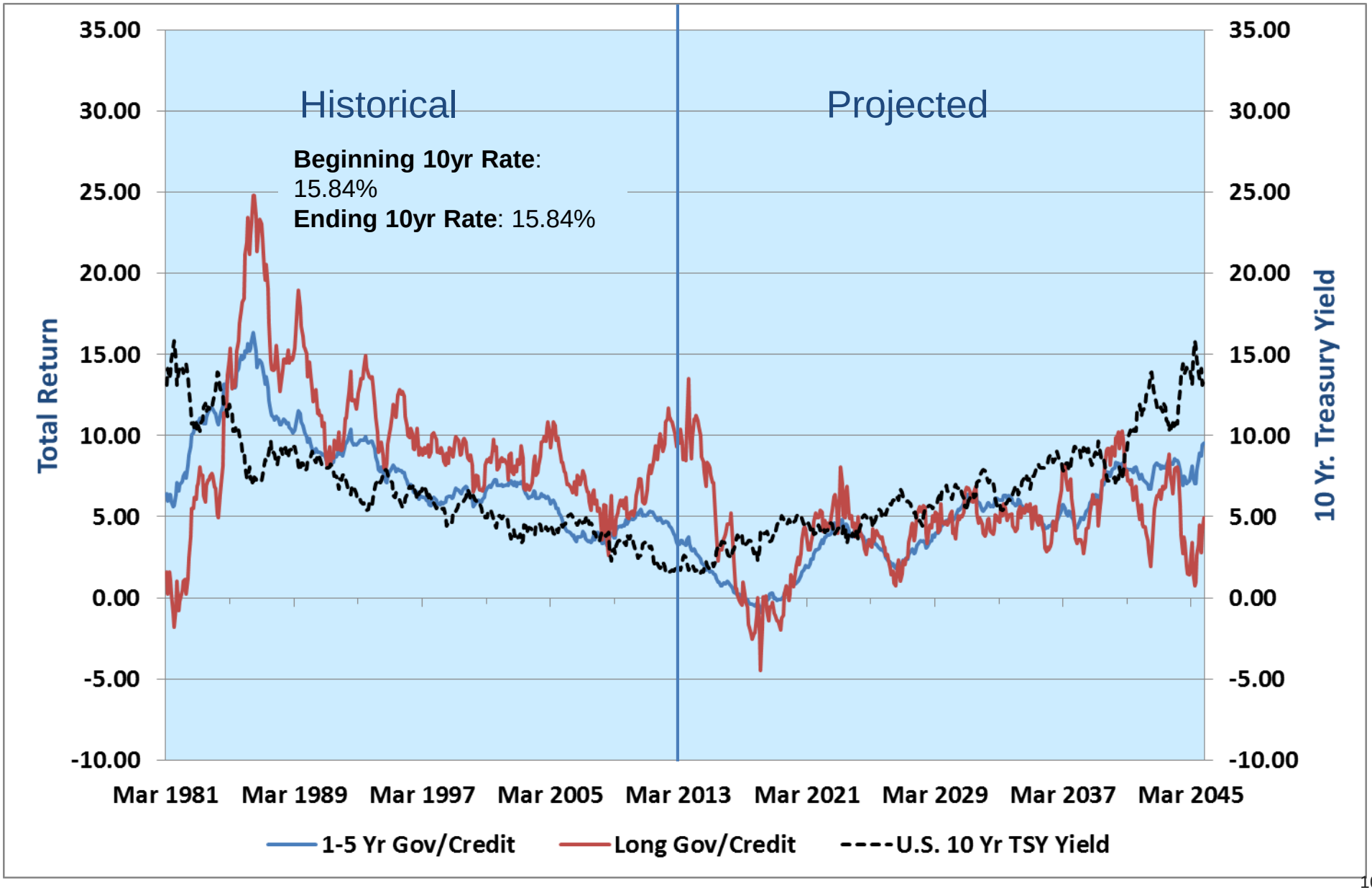
To analyze the effect of rising rates on different fixed income maturities and durations, Wilshire selected the following indexes for the analysis:

- Barclays 1-5yr Government/Credit Index
- Barclays Long Government/Credit Index

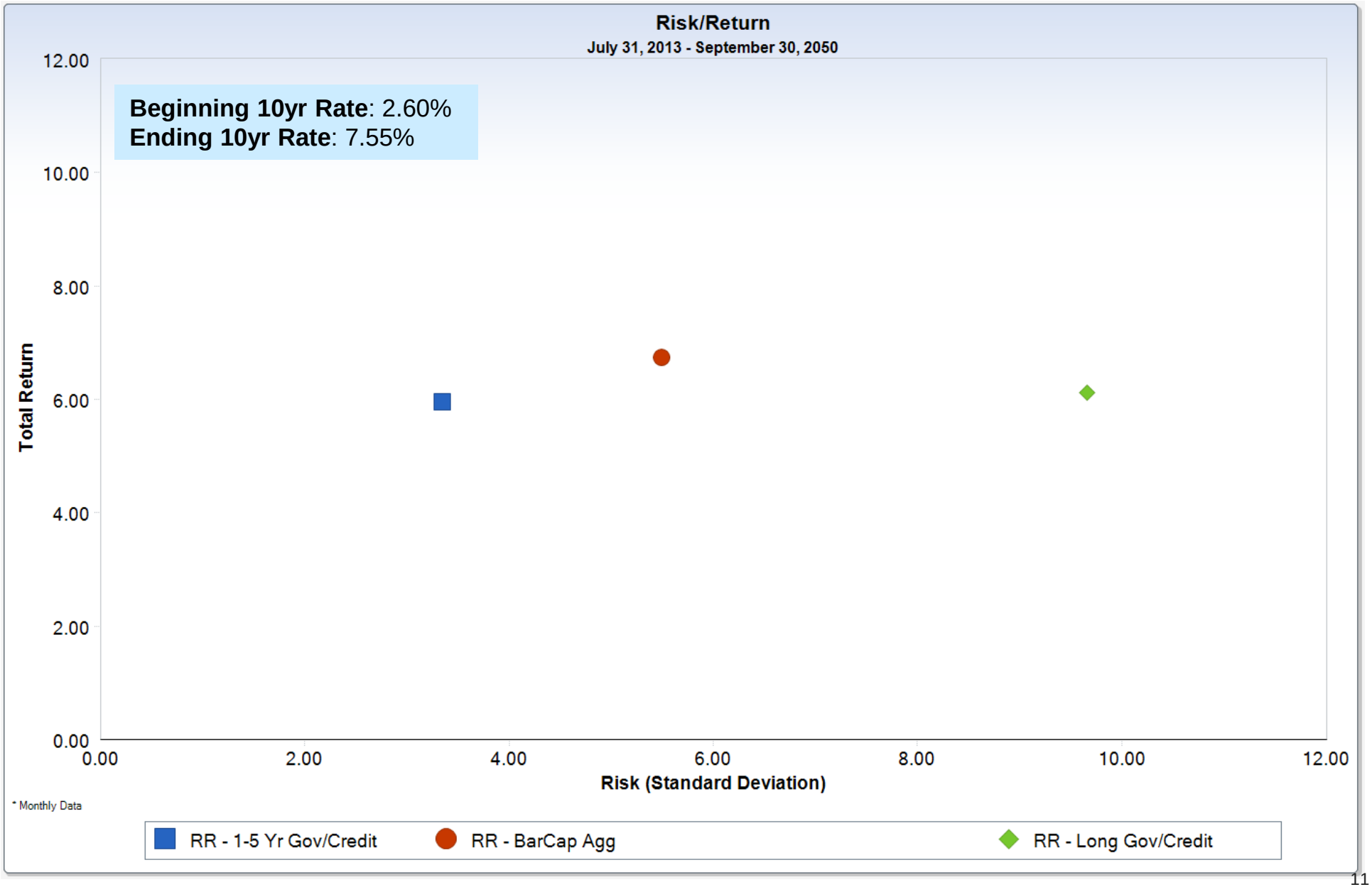
Wilshire decomposed each index's total return into two return components, yield and other

- Yield representing 1/12th of the monthly YTW for each series as a proxy for cash-flow
- Other representing monthly total return minus yield
- By subtracting Other from Yield, Wilshire has created a rising rate environment that mirrors the declining rates seen over the past several decades

1981 – 2045 Historical and Simulated Rolling 5 Yr. Returns to Fixed Income



Projected Risk / Return Chart 2013 – 2050 Rising Rate Period

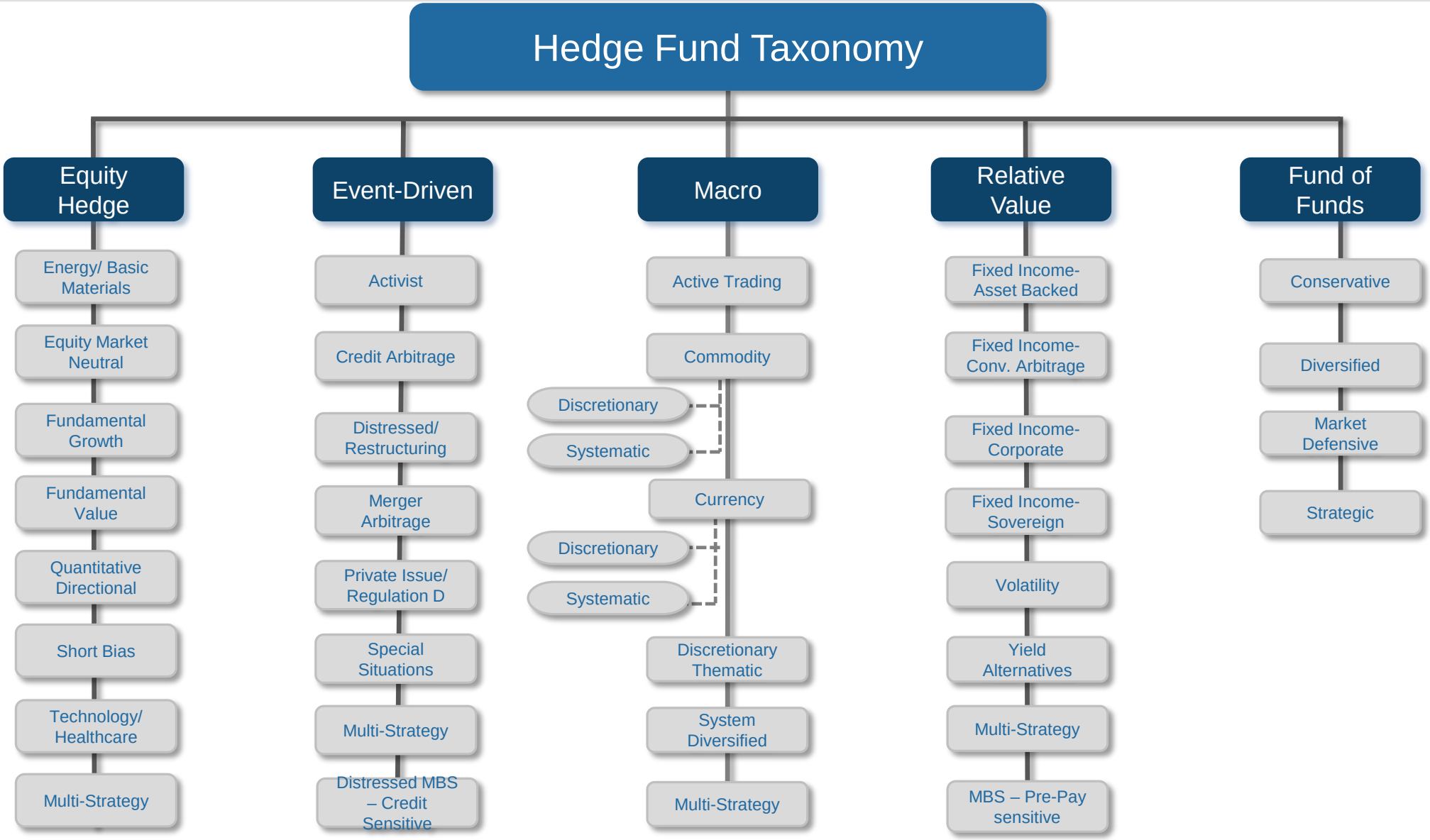


Hedge Fund Strategies

- Hedge Funds are investment strategies with an absolute return focus that may exhibit low correlation to traditional portfolio risk factors.
- With the growth in mutual fund vehicles, alternative betas, and risk premia, hedge fund strategies have become part of a larger opportunity set often described as marketable alternatives.
- Hedge Funds and other marketable alternative investment strategies can use shorting, leverage, and/or derivatives to:
  - Hedge market beta
  - Exploit relative value opportunities
  - Execute directional market views
- The potential benefits offered to investors are:
  - Increased portfolio diversification
  - Enhanced downside protection
  - Customized objective solutions

Main Hedge Fund Strategies

Wilshire



Wilshire

What are the risks?

Manager Risk:
failure of key principals to develop stable and complete organizations

Implementation Risk:
failure to specifically implement a specific strategy / risk of strategy risk

Performance Risk:
failure to achieve stated objectives net of fees and permanent impairment of capital

Operational Risk:
failure of internal controls and procedures

Valuation Risk:
failure of pricing policies and segregation of duties when valuing investments

Liquidity Risk:
inability to redeem capital when desired

Hedge Fund Risks: Liquidity and Leverage

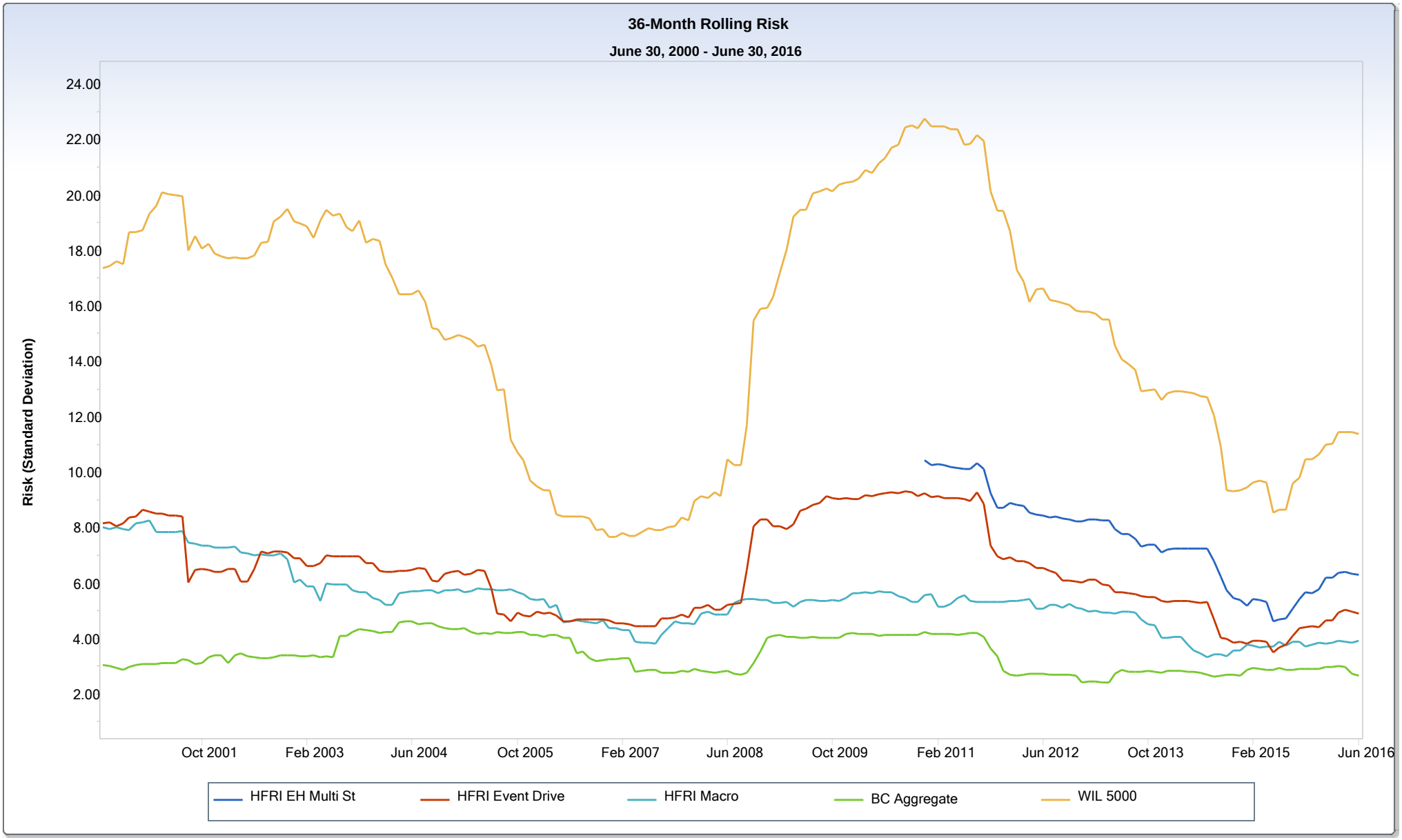
Wilshire

Institutional investors should think about liquidity in two ways:

- **Own investment in hedge fund**
  - Withdrawal and lock-up periods
- **Hedge fund portfolio investments**
  - Exiting positions in thinly traded securities can prove problematic in the event the market moves quickly
  - Liquidity issues can be exacerbated by the use of **leverage**
  - If credit lines are withdrawn, hedge funds face liquidity issues as managers are forced to sell lightly traded securities
  - 2008 performance is the most recent example of issues caused by liquidity and leverage

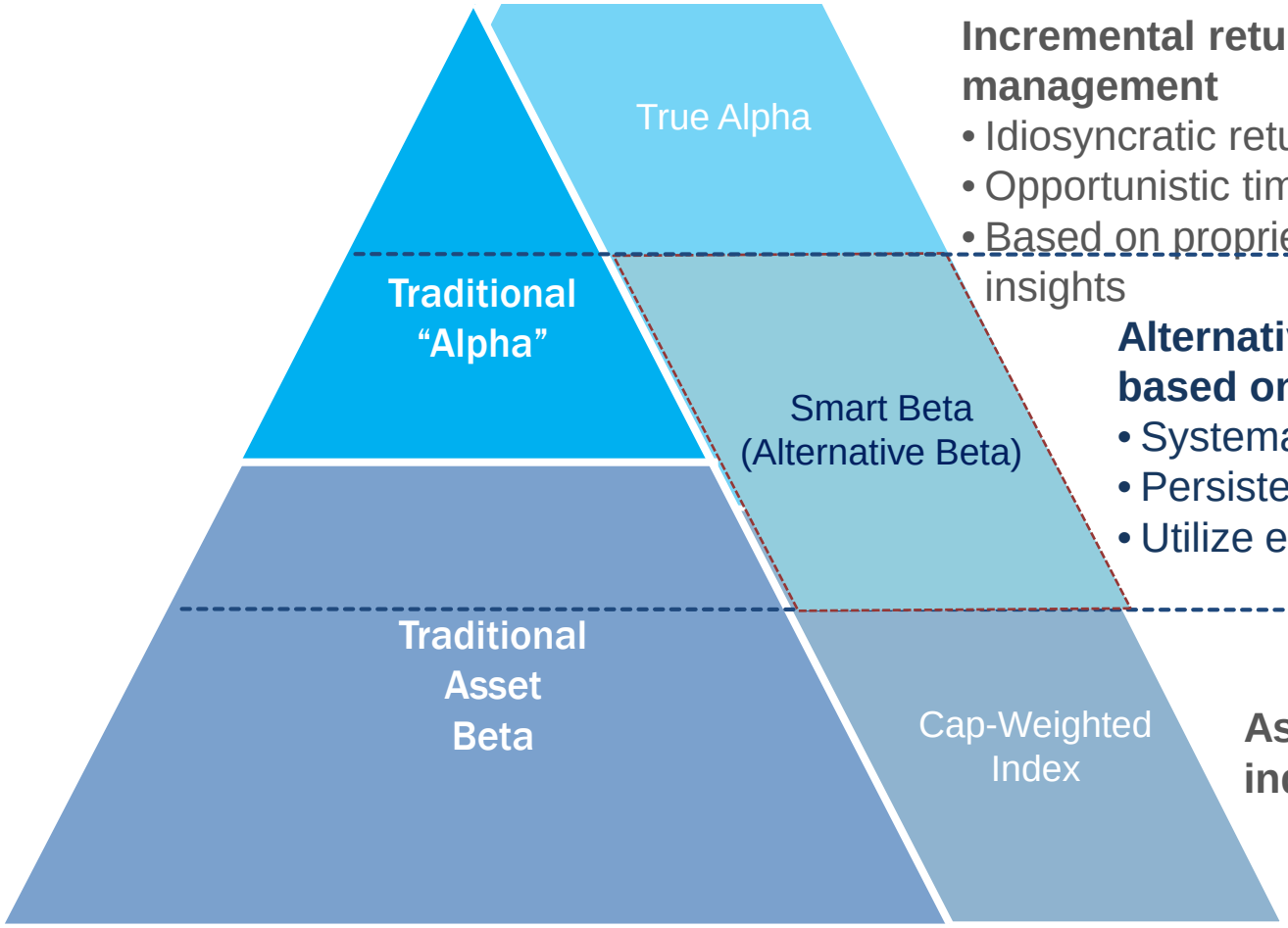
Hedge Fund Performance

Hedge Fund Performance



Wilshire

"Traditional" Alpha vs. "True" Alpha



Incremental return from true active management

- Idiosyncratic return through security selection
- Opportunistic timing of market dislocation
- Based on proprietary research / models / insights

Alternative exposure to asset class based on return-driver factors

- Systematic access to desired factors
- Persistent risk premium over long term
- Utilize easily accessible public data

Asset class return / Passive index investment return

Introduction to Risk Premia Strategies

A ‘risk premium’ is the expected excess return on a security or portfolio for bearing specific risk

- E.g., equities vs. cash, long bonds vs. short bonds, peso vs. dollar

- Magnitude of risk premia can vary over time, but risk premia neither disappears nor is “arbitraged” away given it is the payoff for exposure to specific risk factors

- Risk premia exist in all asset classes and can be isolated in various ways using widely recognized ratios (e.g., E/P, B/P, yield curve slope) or other metrics which represent measurement of particular risk premia

  - Commonly known risk premia were identified by Fama and French in 1993
    - Size (small vs. big)
    - Style (value vs. growth)

- There may be large draw-downs when risks are realized

Risk Premia (Alternative Beta) Universe

- Alternative Beta risk premiums are diverse and broadly available across asset classes

Risk Premium	Return Type	Implementation
Value	Convergence	Long undervalued assets vs. short overvalued assets
Carry	Yield	Long high carry instruments vs. short low carry instruments
Momentum	Persistence	Long recent outperformers vs. short recent underperformers
Event	Catalyst	Long assets undergoing event vs. short based beta
Volatility	Premium	Short implied volatility vs. realized volatility
Liquidity	Mean Reversion	Long assets being sold or short assets being bought
Structural	Various	Long or short assets with supply and demand imbalances

Risk Premia and Hedge Funds Comparison

	Risk Premia	Hedge Funds
Operational considerations	Lower fees, more transparency, less operational risk because accessing the total return of an index, counterparties takes on execution risk	Higher fees, less liquidity, higher risk of operational failures
Ability to customize, use as building blocks, overlays and hedges	A more reliable hedge because of the transparency and systematic nature of the strategies	Can be a good diversifier to traditional investments, but less reliable because of the diversity and complexity of underlying positions and strategies and risk of style drift
Broad range of alternative strategies	Simple strategies, only liquid strategies	Can access illiquidity premiums, less concern about capacity constraints
Access manager skill, adaptive to changing market environment	Not adaptive, need active asset allocation	Can be adaptive, manager skill critical in outperformance
Alpha - generating	Alternative Beta - the strategies themselves can be thought of as an index. Only outperformance is in strategy selection. Can be used to benchmark managers.	Talented managers should outperform risk premia strategies. Access to true alpha-generating strategies.

Conclusion

- The current low yield, low expected return environment presents a significant challenge to institutional investors in meeting their financial objectives
- The need to pursue returns versus an interest in avoiding large losses has opened the door for consideration of alternative strategies that have the potential of managing downside risks
  - However, they involve a higher level of complexity and cost
  - Funding circumstances, risk aversions, etc. must ultimately serve as decision factors regarding the suitability of any of these strategies
- These strategies are worth consideration for institutional investors with a greater appetite for more exotic investment approaches as they continue to navigate the current low yield, low expected return environment

Important Information

This material contains confidential and proprietary information of Wilshire Consulting, and is intended for the exclusive use of the person to whom it is provided. It may not be disclosed, reproduced or redistributed, in whole or in part, to any other person or entity without prior written permission from Wilshire Consulting. Third party information contained herein has been obtained from sources believed to be reliable. Wilshire Consulting gives no representations or warranties as to the accuracy of such information, and accepts no responsibility or liability (including for indirect, consequential or incidental damages) for any error, omission or inaccuracy in such information and for results obtained from its use. Information and opinions are as of the date indicated, and are subject to change without notice.

Past performance is no guarantee of future results. This material is intended for informational purposes only and should not be construed as legal, accounting, tax, investment, or other professional advice.

This report may include estimates, projections and other "forward-looking statements." Due to numerous factors, actual events may differ substantially from those presented.

This presentation is not to be used or considered as an offer to sell, or a solicitation to an offer to buy, any security. Nothing contained herein should be considered a recommendation or advice to purchase or sell any security.

Wilshire® is a registered service mark of Wilshire Associates Incorporated, Santa Monica, California. All other trade names, trademarks, and/or service marks are the property of their respective holders.

Copyright © 2016 Wilshire Associates Incorporated. All rights reserved.

160340 E0317