



Office of the Treasurer of The Regents

University of California

UCRP and GEP Quarterly Investment Risk Report

Quarter ending September 2011

**Committee on Investments/
Investment Advisory Group**

December 12, 2011

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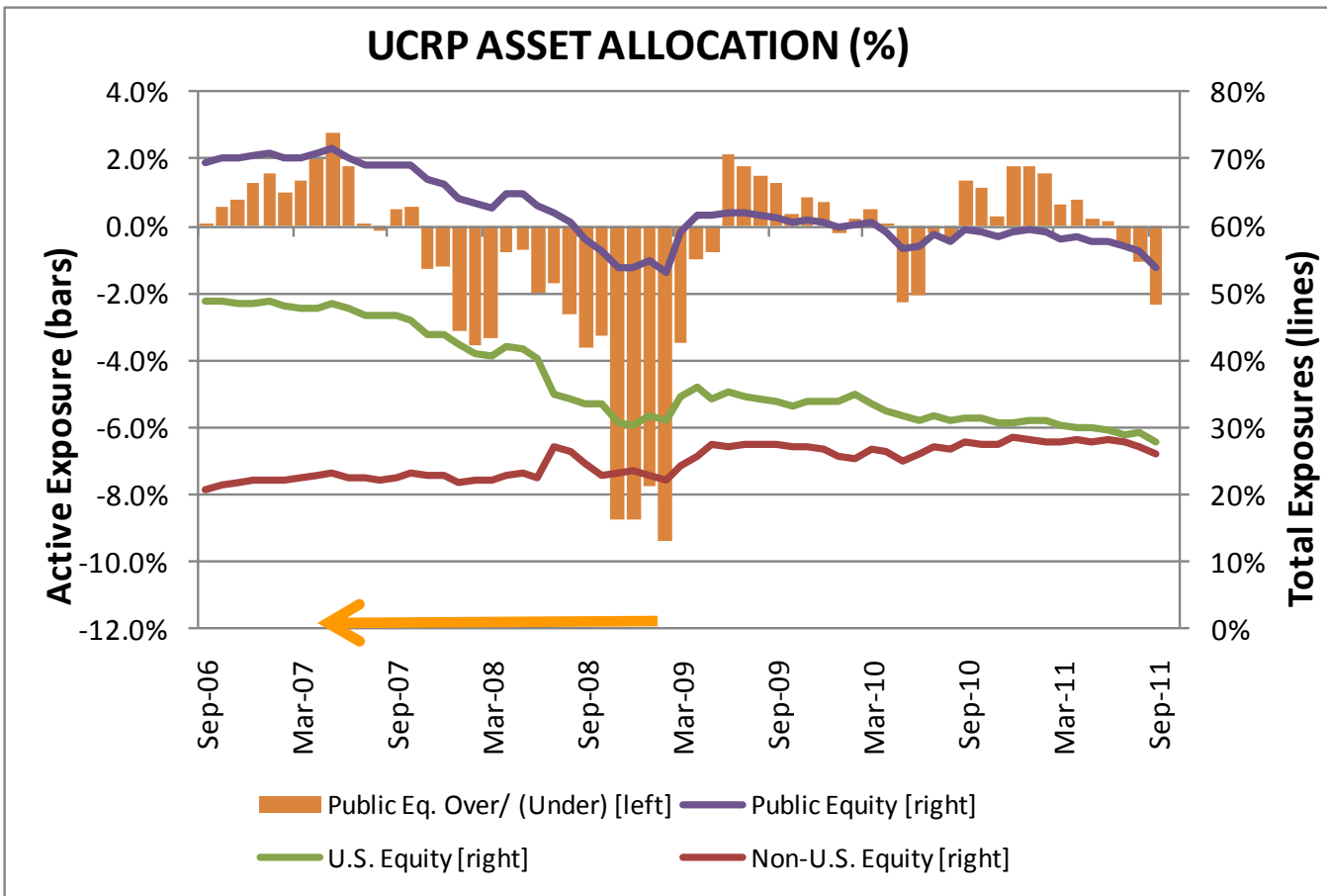


Risk Metrics for UCRP



Asset Allocation

- Total Risk is largely related to the allocation between equity and bonds
- The portfolio went from neutral to a 2% underweight in equity by the end of the quarter



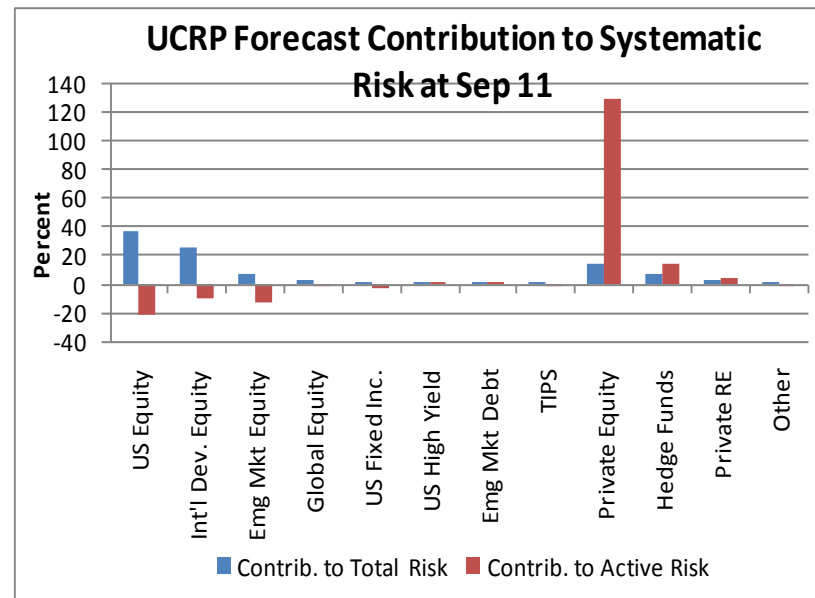
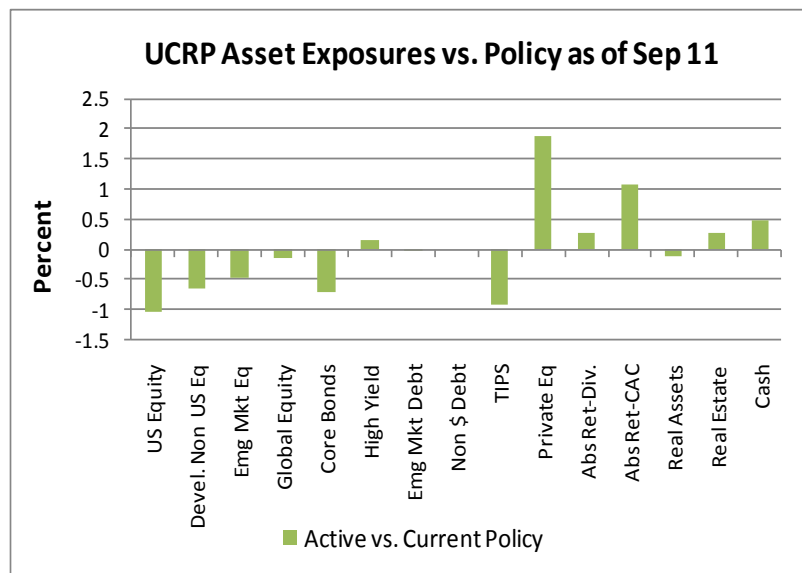
Asset Allocation and Risk

Note: Exposures and Risk charts below are shown using September 1, 2011 target asset weights. Systematic risk is estimated using long term forecasts [from Mercer Investment Consulting, July 2011], **not** recent realized volatility.

(Lower Left) Asset weights are measured relative to **Current** Policy. The fund has an underweight in Public Equity, Bonds and TIPS, and an overweight in Private equity and Cross-Asset-Class strategies.

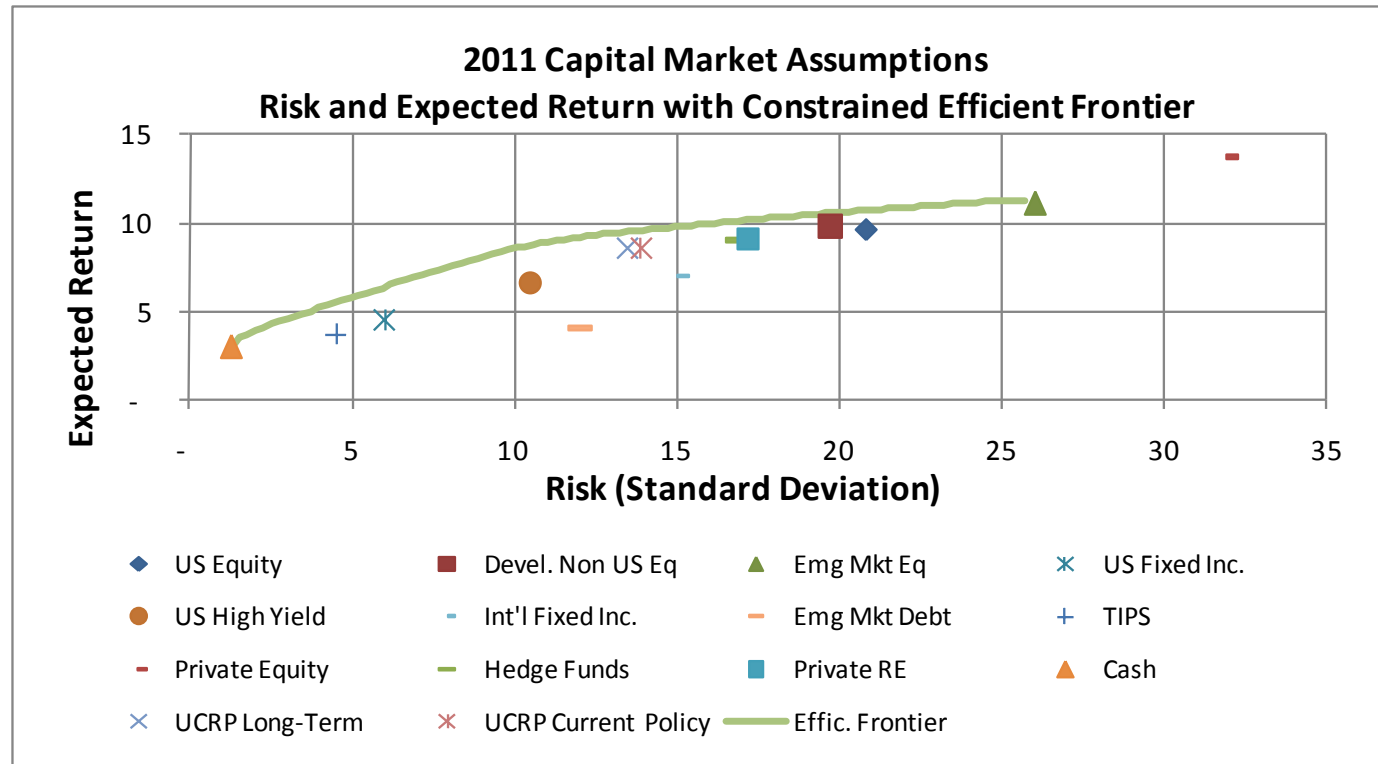
(Lower Right)

- The fund's forecast total systematic risk (blue bars) is 14.12% annualized standard deviation. It is heavily weighted to US and Non-US developed equity (63% of total).
- Forecast active systematic risk is up slightly at 39 bp. The Private equity overweight accounted for over 100% of this amount (red bars).



Expected Risk and Return

Forecast risk and return (using Mercer's July 2011 capital markets assumptions) lies near the constrained efficient frontier; long-term forecast return of the current policy allocation of 7.6%* is close to the actuarially required return of 7.5%.



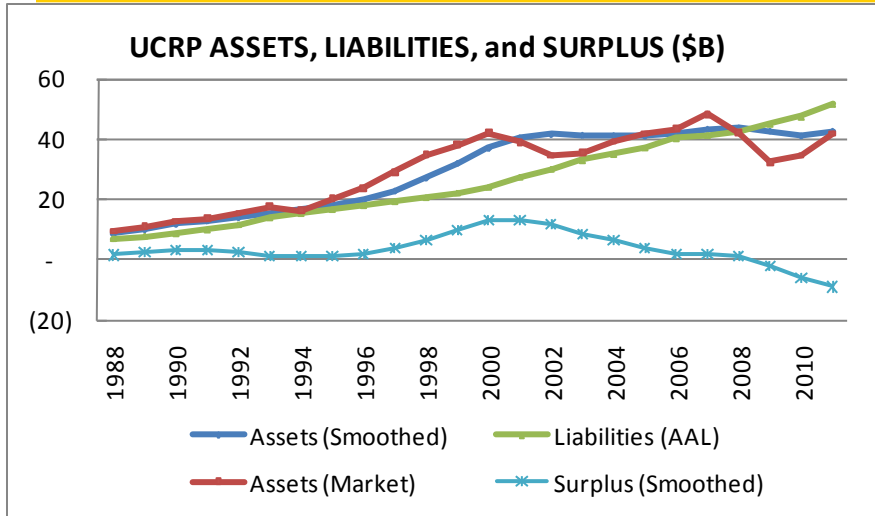
*Asset Class returns and efficient frontiers are shown in the chart as arithmetic (i.e., average) expected returns.

The projected compound annual return over multi-year horizon is 7.6% for the **Current Policy** weights.

Forecast volatility of the current policy is 14.0%.

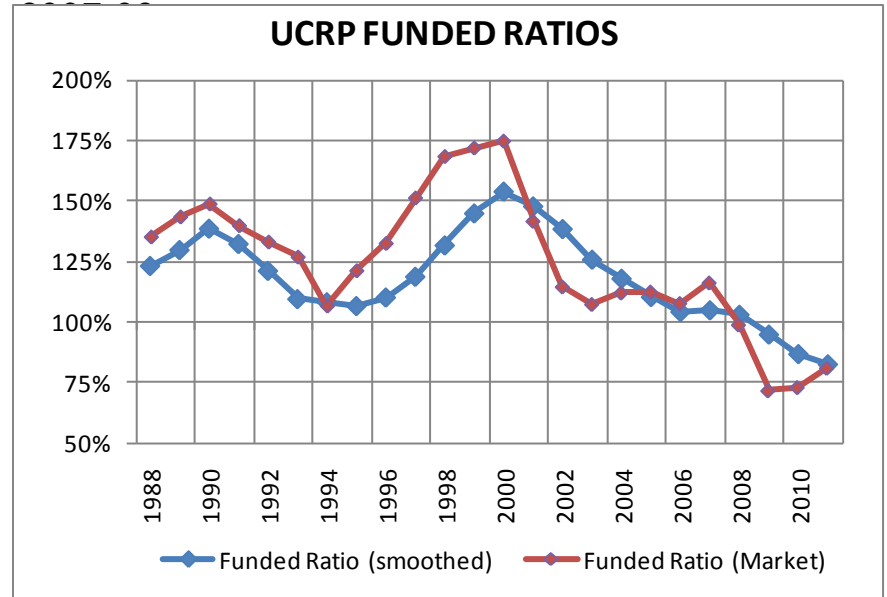
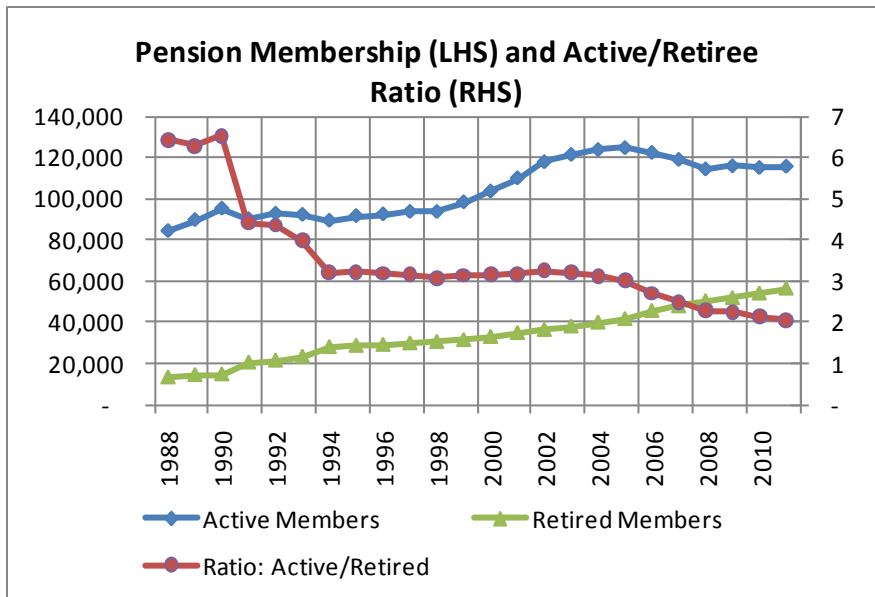


Historical Funded Status



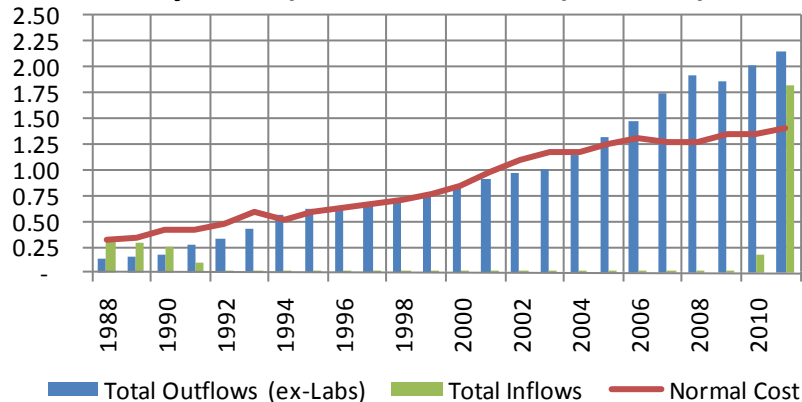
The Pension Fund's liabilities have been growing steadily (**upper left**) with University employment, while the assets have grown (and fallen) with the equity markets. The ratio of actives to retirees has recently fallen from 3x to 2x (**lower left**).

The Funded Ratio (= the ratio of assets to liabilities), is an overall metric of the financial health of a pension plan. This ratio has fluctuated considerably over the past (**lower right**), and has recently fallen below 100% with the bear market of



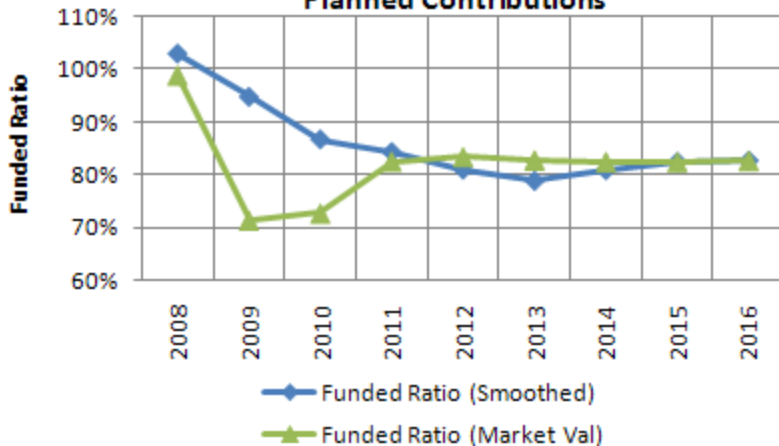
Forecast Funded Status

UCRP Cash Flows (Contributions, Benefit Payments) vs. Normal Cost (\$ Billion)

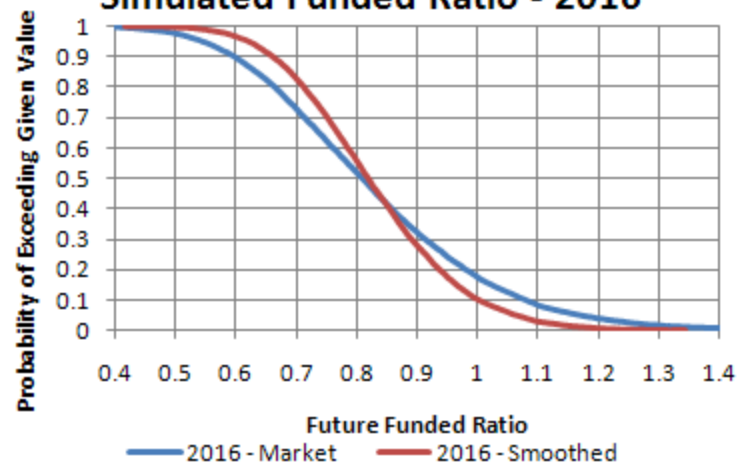


- Contributions were reinstated in 2010 after a pension “holiday” that began in 1990. Annual benefit payments have grown in line with and recently exceeded, Normal Cost over the last decade (**upper left**).
- The **bottom** charts show projected funded ratio with planned contributions. On the left is a static forecast assuming a **constant 7.5% investment return beginning FY 2012**. On the right is a simulation of a **variable rate of return**. It indicates that the probability of reaching full funding (ratio = 1.0) by 2016 is below 20%. [These projections and simulations are approximations only, developed by Treasurer’s Office, not Segal Co.]

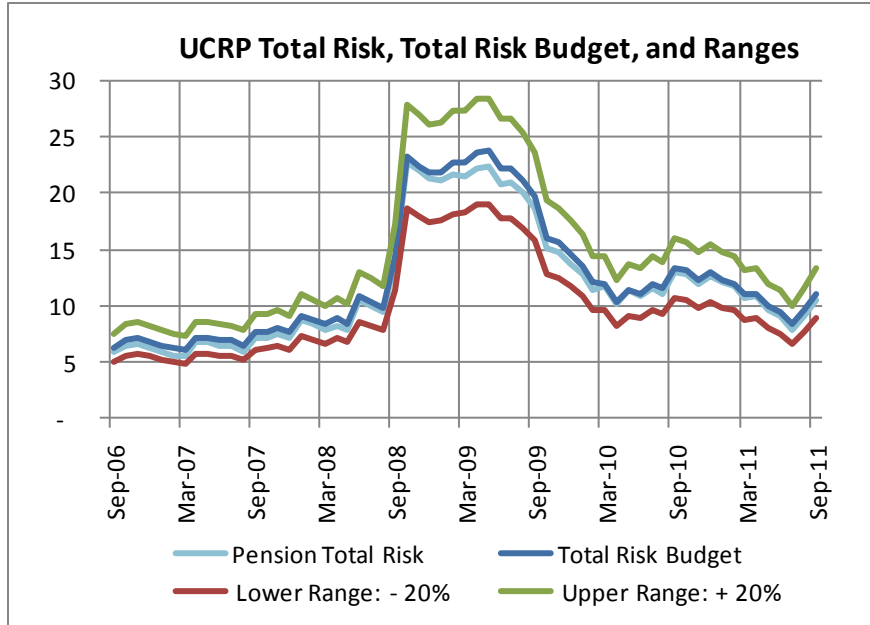
UC Pension Projections (Treasurer’s Office) with Planned Contributions



Simulated Funded Ratio - 2016



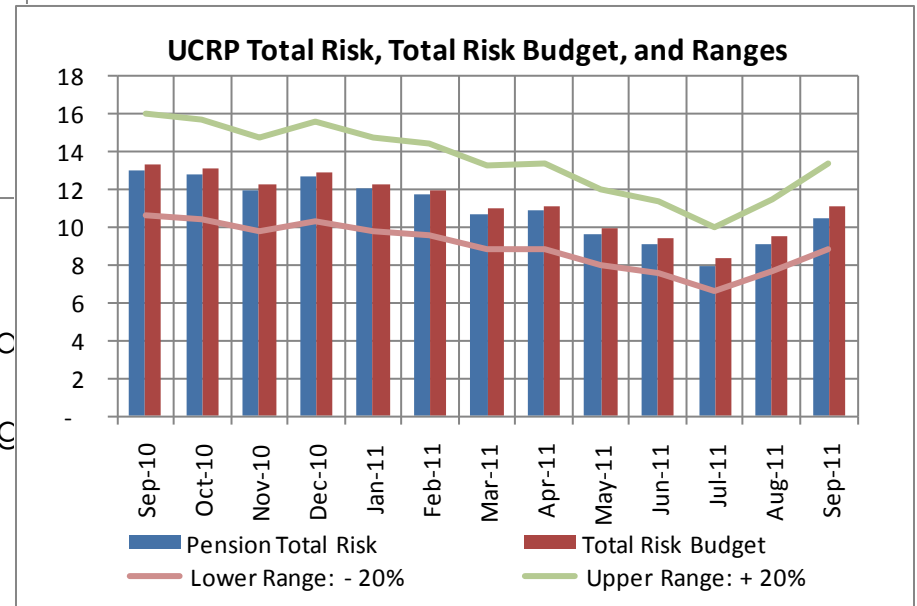
Risk Measures: Total



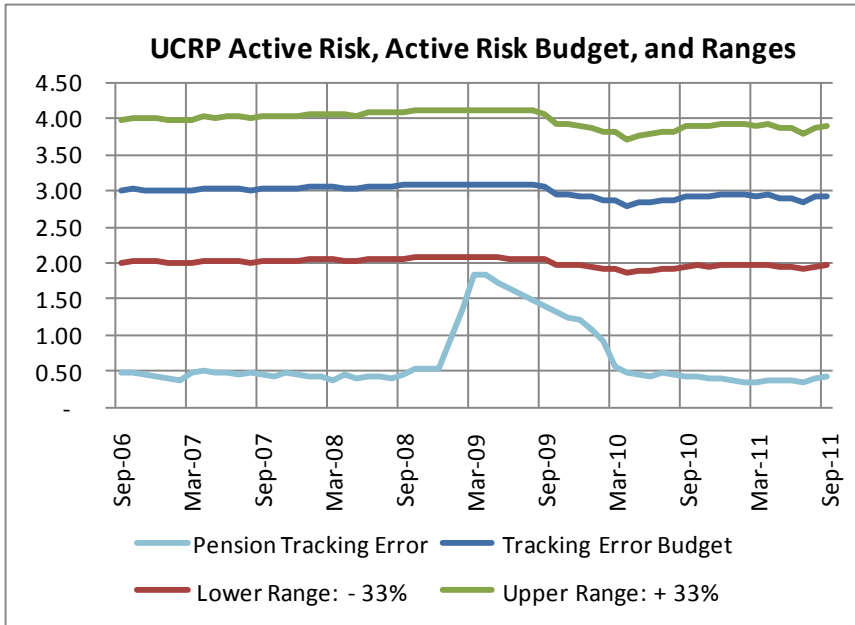
Total risk trend is quite similar to the benchmark; recently Plan volatility has been slightly less than the Budget, but well within ranges. Total volatility has resumed a historically normal range, higher than the mid 2000's but lower than the 2008-09 crash.

Total Risk budget equals Benchmark risk plus the Active risk budget. The ranges are +/- 20% around the budget.

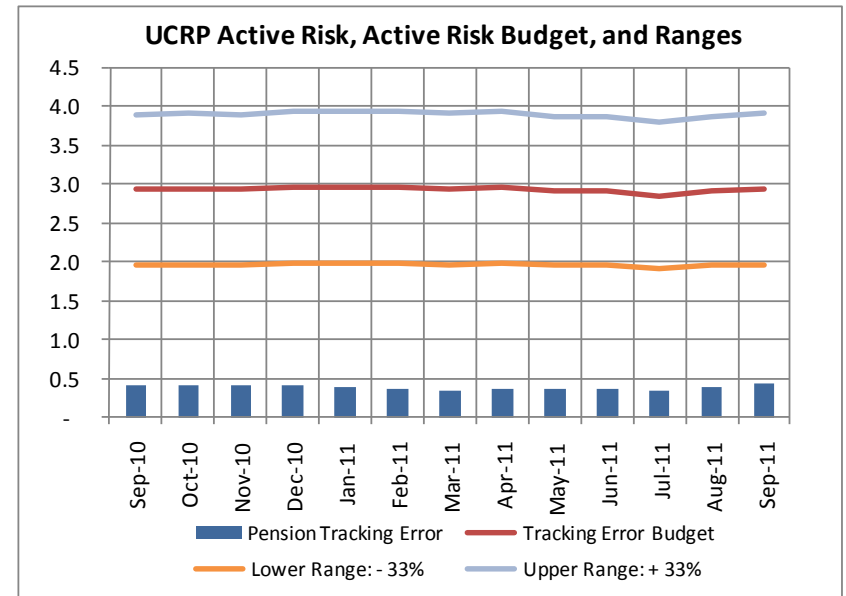
Risk is measured by standard deviation of monthly **total** returns; each point or bar shows a 12 month measurement period. All risk calculations done using exponentially declining weights. (This and following charts show risk budgets as if they had been in place during entire historical period.)



Risk Measures: Active



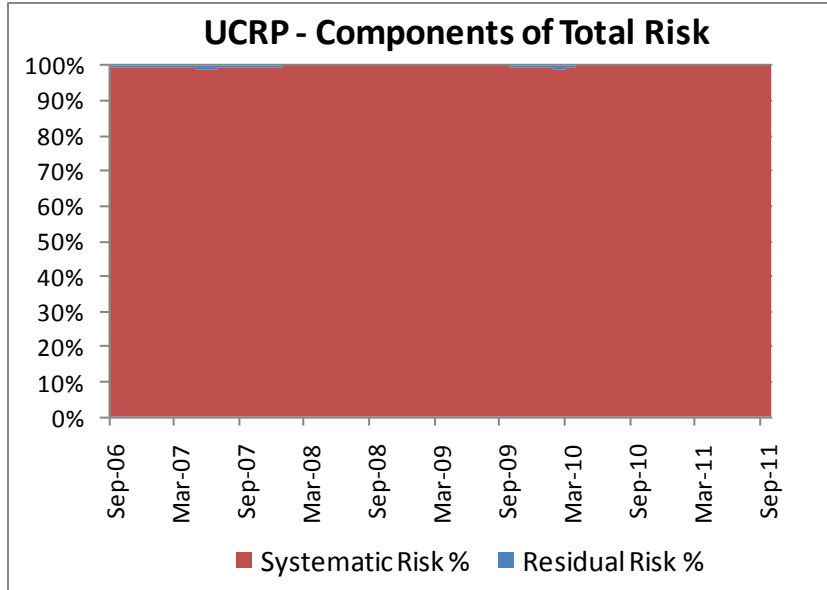
The spike in Active Risk in Q1 09 resulted from the underweight in equity as the market fell and then rallied, plus higher equity volatility. Active risk has currently resumed its low level of the mid 2000's (about 0.50% annualized standard deviation). It is still well below long term expectations for active return, but is well diversified.



The Active risk budget is 3% annualized Tracking Error (adjusted for market volatility), with ranges of +/- 1 pct. point around Budget

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Risk Attribution

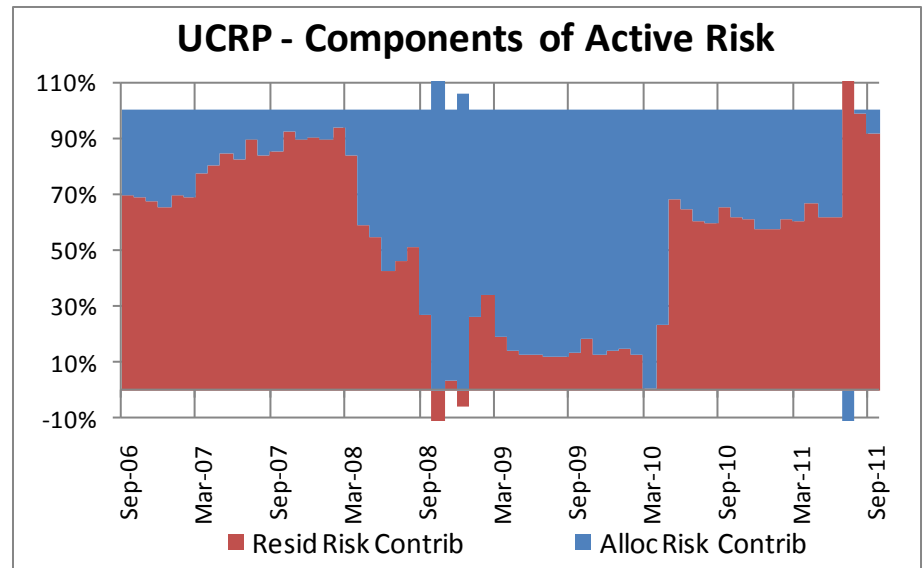


(Upper Left) Virtually all of **Total Risk** is attributed to systematic (market) factors (red bars).

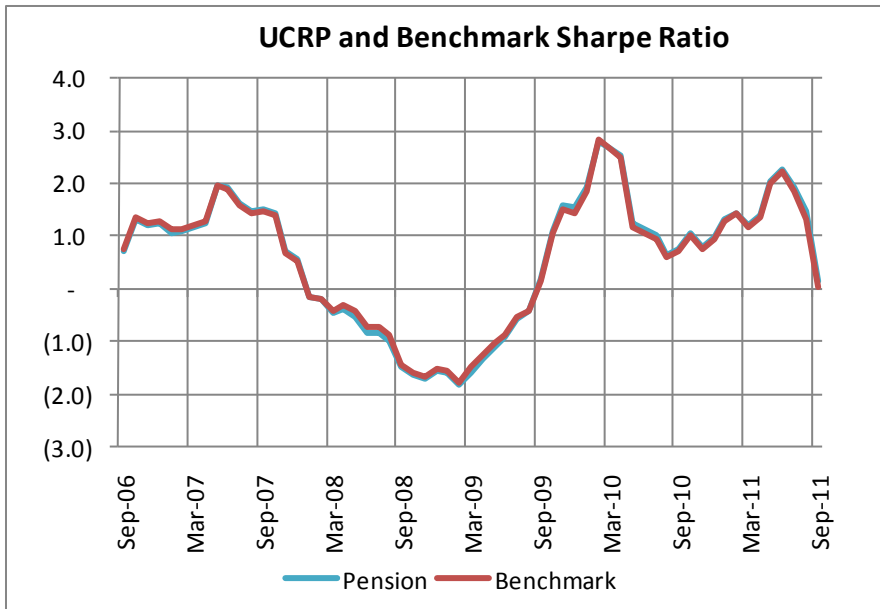
(Lower Right) Normally, the majority of **Active Risk** is attributed to security selection. When asset allocation transitions are implemented, allocation risk increases. During the market turmoil, the equity over / underweight dominated all other decisions, but for the past 6 quarters residual risk is resuming its normal contribution. In the last quarter, residual risk accounted for all of active risk.

Risk is measured here by variance (standard deviation squared) of monthly returns; each bar shows a 12 month measurement period

Systematic Risk is associated with benchmark exposures; residual risk is associated with non benchmark decisions (security selection)

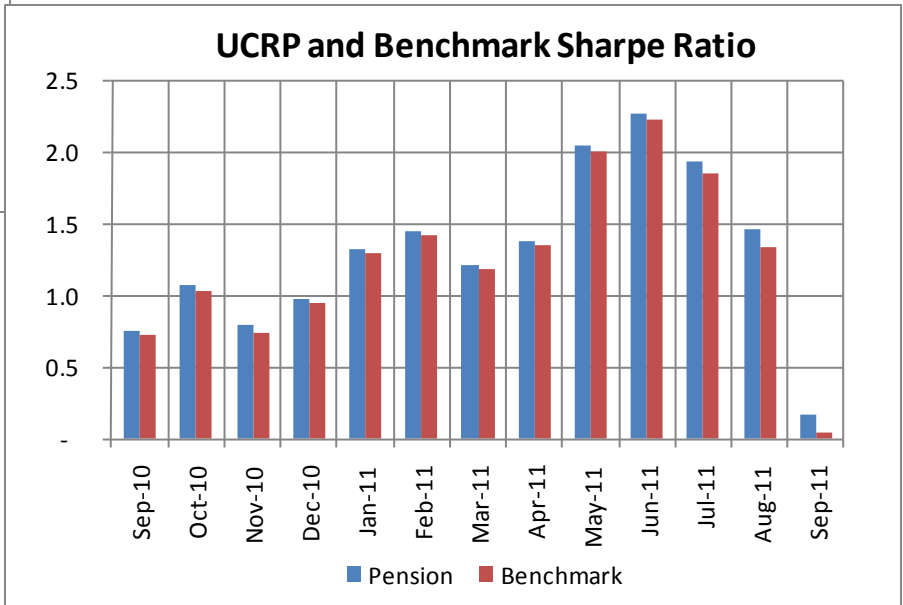


Risk Adjusted Return: Total

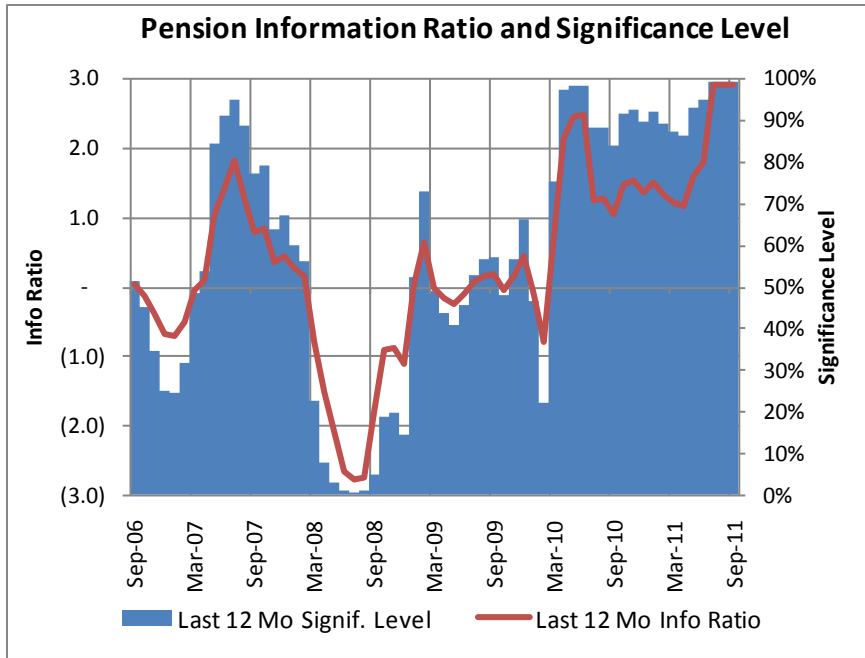


Sharpe Ratio (risk adjusted total return) trend has been quite similar to the benchmark for the past 5 years. The 12 month return on risky assets had been positive since 2009 but fell to zero by quarter end.

Sharpe ratio is “excess” return (total return less risk-free rate) divided by total risk; each point or bar shows a 12 month measurement period. All risk calculations done using exponentially declining weights.

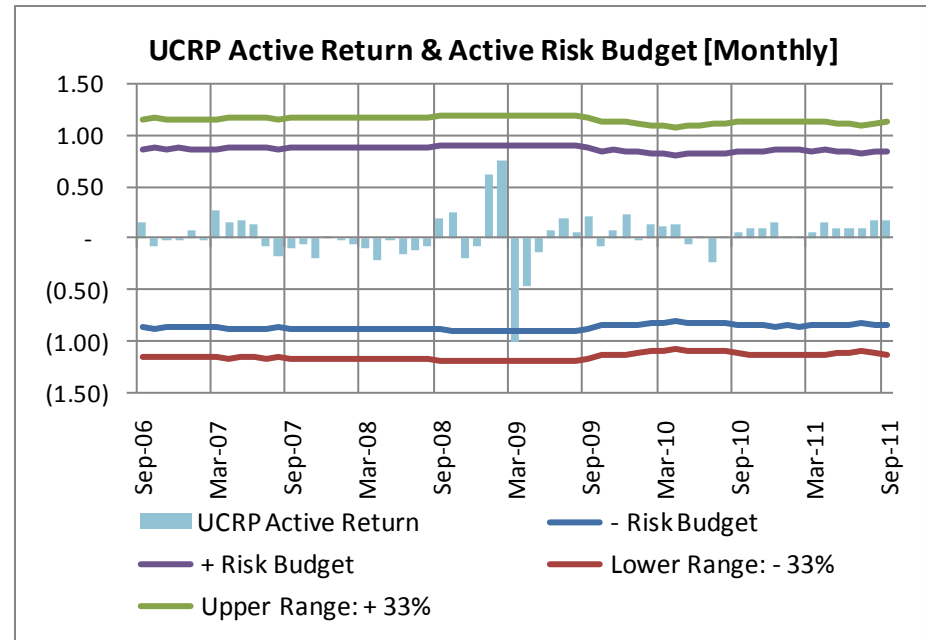


Risk Adjusted Return: Active



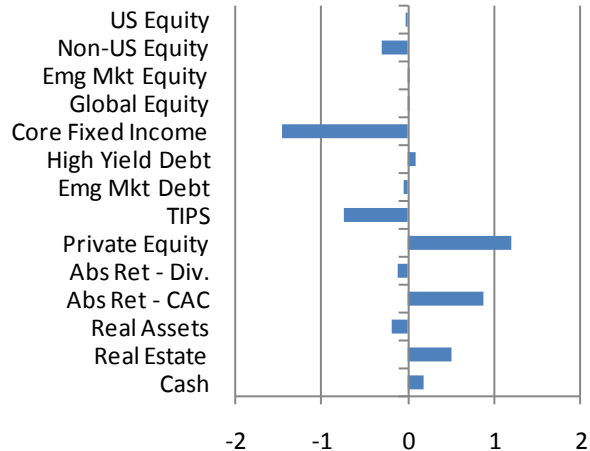
Information ratio (risk adjusted active return) is the result of both asset weighting decisions and active performance. It is higher when the returns are positive and more consistent (less volatile). The Info. ratio has been positive for the past 6 quarters; from the graph below, active returns for the past 9 quarters have been small but positive.

Information ratio is active return (total return less benchmark) divided by active risk; each point shows a 12 month measurement period. The Significance level is the probability that results are due to skill, with 50% being a neutral measure. All risk calculations done using exponentially declining weights.



Performance Attribution

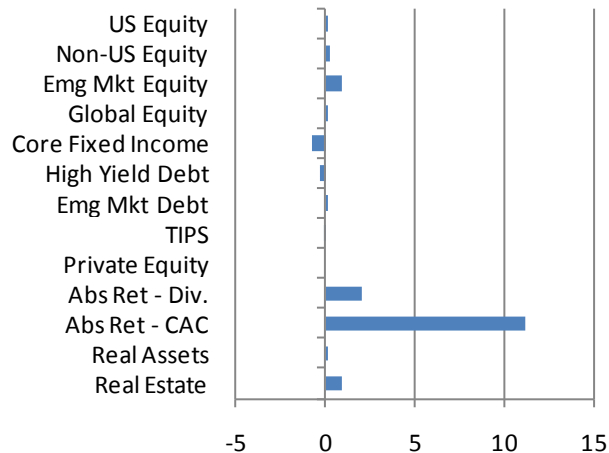
Avg. Active Weight



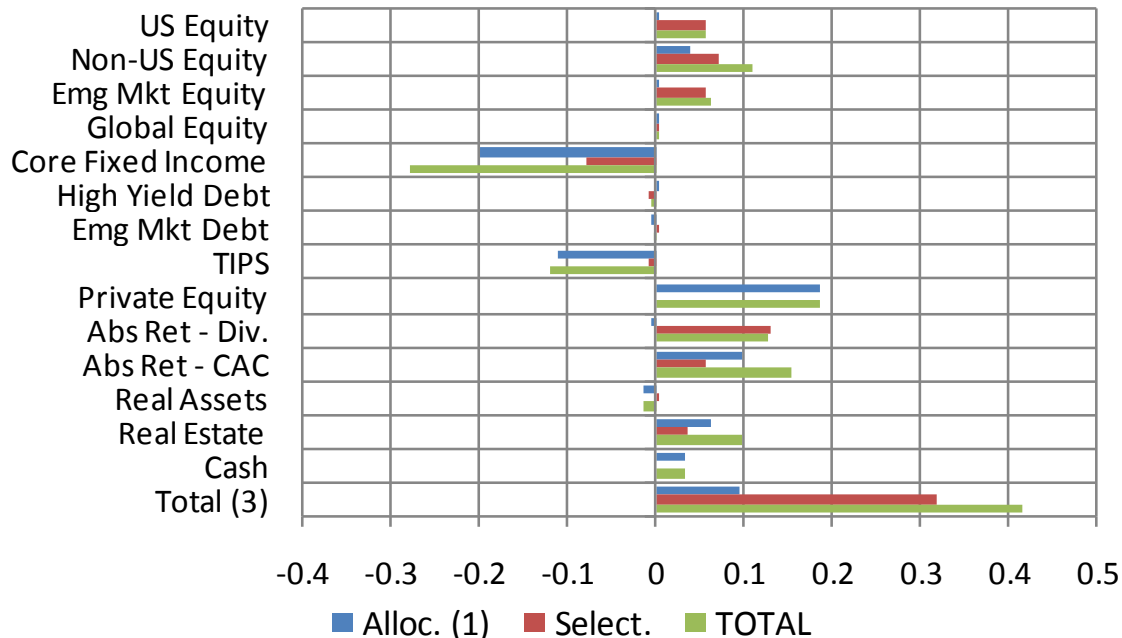
Active Return for the Quarter was +0.41% (Fund return of -9.58% vs. policy benchmark of -9.99%).

[BELOW] Asset allocation decisions (**blue bars**) added 0.09% (PE and CAC overweight offset by core bond and TIPS underweight). Security selection decisions (**red bars**) added 0.32% (primarily Absolute Returns, CAC and public equity)

Avg. Active Return



UCRP Attribution for 3 mo. ending Sep-30-11

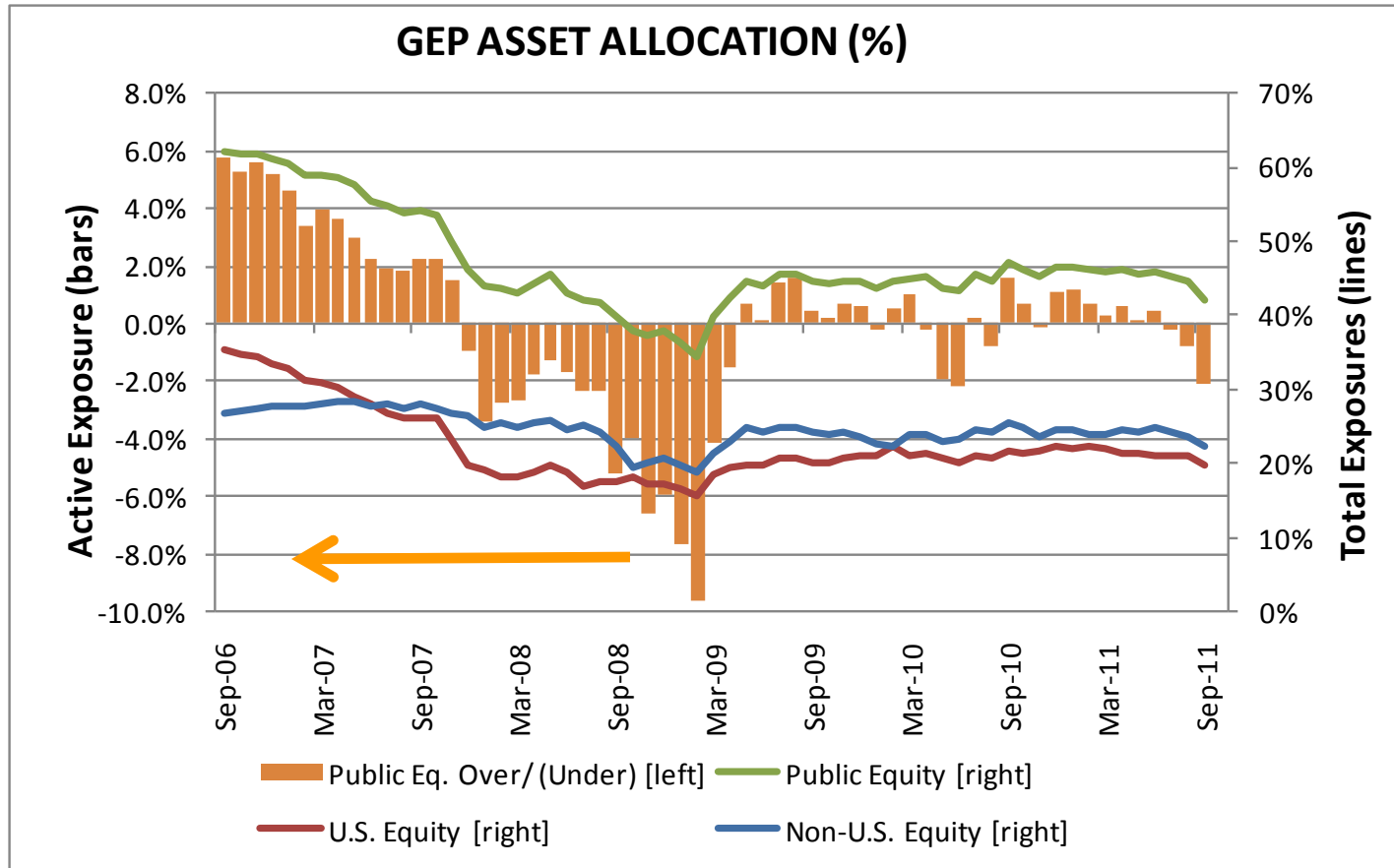


Risk Metrics for GEP



Asset Allocation

- Total Risk is largely related to the allocation between equity and bonds
- The portfolio went from neutral to a 2% underweight in equity by the end of the quarter

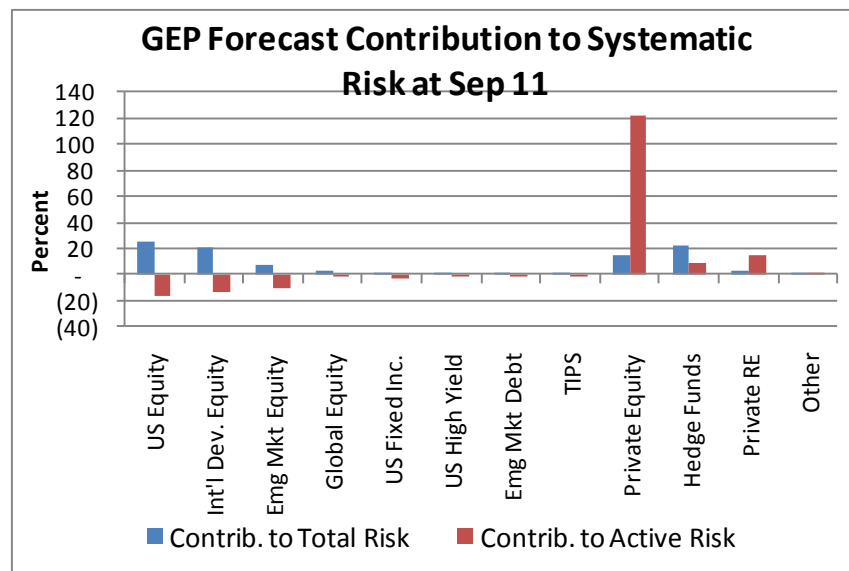
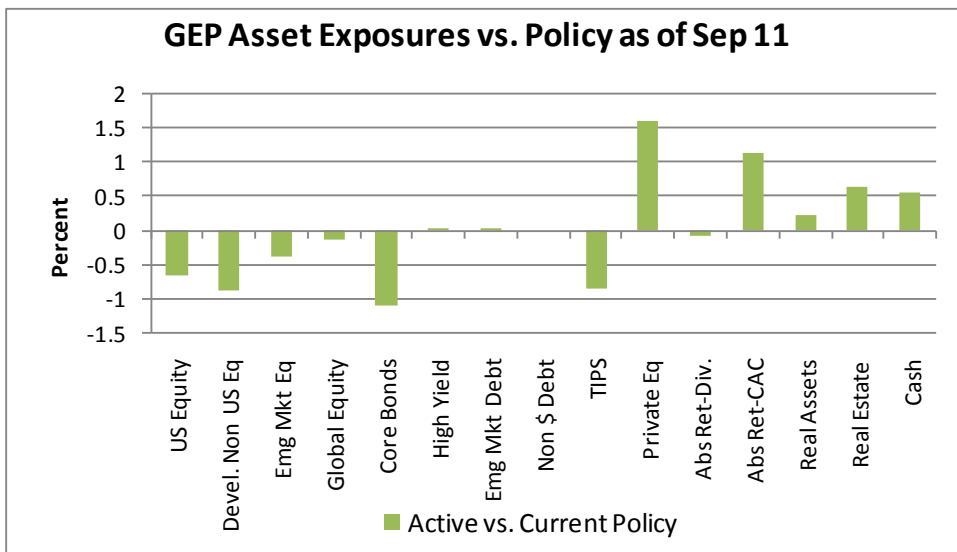


Asset Allocation and Risk

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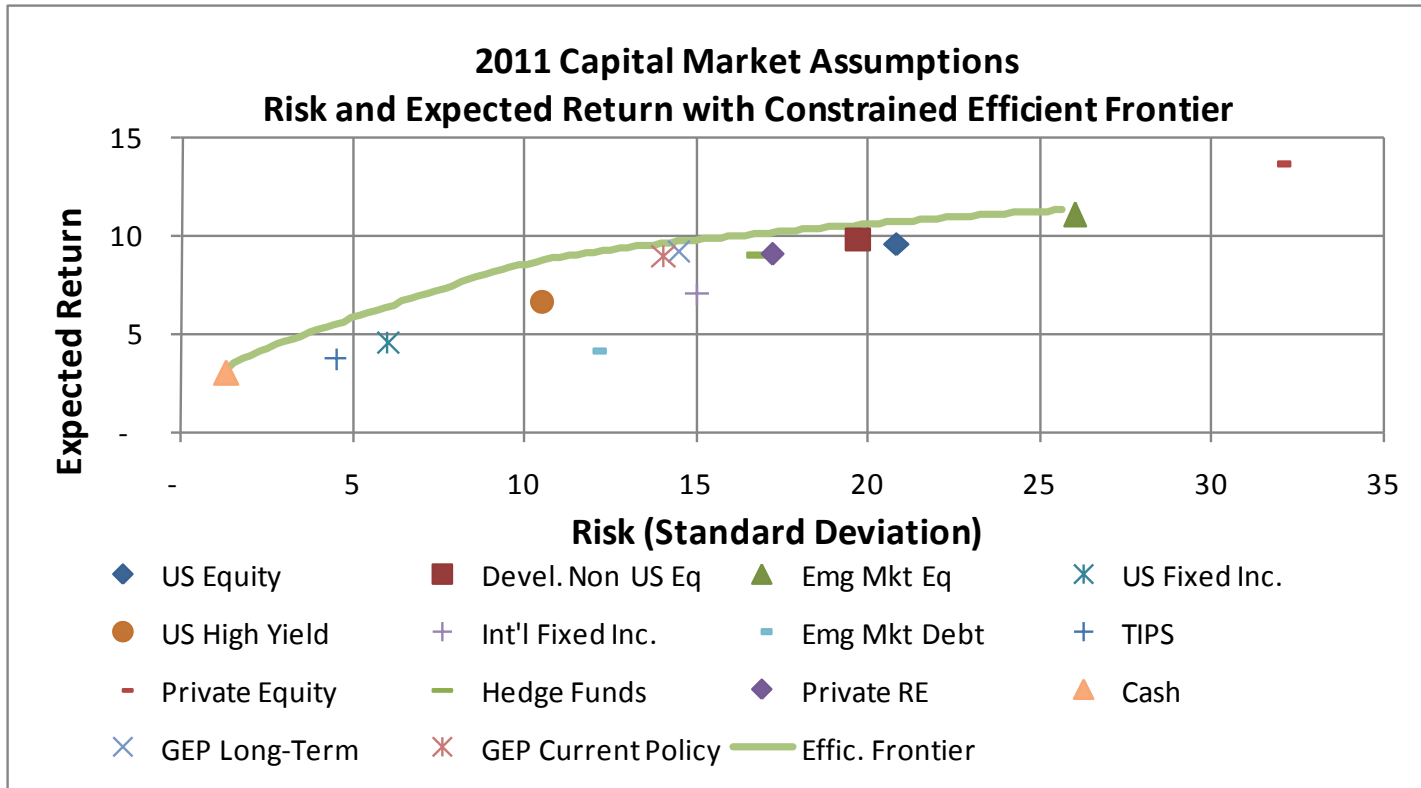
(Lower Left) Asset weights are measured relative to Current Policy. The fund is overweight in Private equity and Cross-Asset-Class strategies, and underweight in public equity, Core Bonds and TIPS.

(Lower Right) The fund's forecast **total systematic risk** (blue bars) is 14.24% annualized standard deviation. It is evenly balanced among US equity, Non US developed equity, Private Equity, and Absolute Return (84% of total). Forecast **active systematic risk** is up slightly at 36 bp. The Private equity overweight accounted for Over 100% of active risk (red bars).



Expected Risk and Return

Forecast risk and return (using Mercer's July 2011 capital markets assumptions) lies near the constrained efficient frontier; forecast return of the current policy mix of 8.0%* is close to the nominal return needed to maintain a constant real payout per student (estimated at 8.5%)

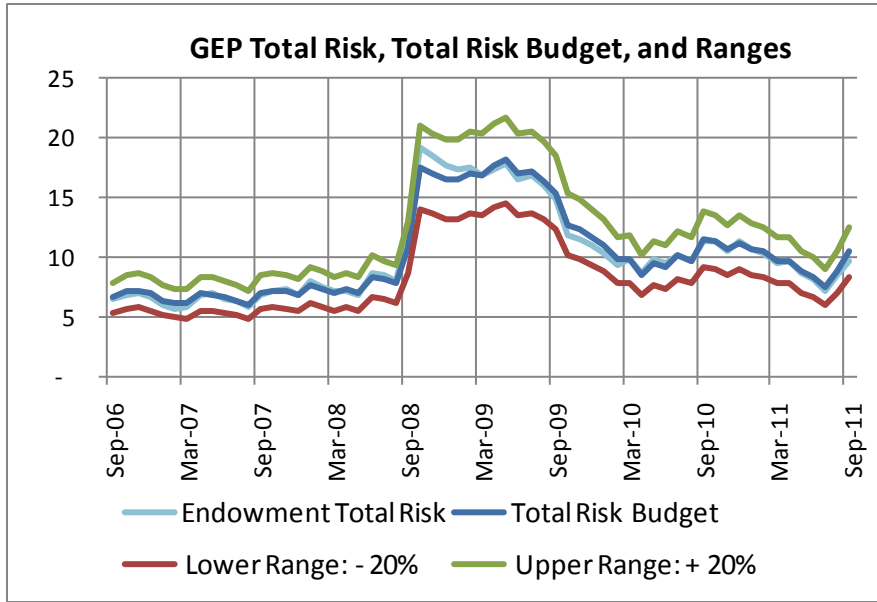


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The projected compound annual return over multi year horizon is 8.0% for the **Current Policy** weights.

Forecast volatility is 14.1%.

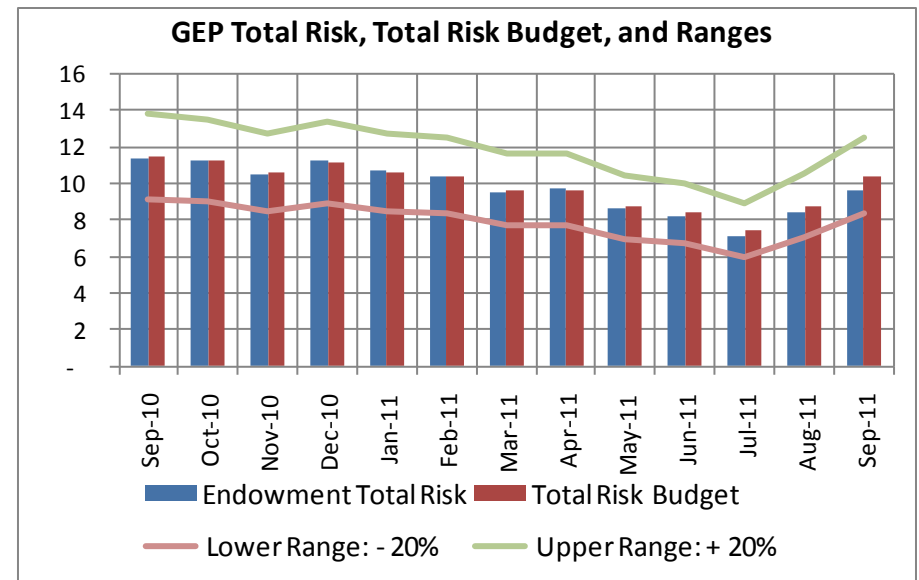
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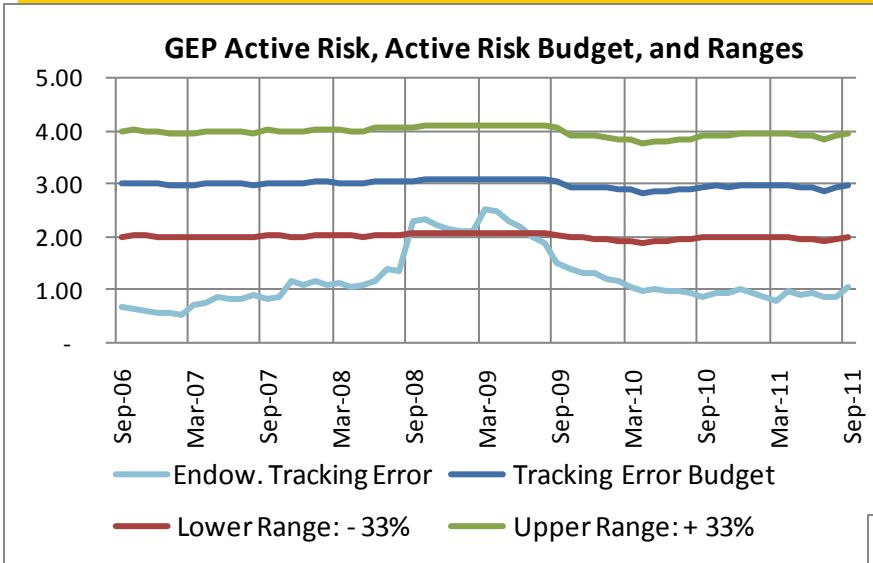
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Risk Measures: Active

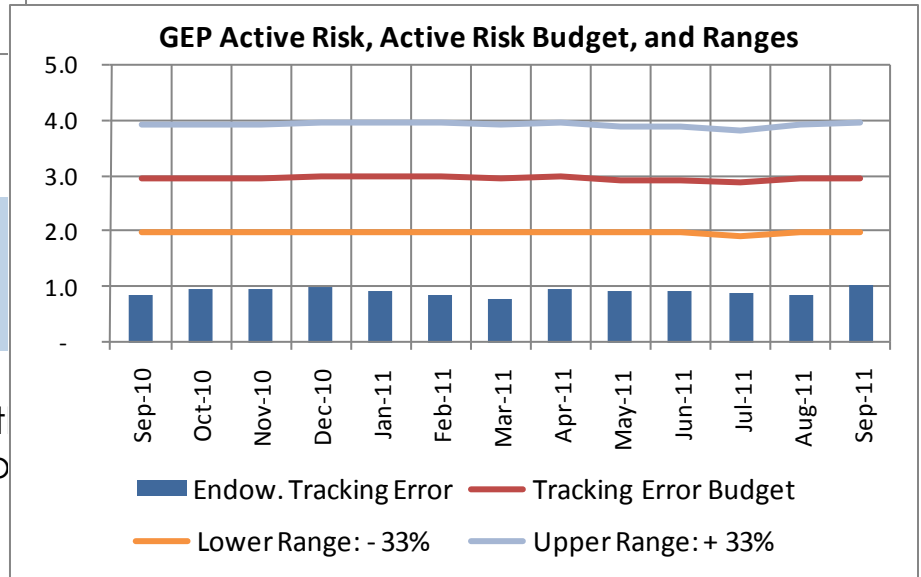


The spike in Active Risk in Q1 09 resulted from the underweight in equity as the market fell and then rallied, plus higher equity volatility.

Active risk has resumed its low level of the mid 2000's (about 1.0%), but is still well below long-term expectations for active return, and is well diversified.

The Active risk budget is 3.0% annualized Tracking Error (adj. for market volatility), with ranges of +/- 1 pct. point around Budget

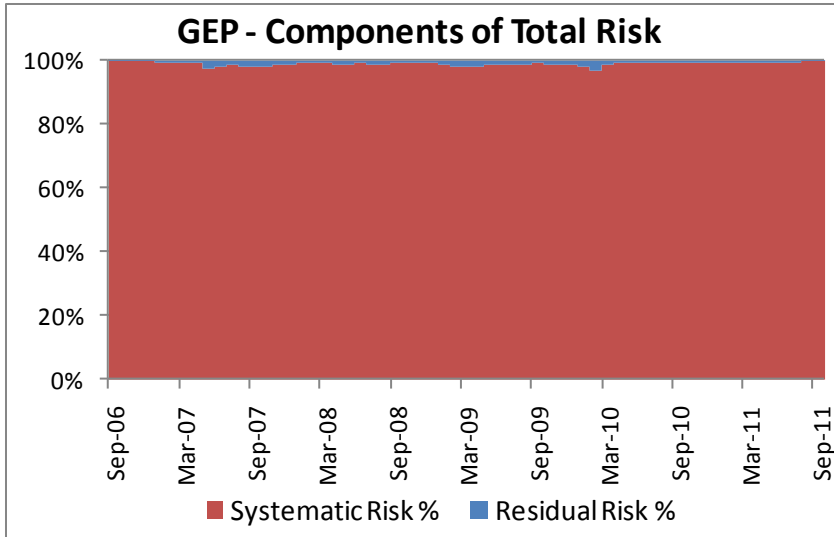
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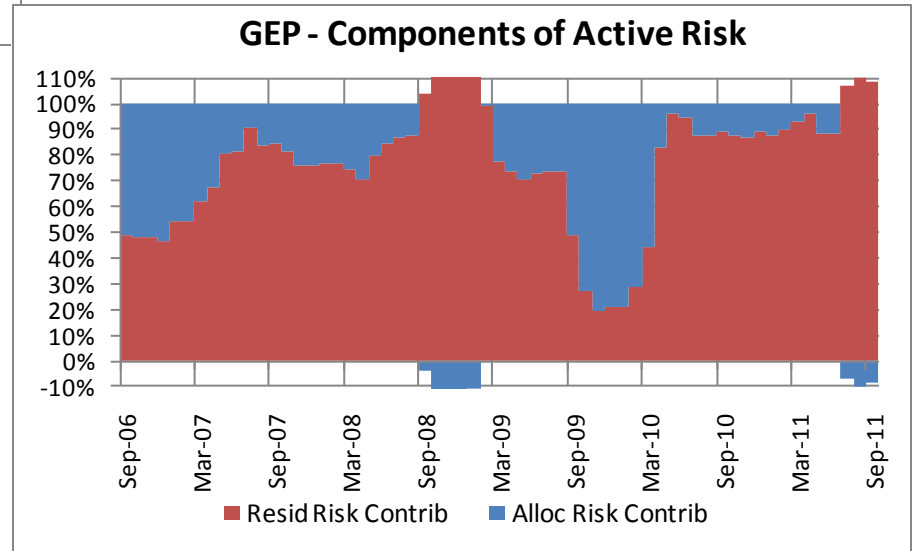
Risk Attribution

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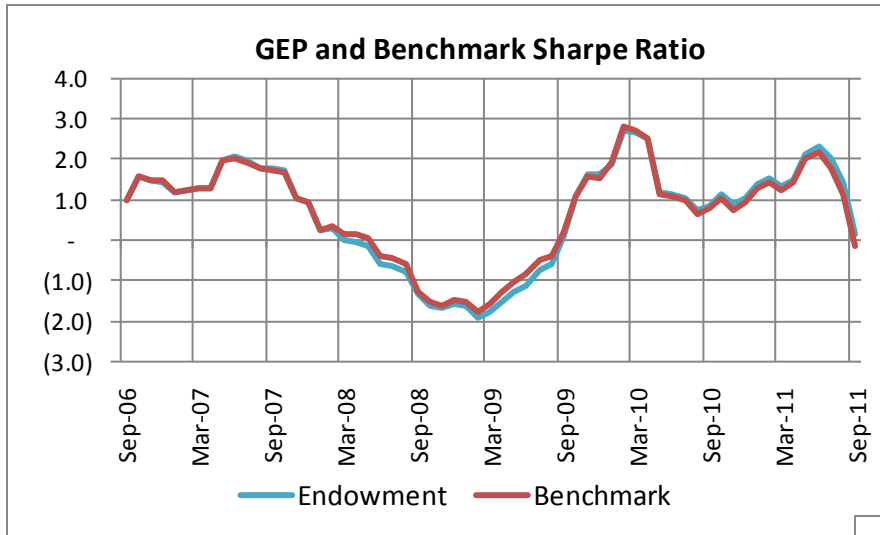
(Lower Right) Normally, the majority of **Active Risk** is attributed to security selection. When asset allocation transitions are implemented, allocation risk tends to dominate. In late 2009, the equity overweight dominated all other active decisions. For the past 18 months, residual risk has resumed its normal contribution level.



Risk is measured here by variance (standard deviation squared) of monthly returns; each bar shows a 12 month measurement period. Systematic risk is associated with benchmark exposures; residual risk is associated with non benchmark decisions (security selection)

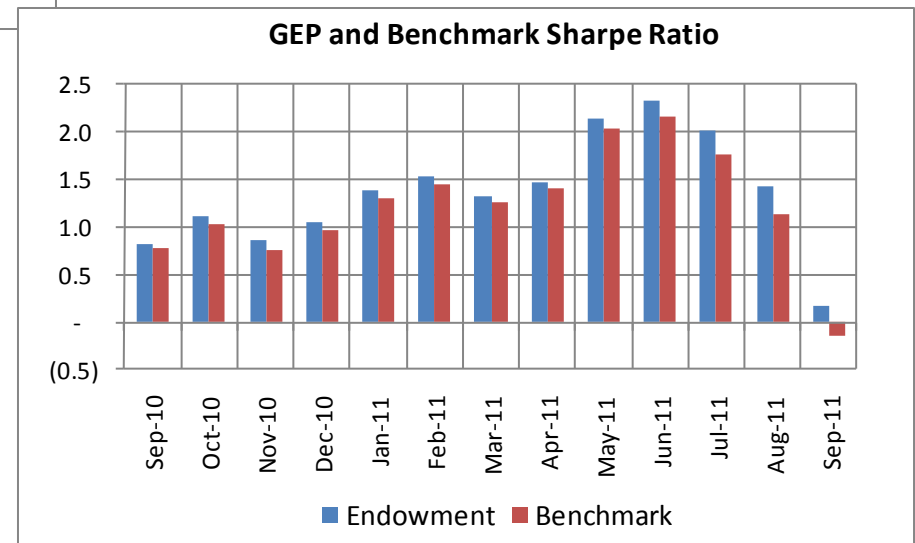


Risk Adjusted Return: Total

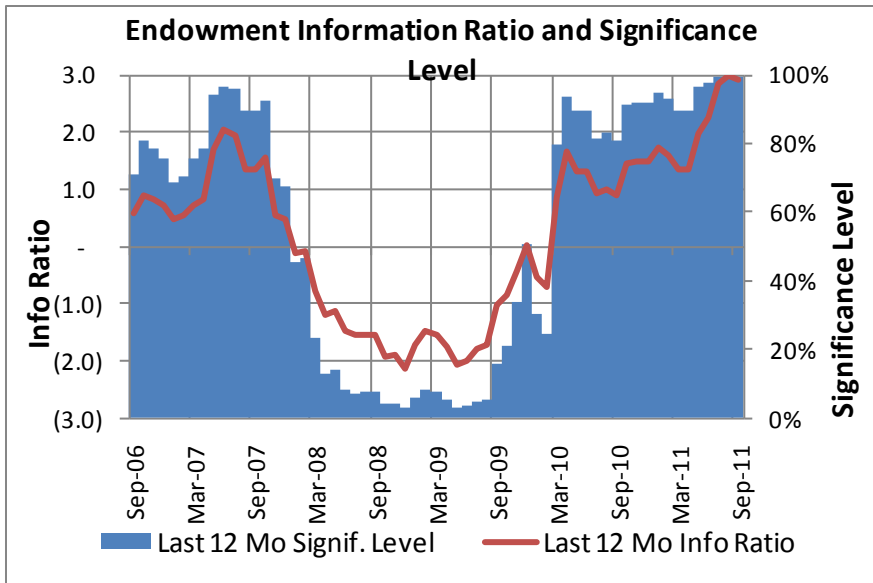


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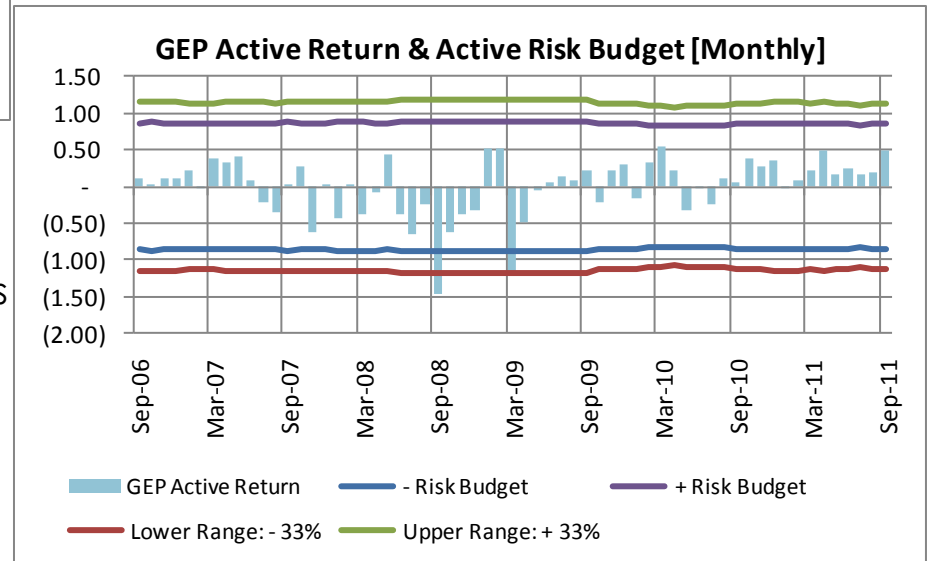


Risk Adjusted Return: Active



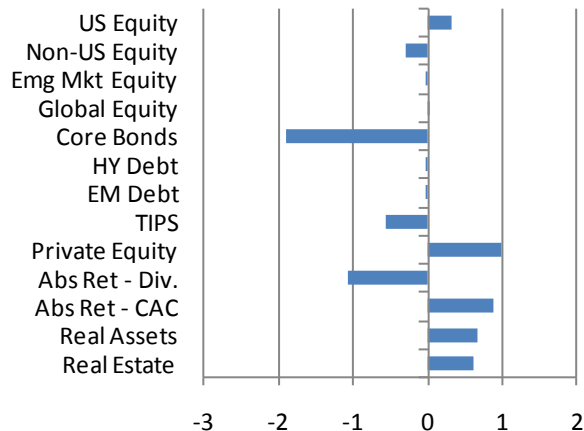
Information ratio (risk adjusted active return) is the result of both asset weighting decisions and active equity and bond performance. It is higher when the returns are more consistent (less volatile). The information ratio has been positive for the past 6 quarters; active return has been small but on average, positive in the past 10 quarters.

Information ratio is active return (total return less benchmark) divided by active risk; each point shows a 12 month measurement period. The Significance level is the probability that results are due to skill, with 50% being a neutral measure. All risk calculations done using exponentially declining weights.

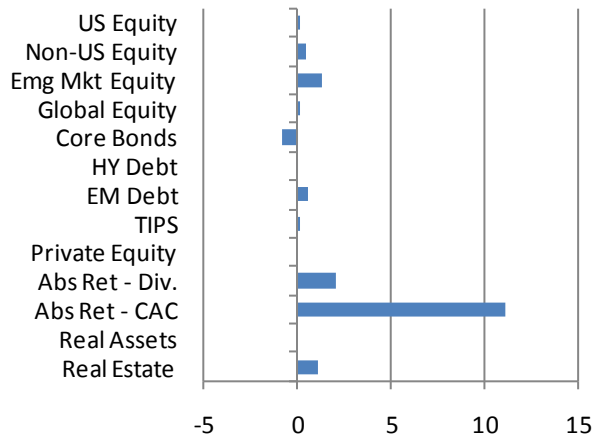


Performance Attribution

Avg. Active Weight



Avg. Active Return



Active Return for the Quarter was +0.78% (Fund return of -8.80% vs. policy benchmark of -9.58%).

[BELOW] Asset allocation decisions (**blue bars**) added 0.03%. Security selection decisions (**red bars**) added 0.76% (0.51% from Absolute Returns and 0.18% from Public Equity).

GEP Attribution for 3 mo. ending Sep-30-11

