CRS

Asset Allocation Analysis
June 4, 2011

Summary of Study Assumptions and Data Inputs

Number of Runs Evaluated	1,000
Holding Period	120
Most Recent Data Inputs	December 31, 2010

Monte Carlo Type	75% 10 Yr. Treasury & 25% BBB Spread
Market Value ($000,000)	$2,000.0
Client Type	Public
Fund Type	Defined Benefit
Target Rate of Return	8.00%

Re-Balancing Rules	Monthly Rebalance
Cash Flow Rules	Liquid Pro Rata

Illiquid Asset Classes:

Funding Asset Class	Illiquid Asset Class
1) BarCap Aggregate	1) Infrastructure
2) MSCI EAFE	2) Private Equity FOF

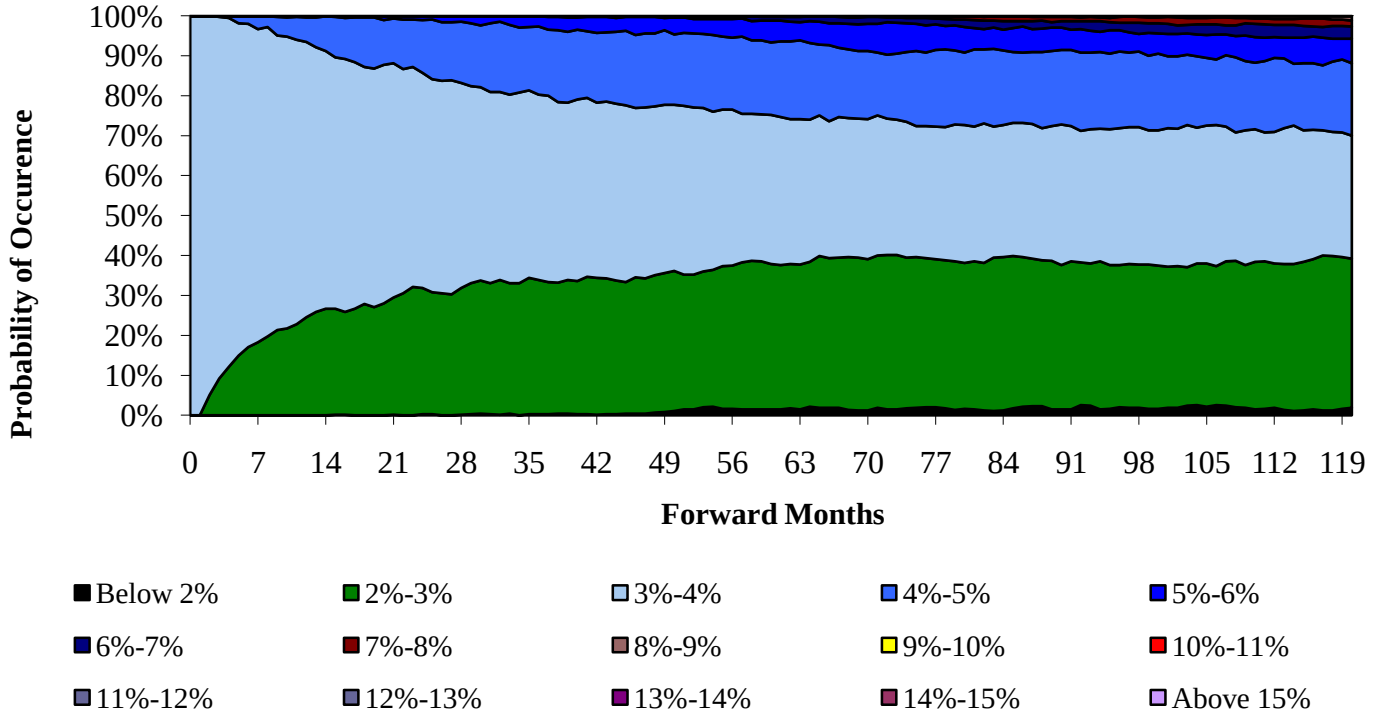
Illiquid Asset Class Funding Rules	Level
Number of Vintage Years Modeled	6

Simulated 10 Year Treasury Movement

As of December 31, 2010, the yield of the 10 Yr. Treasury was 3.29%. The Monte Carlo begins by simulating the possible monthly movements of the 10 Yr. Treasury yield over the course of the designated time period.

State of the 10 Yr. Treasury	Probability of the State of the 10 Yr. Treasury Yield in 10 Yrs.
Below 2%	1.9%
2 - 3%	37.3%
3 - 4%	30.8%
4 - 5%	18.1%
5 - 6%	6.1%
6 - 7%	3.1%
7 - 8%	1.5%
8 - 9%	1.2%
9 - 10%	0.0%
10 - 11%	0.0%
11 - 12%	0.0%
12 - 13%	0.0%
13 - 14%	0.0%
14 - 15%	0.0%
Above 15%	0.0%

Average Simulated Variation of 10 Yr Treasury

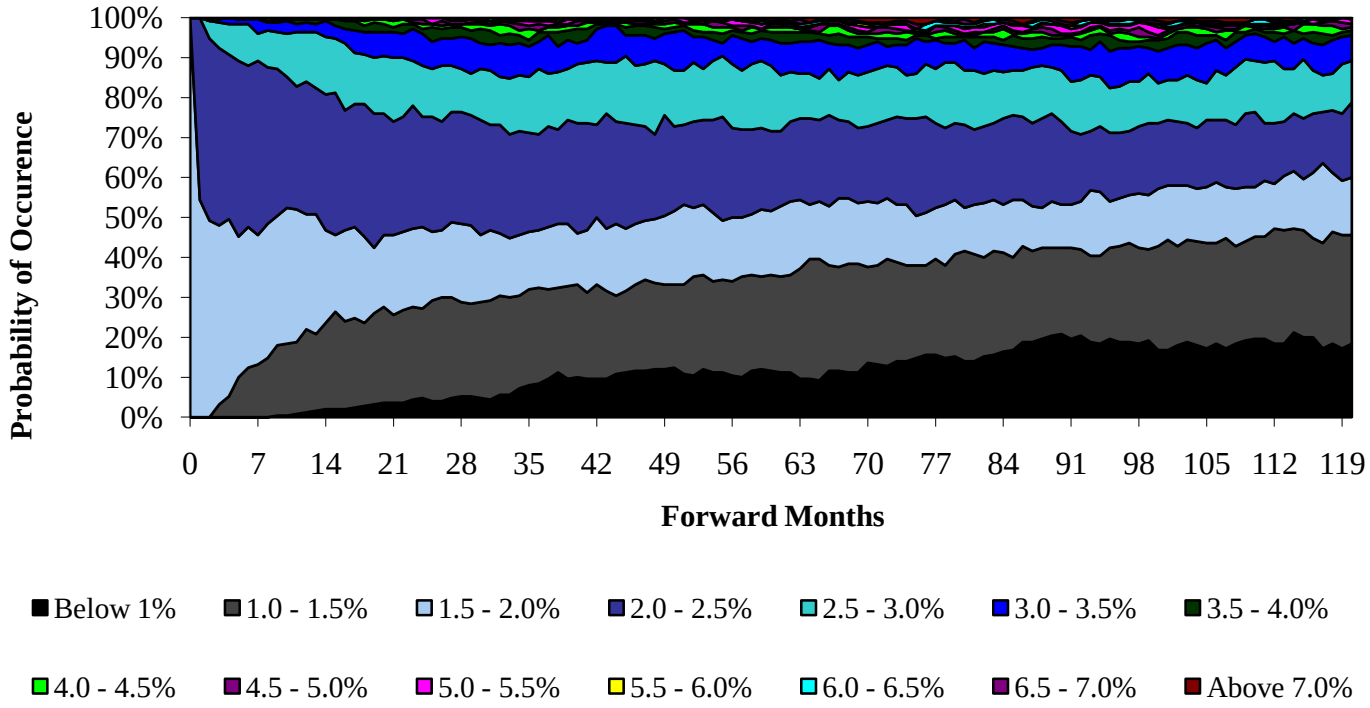


Simulated BBB Spread Movement

As of December 31, 2010, the BBB spread over Treasuries was 1.96%. The Monte Carlo begins by simulating the possible monthly movements of the BBB spread over Treasuries over the course of the designated time period.

State of the BBB Spread	Probability of the State of the BBB Spread
Below 1%	18.4%
1.0 - 1.5%	27.2%
1.5 - 2.0%	14.4%
2.0 - 2.5%	18.8%
2.5 - 3.0%	10.4%
3.0 - 3.5%	6.4%
3.5 - 4.0%	1.2%
4.0 - 4.5%	0.8%
4.5 - 5.0%	0.8%
5.0 - 5.5%	1.2%
5.5 - 6.0%	0.4%
6.0 - 6.5%	0.0%
6.5 - 7.0%	0.0%
Above 7.0%	0.0%

Average Simulated Variation of BBB Spread



Proposed Portfolio Options

The chart below outlines the allocation of the current portfolio and the proposed portfolio options.

Asset Class	Jun-06	Jan-07	Aug-09	Jun-11
Broad Fixed Income	24.0%	12.0%	12.0%	14.0%
High Yield	5.0%	5.0%	5.0%	3.0%
Total Fixed Income	29.0%	17.0%	17.0%	17.0%
Broad U.S. Equity	0.0%	18.0%	15.0%	19.5%
U.S. Large-Cap Core	44.0%	0.0%	0.0%	0.0%
U.S. Large-Cap Value	0.0%	10.0%	3.0%	0.0%
U.S. Large-Cap Growth	0.0%	5.5%	1.5%	0.0%
U.S. Mid-Cap Value	9.0%	0.0%	0.0%	0.0%
U.S. Mid-Cap Growth	0.0%	5.0%	5.0%	5.0%
U.S. Small-Cap Value	0.0%	5.0%	5.0%	5.0%
Total U.S. Equity	53.0%	43.5%	29.5%	29.5%
Developed Large-Cap	17.0%	14.0%	15.0%	11.0%
Non-U.S. Small-Cap	0.0%	2.0%	3.0%	5.0%
Emerging Market	0.0%	1.0%	3.0%	5.0%
Total Non-U.S. Equity	17.0%	17.0%	21.0%	21.0%
Hedge Fund - Hedged Equity	0.0%	5.0%	15.0%	15.0%
Total Hedge Funds	0.0%	5.0%	15.0%	15.0%
Real Estate - Core	0.0%	7.5%	7.5%	7.5%
Infrastructure	0.0%	5.0%	5.0%	5.0%
Total Real Assets	0.0%	12.5%	12.5%	12.5%
Private Equity - FOF	1.0%	5.0%	5.0%	5.0%
Total Private Equity	1.0%	5.0%	5.0%	5.0%
Total	100.0%	100.0%	100.0%	100.0%

Portfolio Options

The chart below outlines the allocation of the current portfolio and the proposed portfolio options.

Asset Class	Jun-06	Jan-07	Aug-09	Jun-11
Broad Fixed Income	24.0%	12.0%	12.0%	14.0%
High Yield	5.0%	5.0%	5.0%	3.0%
Total Fixed Income	29.0%	17.0%	17.0%	17.0%
Broad U.S. Equity	0.0%	18.0%	15.0%	19.5%
U.S. Large-Cap Core	44.0%	0.0%	0.0%	0.0%
U.S. Large-Cap Value	0.0%	10.0%	3.0%	0.0%
U.S. Large-Cap Growth	0.0%	5.5%	1.5%	0.0%
U.S. Mid-Cap Value	9.0%	0.0%	0.0%	0.0%
U.S. Mid-Cap Growth	0.0%	5.0%	5.0%	5.0%
U.S. Small-Cap Value	0.0%	5.0%	5.0%	5.0%
Total U.S. Equity	53.0%	43.5%	29.5%	29.5%
Developed Large-Cap	17.0%	14.0%	15.0%	11.0%
Non-U.S. Small-Cap	0.0%	2.0%	3.0%	5.0%
Emerging Market	0.0%	1.0%	3.0%	5.0%
Total Non-U.S. Equity	17.0%	17.0%	21.0%	21.0%
Hedge Fund - Hedged Equity	0.0%	5.0%	15.0%	15.0%
Total Hedge Funds	0.0%	5.0%	15.0%	15.0%
Real Estate - Core	0.0%	7.5%	7.5%	7.5%
Infrastructure	0.0%	5.0%	5.0%	5.0%
Total Real Assets	0.0%	12.5%	12.5%	12.5%
Private Equity - FOF	1.0%	5.0%	5.0%	5.0%
Total Private Equity	1.0%	5.0%	5.0%	5.0%
Total	100.0%	100.0%	100.0%	100.0%

Summary of Portfolio Characteristics

	Jun-06	Jan-07	Aug-09	Jun-11
Avg. Annualized 10 Yr. Return	9.37%	9.77%	9.83%	9.93%
Avg. Annualized 10 Yr. Volatility	15.08%	14.08%	12.05%	11.30%
Downside Probability (Return < 8%)	40.60%	37.80%	35.50%	33.40%
Downside Risk (Return < 8%)	5.78%	5.16%	4.30%	3.98%
% of Portfolio in Illiquid Assets	1.00%	10.00%	10.00%	10.00%

Risk Scorecard

The following Risk Scorecard quantitatively ranks the Current Portfolio and proposed portfolios on various risk factors between 0 and 10. Then, the scorecard calculates and proposes a "Risk Optimal" portfolio based on the following weighting: 30% Volatility, 40% Downside Risk, 5% Peer Risk, 5% Interest Rate Risk, 5% Credit Quality Risk, 5% Equity Style Risk, 5% Valuation Risk, and 5% Liquidity Risk. The higher score indicates either more attractive risk/return characteristics or lower risk.

	Jun-06	Jan-07	Aug-09	Jun-11
Volatility-Related Score	3.11	3.47	4.08	4.39
Downside Risk-Related Score	3.24	3.78	4.57	4.99
Peer Risk-Related Score	8.60	8.35	7.65	7.65
Interest Rate-Related Score	3.72	4.24	4.24	3.74
Credit Quality-Related Score	1.46	1.18	1.18	1.47
Equity Style-Related Score	7.74	7.34	5.51	5.25
Equity Valuation-Related Score	1.88	1.57	1.46	1.56
Liquidity-Related Score	9.90	7.75	6.75	6.75
Total Score	3.89	4.08	4.39	4.64

The Risk Scorecard recommends Jun-11.

Risk Factors

Eight risk factors are evaluated in the decision process when analyzing different portfolios. Each of the following factors are quantitatively ranked on a scale between 0 and 10 where 0 represents the greatest amount of risk and 10 represents the least amount of risk. The risk factors are aggregated into a proprietary Risk Scorecard using a multi-factor approach to determine the most appropriate portfolio for achieving the fund's goals.

Volatility-Related Score: A measure of possible risk-adjusted returns where risk is assessed as portfolio volatility. The score is based on the ratio of average simulated annualized 10 year return over the average simulated 10 year volatility of each portfolio option. The higher the Volatility-Related Score the better potential risk-adjusted returns.

	Jun-06	Jan-07	Aug-09	Jun-11
Avg. Return/Avg. Volatility	0.62	0.69	0.82	0.88
Volatility-Related Score	3.11	3.47	4.08	4.39

Downside Risk-Related Score: A measure of possible risk-adjusted returns where risk is assessed as portfolio downside risk. The score is based on the ratio of average simulated annualized 10 year return over the simulated downside risk of each portfolio option. The higher the Downside Risk-Related Score the better potential risk-adjusted returns.

	Jun-06	Jan-07	Aug-09	Jun-11
Avg. Return/Downside Risk	1.62	1.89	2.29	2.50
Downside Risk-Related Score	3.24	3.78	4.57	4.99

Peer Risk-Related Score: A measure of variance of the target allocation of each portfolio option from an industry average. The score is based on the variance of the fixed income and domestic equity allocations from the industry averages according to the following formula:

$$\text{Peer Variance} = 1 - ABS(E_t - E_i) - ABS(F_t - F_i)$$

where E_t is the domestic equity target allocation of the portfolio option
E_i is the industry average allocation to domestic equity
F_t is the fixed income target allocation of the portfolio option
F_i is the industry average allocation to fixed income

The lower the Peer Risk-Related Score the greater the variance of the target allocation from the industry average.

	Jun-06	Jan-07	Aug-09	Jun-11
Peer Variance	0.86	0.84	0.77	0.77
Peer Risk-Related Score	8.60	8.35	7.65	7.65

Interest Rate-Related Score: A measure of risk-adjusted yield-to-worst ("YTW") of the fixed income portion of each portfolio option where risk is assessed as duration. The score is based on the ratio of YTW over duration of each portfolio option. The higher the Interest Rate-Related Score the better the risk-adjusted YTW.

	Jun-06	Jan-07	Aug-09	Jun-11
YTW/Duration	0.74	0.85	0.85	0.75
Interest Rate-Related Score	3.72	4.24	4.24	3.74

Credit Quality-Related Score: A measure of risk-adjusted yield-to-worst ("YTW") of the fixed income portion of each portfolio option where risk is assessed as credit score. The score is based on the ratio of YTW over the credit score of each portfolio option. The higher the Credit Quality-Related Score the better the risk-adjusted YTW.

	Jun-06	Jan-07	Aug-09	Jun-11
YTW/Credit Score	0.73	0.59	0.59	0.73
Credit Quality-Related Score	1.46	1.18	1.18	1.47

Equity Style-Related Score: A measure of size and style variance of the domestic equity portion of each portfolio option relative to the Wilshire 5000. The score is based on the variance of the Wilshire Style Metrics for size and style. The higher the Equity Style-Related Score the more similar the domestic equity portfolio to the broad market.

$$(\text{Style Variance})^2 = (S_t - S_i)^2 - (C_t - C_i)^2$$

where S_t is the Wilshire Style Metric for the equity portion of the portfolio option

S_i is the Wilshire Style Metric for the Wilshire 5000

C_t is the Wilshire Size Metric for the equity portion of the portfolio option

C_i is the Wilshire Size Metric for the Wilshire 5000

The lower the Equity Style-Related Score the greater the variance of the style relative to the Wilshire 5000.

	Jun-06	Jan-07	Aug-09	Jun-11
Style Variance	22.59	26.64	44.95	47.53
Equity Style-Related Score	7.74	7.34	5.51	5.25

Equity Valuation-Related Score: A measure of valuation-adjusted 5 years earnings growth of the domestic equity portion of each portfolio option where valuation is assessed as the price-to-earnings ratio ("P/E"). The higher the Equity Valuation-Related Score the better the valuation-adjusted 5 years earnings growth.

	Jun-06	Jan-07	Aug-09	Jun-11
(5 Yr. Earnings Growth)/(P/E)	0.19	0.16	0.15	0.16
Equity Valuation-Related Score	1.88	1.57	1.46	1.56

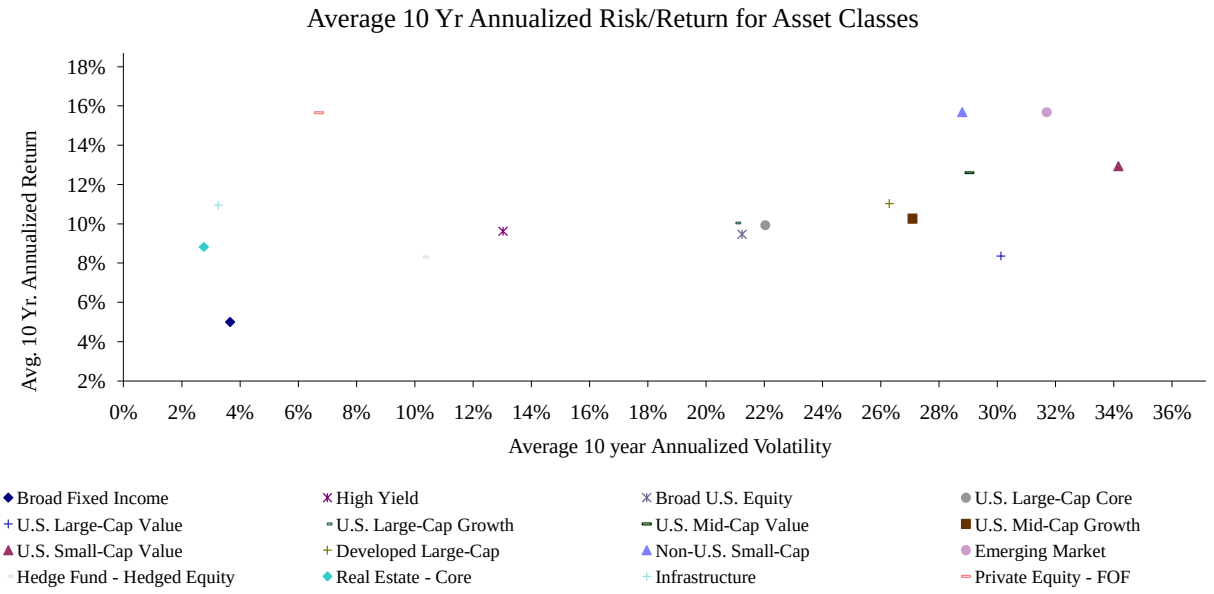
Liquidity-Related Score: A measure of liquidity of each portfolio. The score is based on the target allocation of each portfolio option to illiquid asset classes (i.e. infrastructure, real estate - opportunistic, real estate - mezzanine, timber, private equity - mezzanine, private equity - venture capital, private equity - LBO, private equity - special situation, and private equity fund-of-funds). The lower the Liquidity-Related Score the greater exposure to illiquid asset classes.

	Jun-06	Jan-07	Aug-09	Jun-11
% of Target that is Liquid	0.99	0.78	0.68	0.68
Liquidity-Related Score	9.90	7.75	6.75	6.75

Simulated Asset Class Characteristics

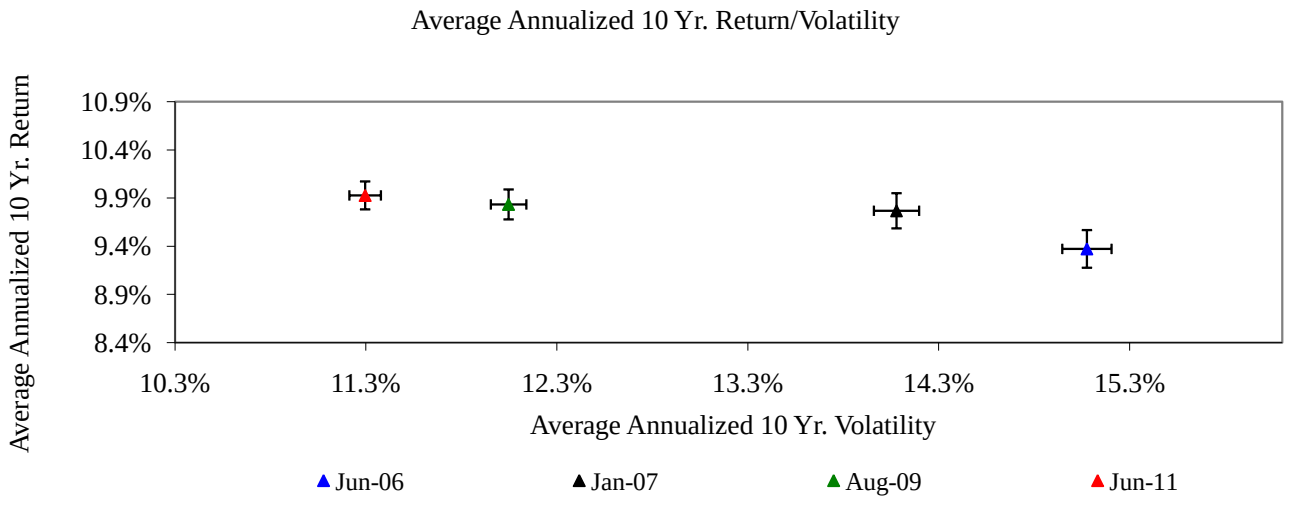
The results of the simulated capital market returns are shown below. It is important to note the data below represents output from the simulations generated by the software, and not deterministic views of future capital market performance. The first column is the average annualized 10 year return of the all the simulations. The second column is the average annualized 10 year volatility of the all the simulations. Note that this is not the same as the standard deviation of the distribution of the possible annualized 10 year returns. The last three columns indicate the annualized 10 year return for the 25th, 50th, and 75th percentile; the higher the percentile, the better the performance.

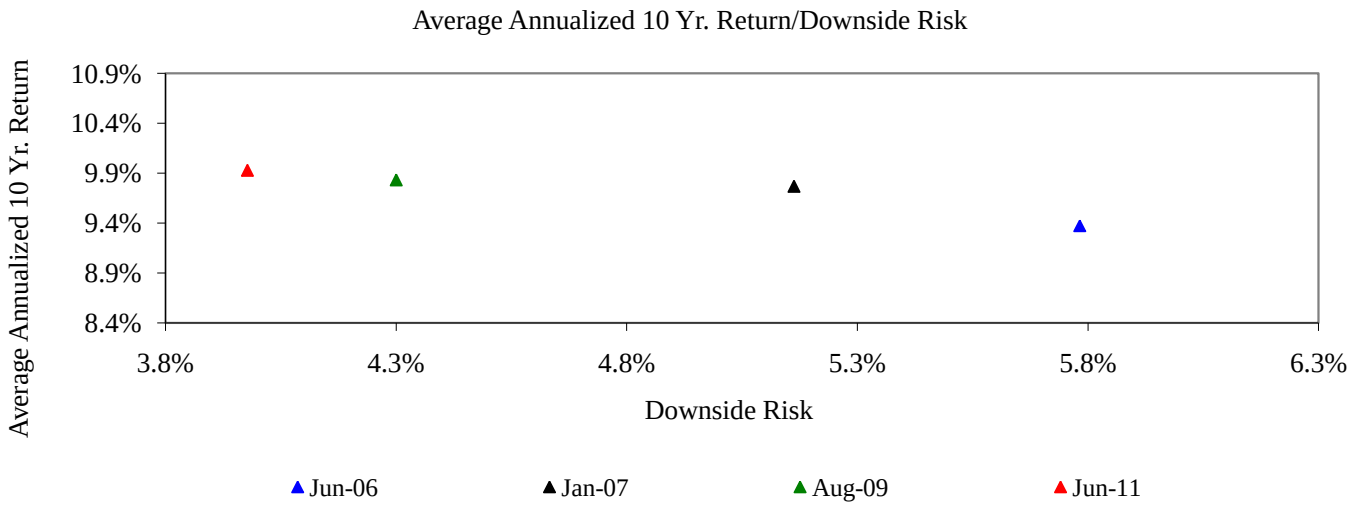
Asset Class	Modern Proxy	Avg. 10 Year Ann. Return	Avg. 10 Year Ann. Volatility	25th Percentile 10 Year Ann. Return	50th Percentile 10 Year Ann. Return	75th Percentile 10 Year Ann. Return
Broad Fixed Income	BarCap Aggregate	4.7%	3.7%	3.4%	4.4%	5.4%
High Yield	BarCap High Yield	9.3%	13.0%	5.6%	9.1%	12.5%
Broad U.S. Equity	Wilshire 5000	9.2%	21.2%	3.6%	9.1%	14.9%
U.S. Large-Cap Core	S&P 500	9.6%	22.0%	3.8%	9.7%	15.4%
U.S. Large-Cap Value	Russell 1000 Value	8.1%	30.1%	0.2%	8.1%	16.1%
U.S. Large-Cap Growth	Russell 1000 Growth	9.7%	21.0%	4.0%	9.7%	15.6%
U.S. Mid-Cap Value	Russell MC Value	12.3%	29.0%	4.8%	12.2%	19.8%
U.S. Mid-Cap Growth	Russell MC Growth	9.9%	27.1%	3.0%	9.2%	16.9%
U.S. Small-Cap Value	Russell 2000 Value	12.6%	34.2%	3.5%	12.3%	20.9%
Developed Large-Cap	MSCI EAFE	10.7%	26.3%	4.4%	10.8%	15.0%
Non-U.S. Small-Cap	Intl. Small-Cap	15.4%	28.8%	4.5%	15.0%	20.1%
Emerging Market	MSCI Emerging Market	15.4%	31.7%	4.9%	14.8%	20.7%
Hedge Fund - Hedged Equity	HFR Hedged Equity	8.0%	10.3%	5.3%	8.1%	10.7%
Real Estate - Core	NCREIF	8.5%	2.8%	7.7%	8.6%	9.4%
Infrastructure	Simulated	10.6%	3.3%	9.3%	10.4%	11.9%
Private Equity - FOF	Simulated	15.3%	6.7%	12.6%	15.4%	18.1%



Proposed Portfolio Options

	Jun-06	Jan-07	Aug-09	Jun-11
Average Annualized 10 Yr. Return	9.37%	9.77%	9.83%	9.93%
Average Annualized 10 Yr. Volatility	15.08%	14.08%	12.05%	11.30%
Average Return/Average Volatility	0.62	0.69	0.82	0.88
25th Percentile Ann. 10 Yr. Return	5.45%	5.92%	6.69%	6.98%
50th Percentile Ann. 10 Yr. Return	9.44%	9.78%	9.90%	9.98%
75th Percentile Ann. 10 Yr. Return	13.41%	13.60%	13.05%	12.87%
Downside Probability (Return < 8%)	40.60%	37.80%	35.50%	33.40%
Downside Risk (Return < 8%)	5.78%	5.16%	4.30%	3.98%
Avg. Downside Dev. (Return < 8%)	4.46%	3.96%	3.25%	3.00%
Downside Probability (Return < 0.0%)	6.70%	5.00%	2.10%	1.50%
Downside Risk (Return < 0.0%)	4.26%	3.50%	3.45%	3.36%
Avg. Downside Dev. (Return < 0.0%)	2.99%	2.50%	2.50%	2.46%





Error bars represent the standard error of the simulated statistic.

Peer Risk Analysis

The following analysis compares the overall composition of each portfolio to the average allocations for the appropriate peer group. While allocation to each asset class is included, the analysis focuses primarily on differences in allocations to fixed income and equities, as these asset classes typically constitute the majority of each portfolio.

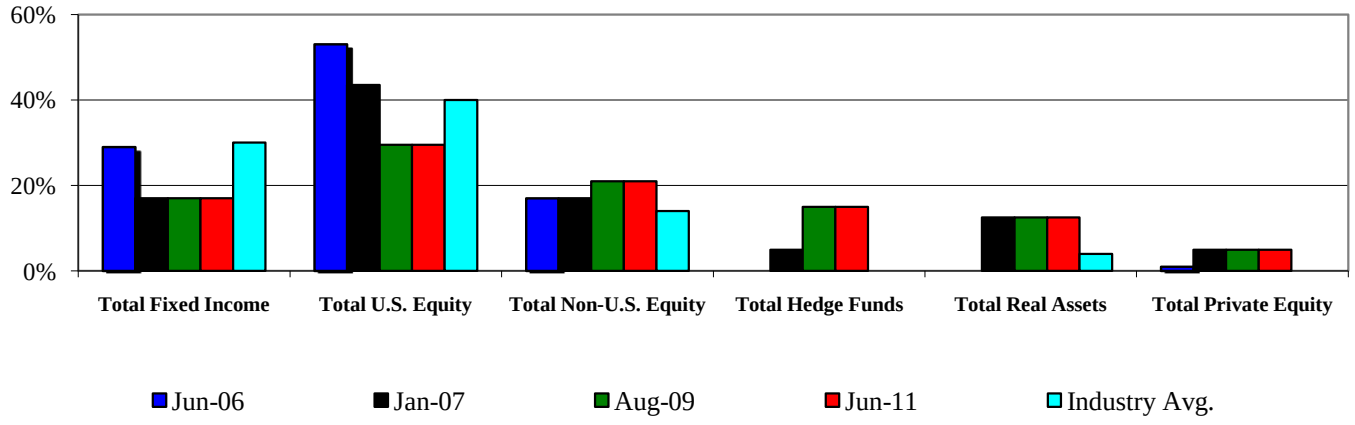
Portfolio Options Targets

Asset Class	Jun-06	Jan-07	Aug-09	Jun-11
Total Fixed Income	29.0%	17.0%	17.0%	17.0%
Total U.S. Equity	53.0%	43.5%	29.5%	29.5%
Total Non-U.S. Equity	17.0%	17.0%	21.0%	21.0%
Total Hedge Funds	0.0%	5.0%	15.0%	15.0%
Total Real Assets	0.0%	12.5%	12.5%	12.5%
Total Private Equity	1.0%	5.0%	5.0%	5.0%
Total Fund	**100.0%**	**100.0%**	**100.0%**	**100.0%**

Portfolio Options Targets Variance From the Industry Average

Asset Class	Jun-06	Jan-07	Aug-09	Jun-11
Total Fixed Income	-1.0%	-13.0%	-13.0%	-13.0%
Total U.S. Equity	13.0%	3.5%	-10.5%	-10.5%
Total Non-U.S. Equity	3.0%	3.0%	7.0%	7.0%
Total Hedge Funds	0.0%	5.0%	15.0%	15.0%
Total Real Assets	-4.0%	8.5%	8.5%	8.5%
Total Private Equity	1.0%	5.0%	5.0%	5.0%

Portfolio Options Relative to Industry

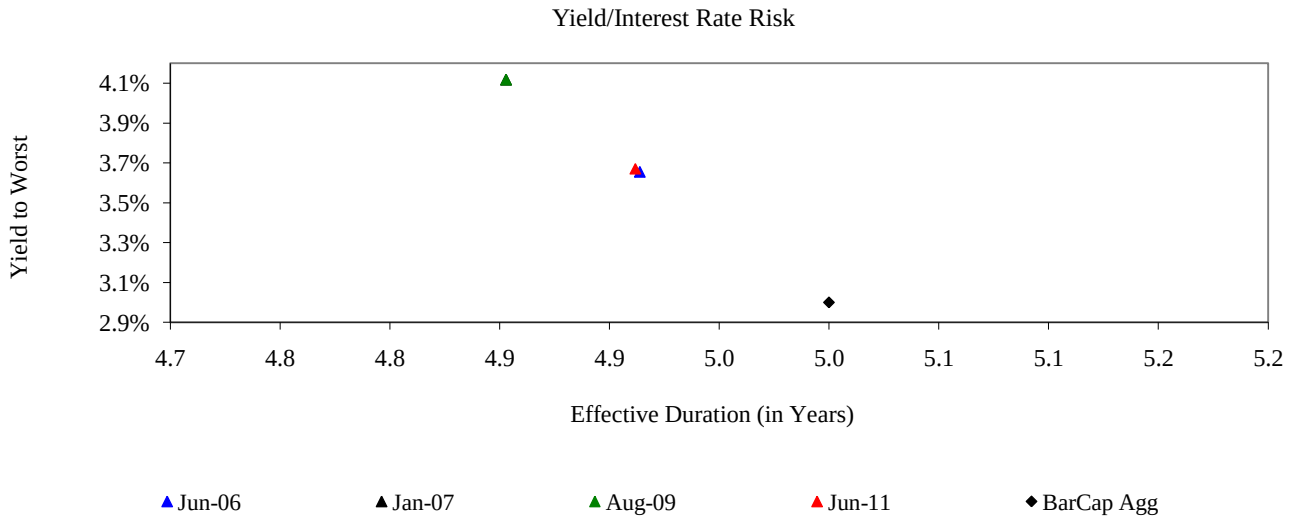


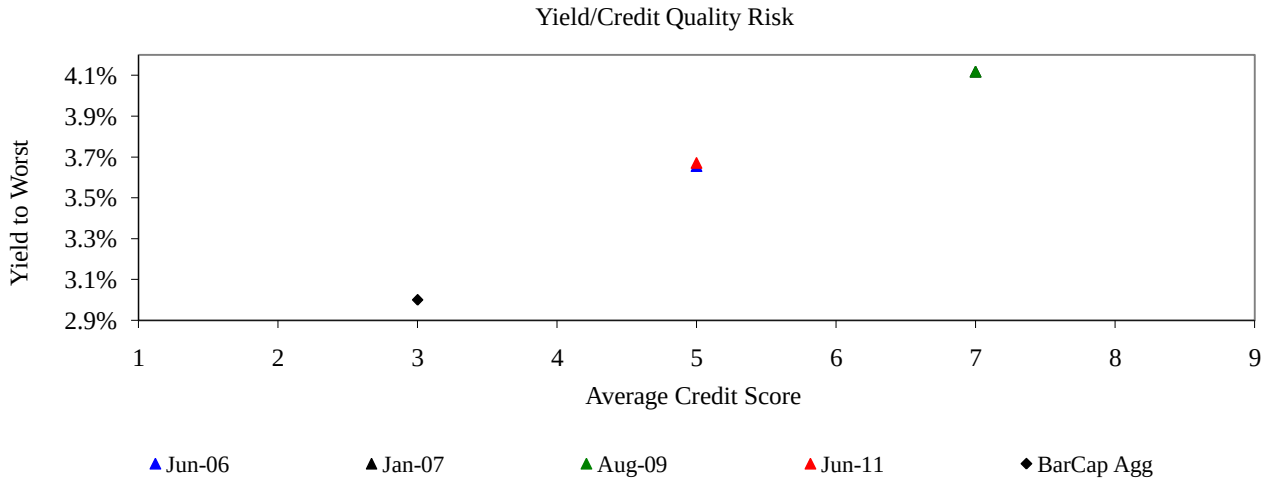
Fixed Income Structural Analysis

The following analysis compares the fixed income portions of each portfolio to the BarCap Aggregate Index, the most common benchmark used to evaluate fixed income performance. The analysis incorporates yield, duration, and credit quality and compares the composite score for each portfolio against the BarCap Aggregate Index to determine scores for interest rate risk and credit quality, as reflected on the risk scorecard.

Asset Class	Jun-06	Jan-07	Aug-09	Jun-11
Broad Fixed Income	82.8%	70.6%	70.6%	82.4%
High Yield	17.2%	29.4%	29.4%	17.6%
Total Fixed Income Allocation	**100.0%**	**100.0%**	**100.0%**	**100.0%**

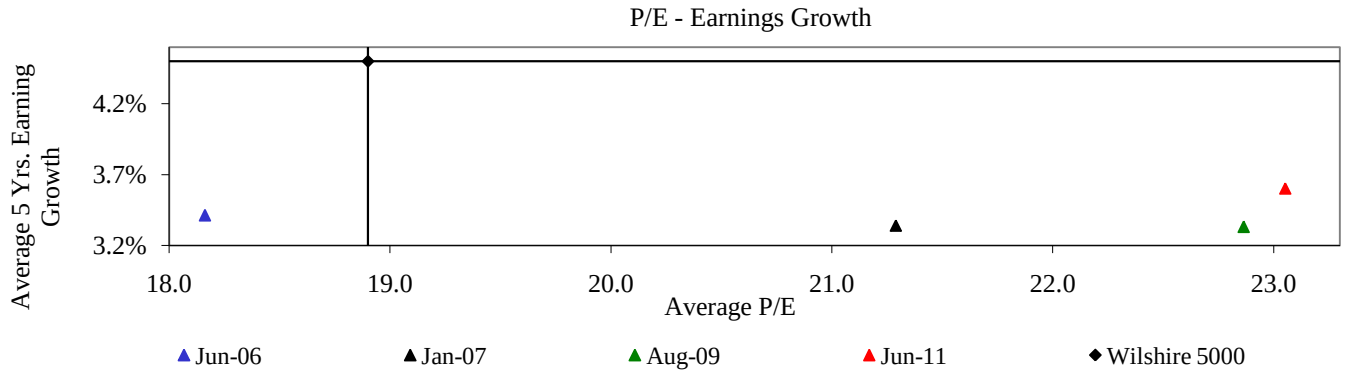
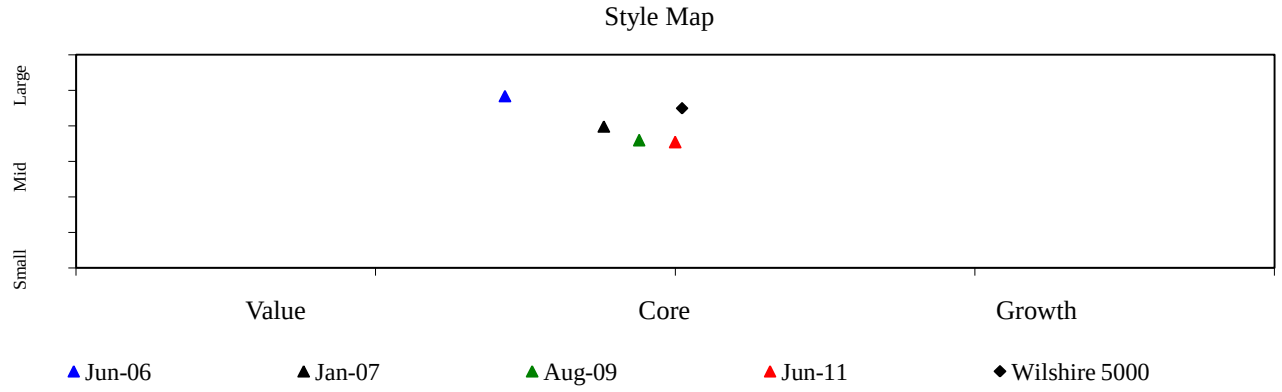
	Jun-06	Jan-07	Aug-09	Jun-11	BarCap Agg
Time to Maturity (Yrs.)	7.1	7.2	7.2	7.1	7.1
Effective Duration (Yrs.)	4.9	4.9	4.9	4.9	5.0
Yield to Worst	3.7%	4.1%	4.1%	3.7%	3.0%
Average Credit Score	5.0	7.0	7.0	5.0	3.0
Average Credit Quality	AA3	A2	A2	AA3	AA1





U.S. Equity Structural Analysis

The following analysis compares the U.S. equity portions of each portfolio to the Wilshire 5000 Index, the broadest market benchmark available to evaluate domestic equity performance. The analysis incorporates capitalization, style, five year earnings growth, and price-to-earnings ("P/E") ratios. The composite score for each portfolio is compared against the Wilshire 5000 Index to determine scores for equity style and equity valuation, as reflected on the risk scorecard.

Asset Class	Jun-06	Jan-07	Aug-09	Jun-11
Broad U.S. Equity	0.0%	41.4%	50.8%	66.1%
U.S. Large-Cap Core	83.0%	0.0%	0.0%	0.0%
U.S. Large-Cap Value	0.0%	23.0%	10.2%	0.0%
U.S. Large-Cap Growth	0.0%	12.6%	5.1%	0.0%
U.S. Mid-Cap Value	17.0%	0.0%	0.0%	0.0%
U.S. Mid-Cap Growth	0.0%	11.5%	16.9%	16.9%
U.S. Small-Cap Value	0.0%	11.5%	16.9%	16.9%
Total U.S. Equity Allocation	**100.0%**	**100.0%**	**100.0%**	**100.0%**

	Jun-06	Jan-07	Aug-09	Jun-11	Wilshire 5000
Average Capitalization ($ B)	$75.1	$59.4	$51.5	$51.4	$75.4
Equity Yield	1.9%	1.7%	1.6%	1.6%	1.9%
Average P/E	18.2	21.3	22.9	23.1	18.9
Five Yrs Earnings Growth	3.4%	3.3%	3.3%	3.6%	4.5%