UNIVERSITY OF CALIFORNIA
Office of the Treasurer

# 601 QUARTERLY INVESTMENT RISK REPORT
# UCRP and GEP

*Committee on Investments /*
*Investment Advisory Committee*
*Fourth Quarter, 2006*

# CONTENTS

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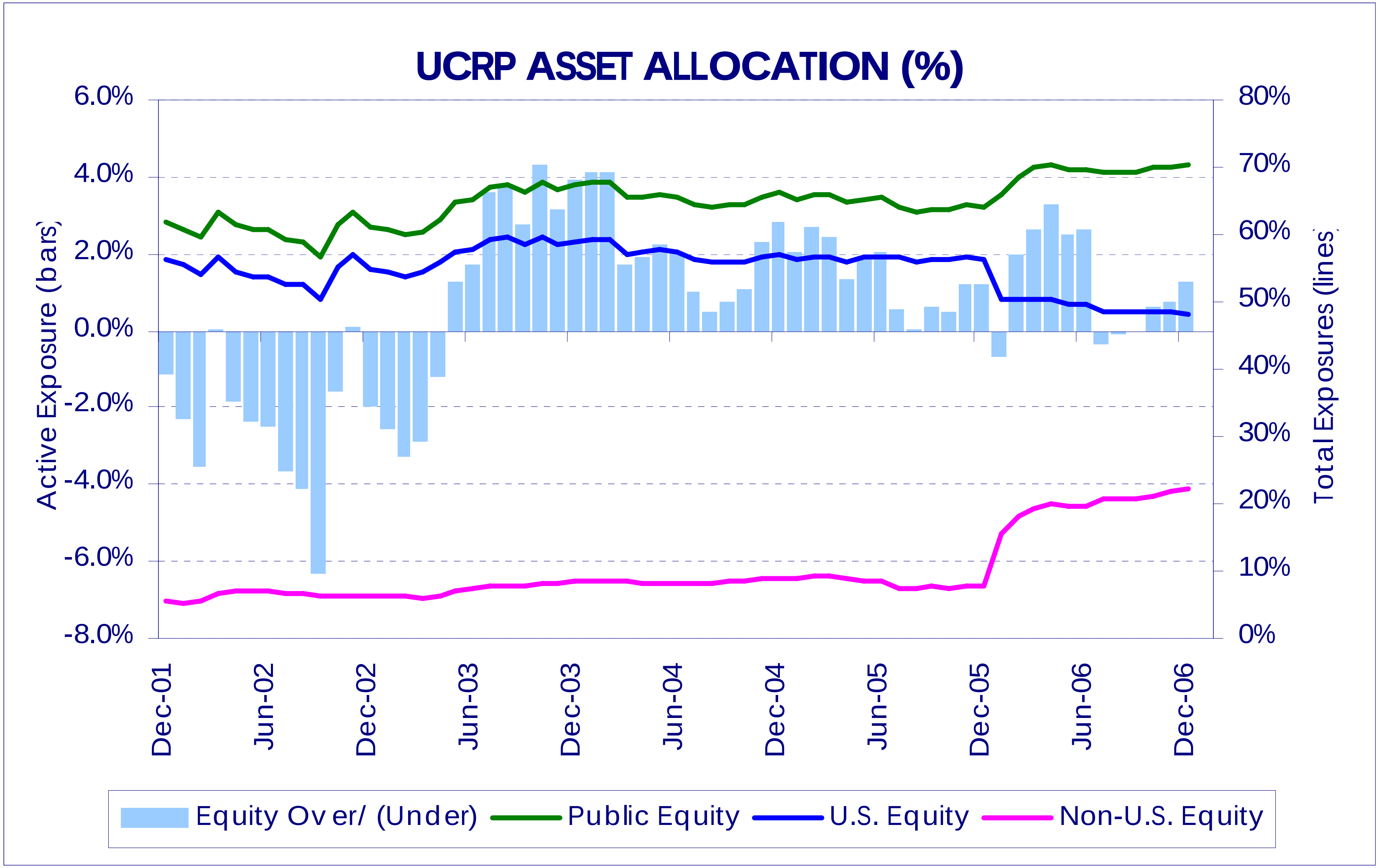
# ASSET ALLOCATION

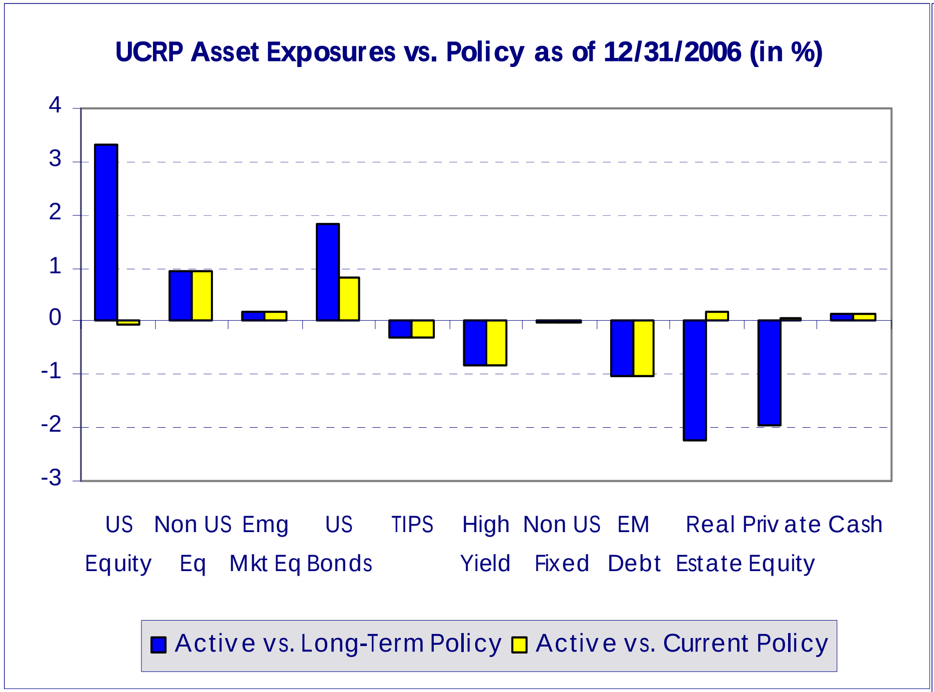
Total Risk is largely related to the allocation between equity and bonds – Total equity was slightly overweight in Q4 2006

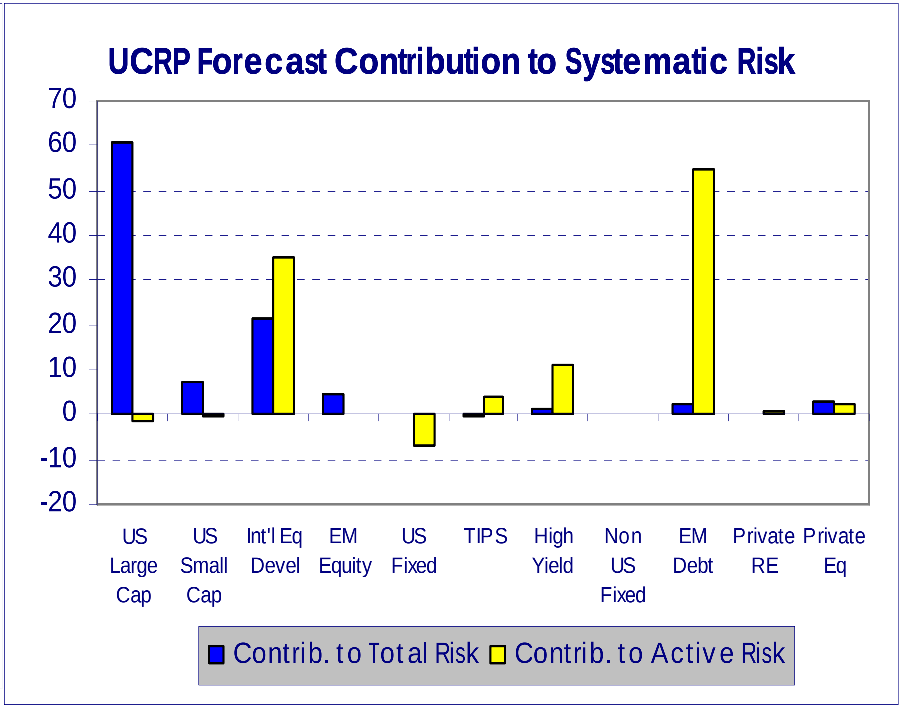


# ASSET ALLOCATION and RISK

**[LOWER LEFT]** Asset weights are measured relative to Long-Term Policy allocation (blue bars) and Current Policy (yellow bars); Current Policy recognizes the illiquidity of Priv. Eq. & Real Estate. Underweight in Private Equity and Real Estate is temporarily invested in US equity. Compared to Current Policy, the fund has a small underweight in High Yield and Emerging Debt, and overweight in Non US Equity and US bonds.

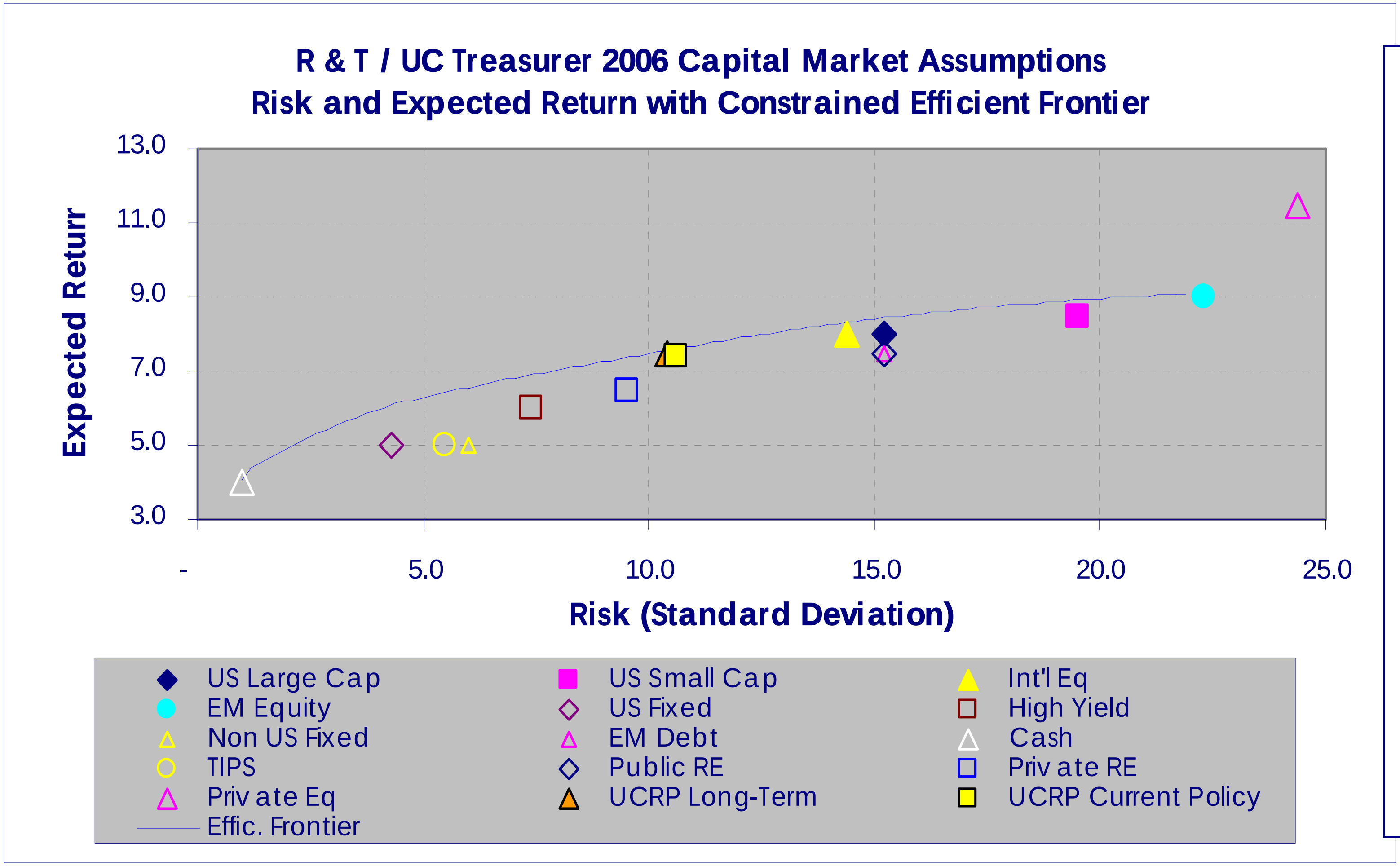
**[LOWER RIGHT]** Although US Equity is 48% of the Current Policy, it contributes 68% of the forecast **total systematic risk** (blue bars). Forecast **active systematic risk** is 16 bp. About 35% of this amount is contributed by Non-US Devel. Eq underweight, and 55% from the underweight in Emerging Mkt Debt (yellow bars).



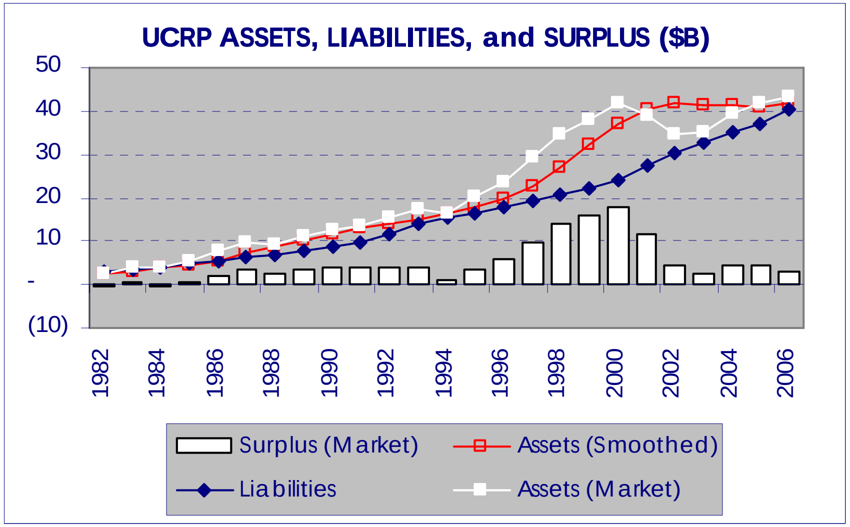
# EXPECTED RISK AND RETURN

Forecast risk and return (using R&T / Treasurer's 2006 capital markets assumptions) lies on the constrained efficient frontier; however forecast return of 6.8%* is less than actuarially required return of 7.5%



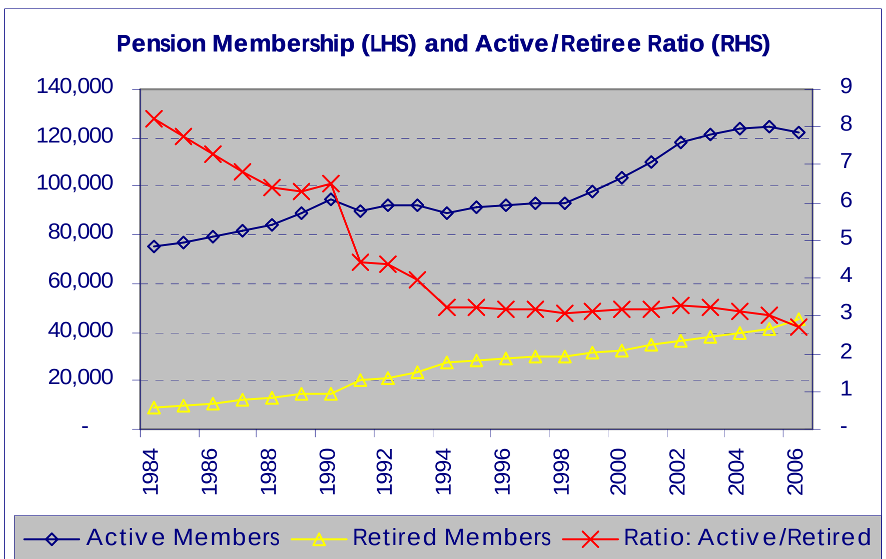

* Asset Class returns and Efficient frontiers are shown in the chart as arithmetic (i.e., average) expected returns. The projected compound annual return over multi year horizon is 6.8% for the Current Policy weights. Forecast risk is 10.7%.

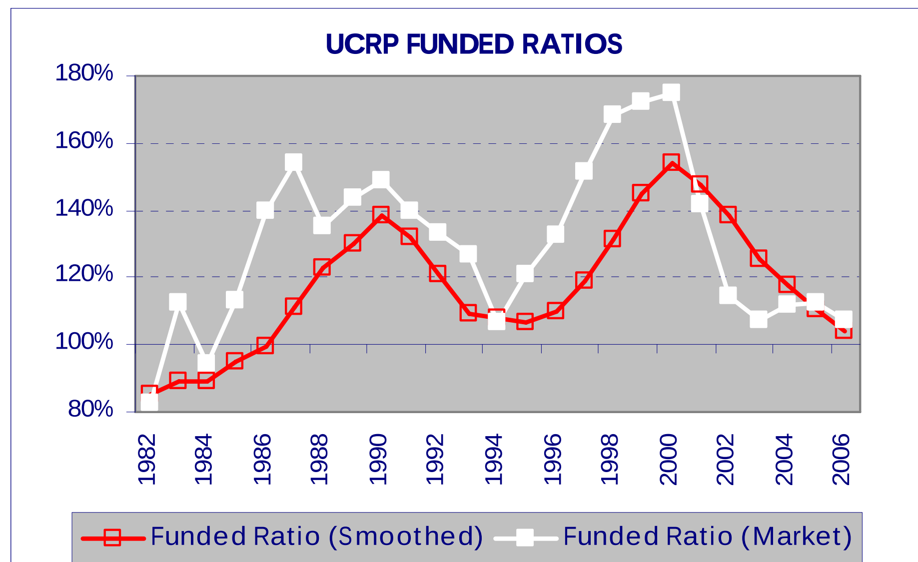
# HISTORICAL FUNDED STATUS



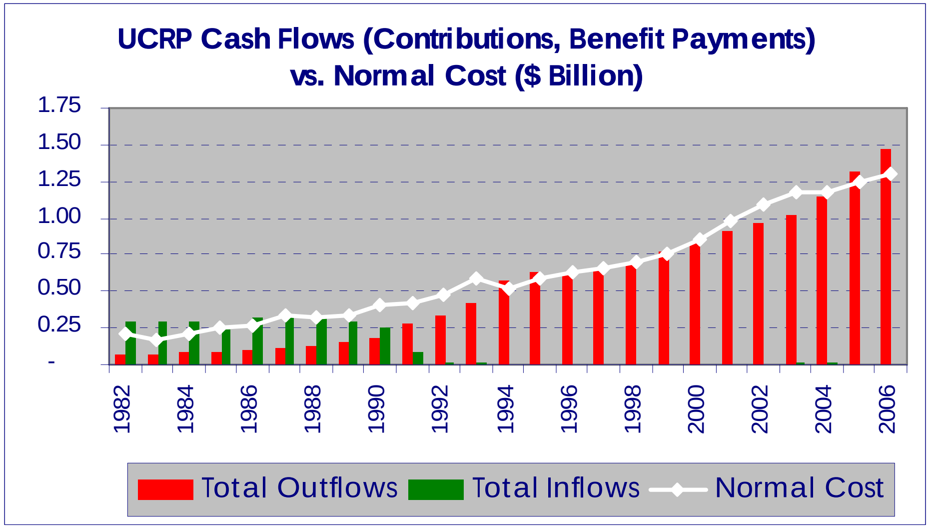

The Pension Fund's assets and liabilities have been growing steadily (upper left) with University employment and the bull market of 1982-2000. The ratio of actives to retirees has remained steady at a healthy level of 3 (lower left).

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 while currently greater than 100%, is expected to decline over the next decade (see next slide).

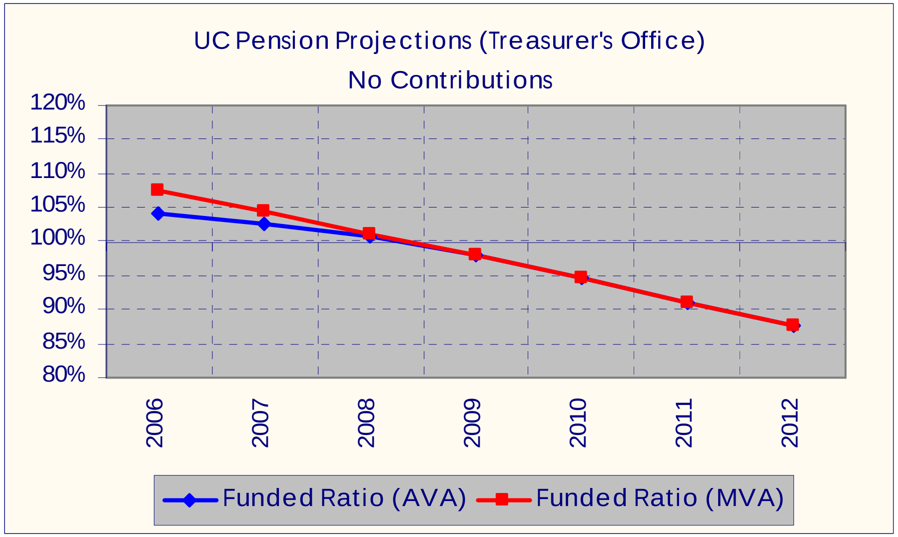


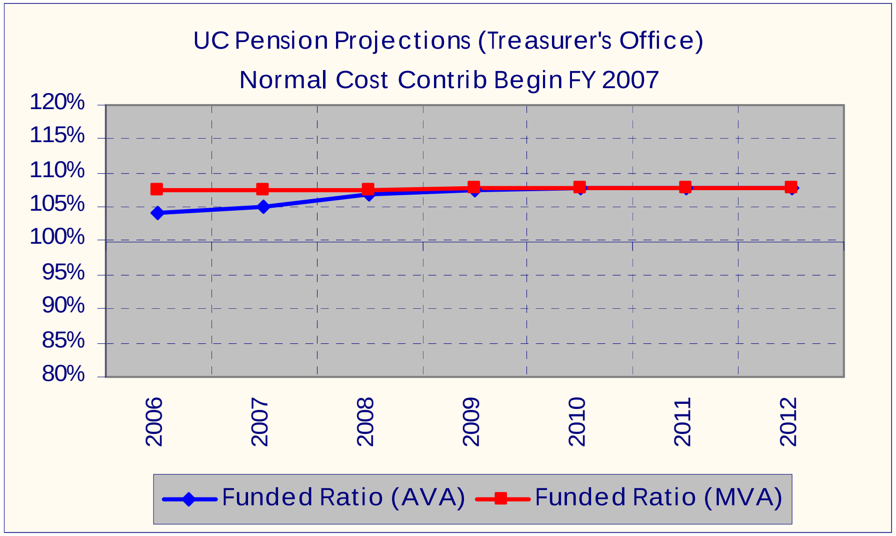



# FORECAST FUNDED STATUS

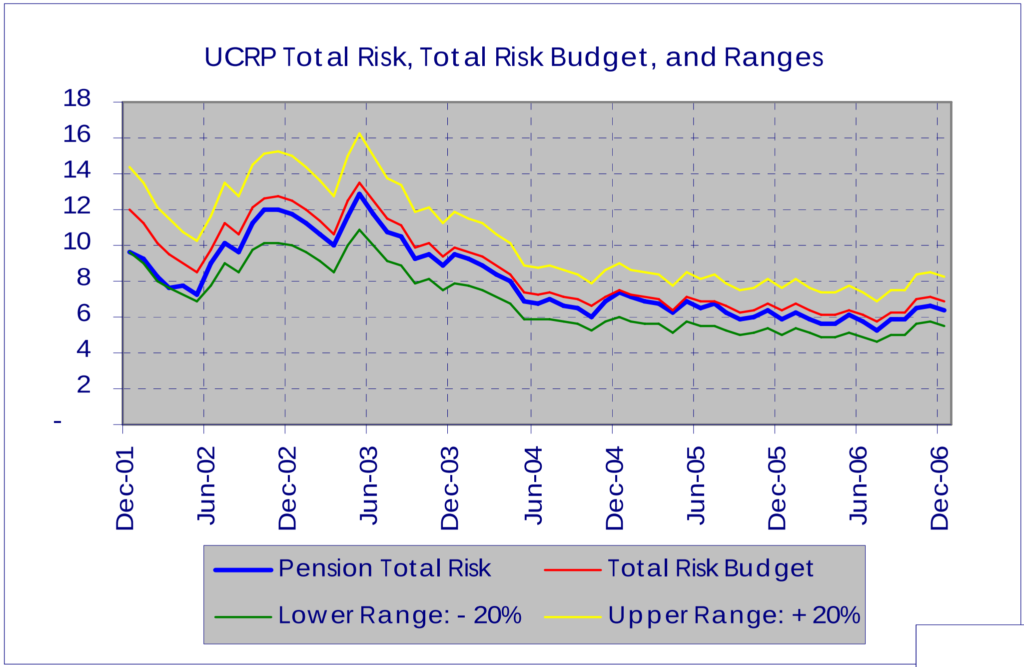



Contributions were suspended in 1990, but annual benefit payments have grown in line with Normal Cost over the last decade (upper left). In the most recent actuarial valuation [July 2006], the Plan's actuary noted that without additional contributions, "UCRP is expected to become less than fully funded within the next few years." The bottom two charts show projected funded ratio without and with contributions. (For this example, contributions were set to be equal to forecast Normal Cost, beginning FY 2007.)



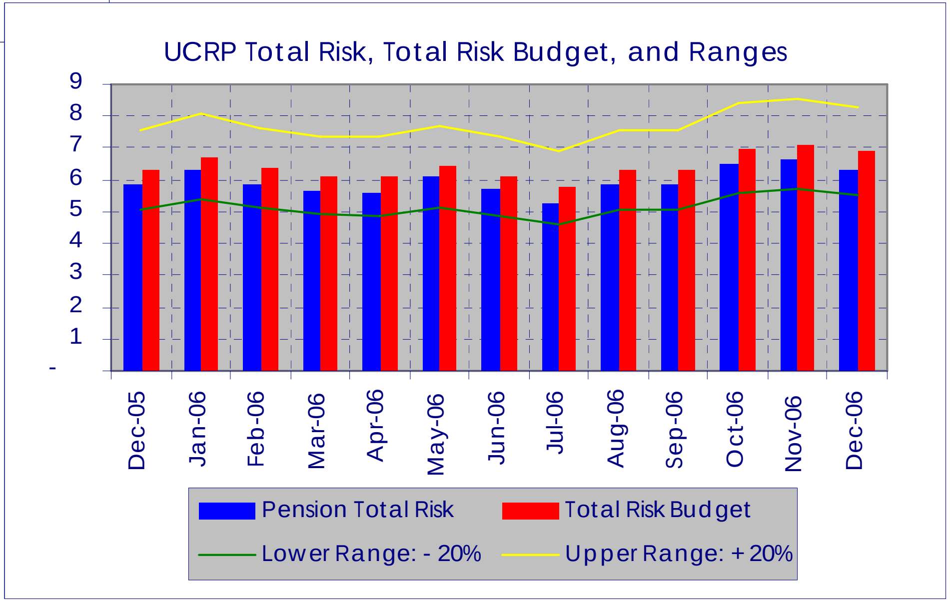
# RISK MEASURES - TOTAL



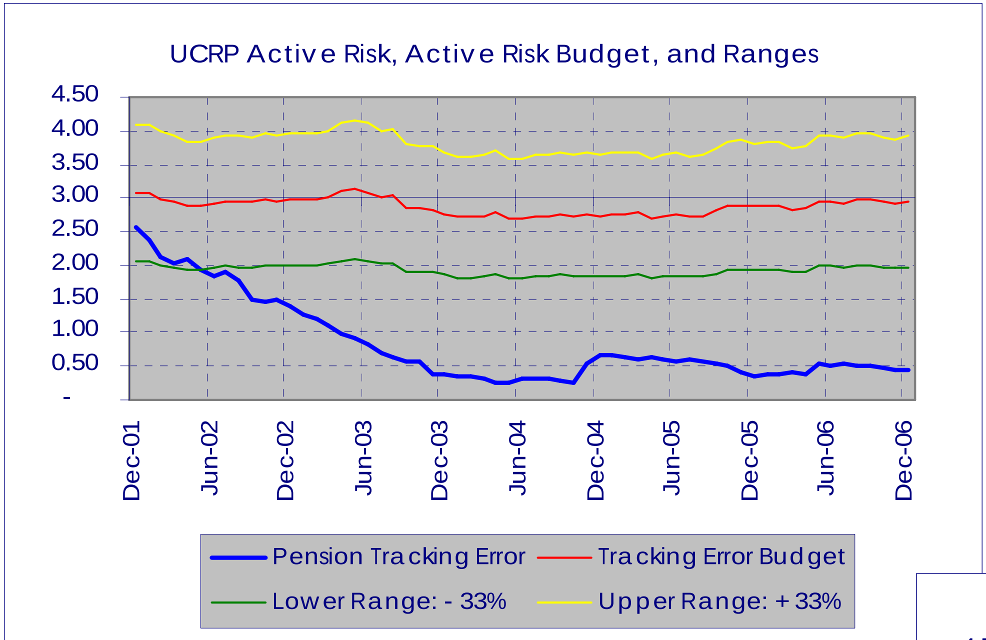

Total risk trend quite similar to benchmark; recently Plan risk is slightly less than the Budget, but well within ranges

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.]



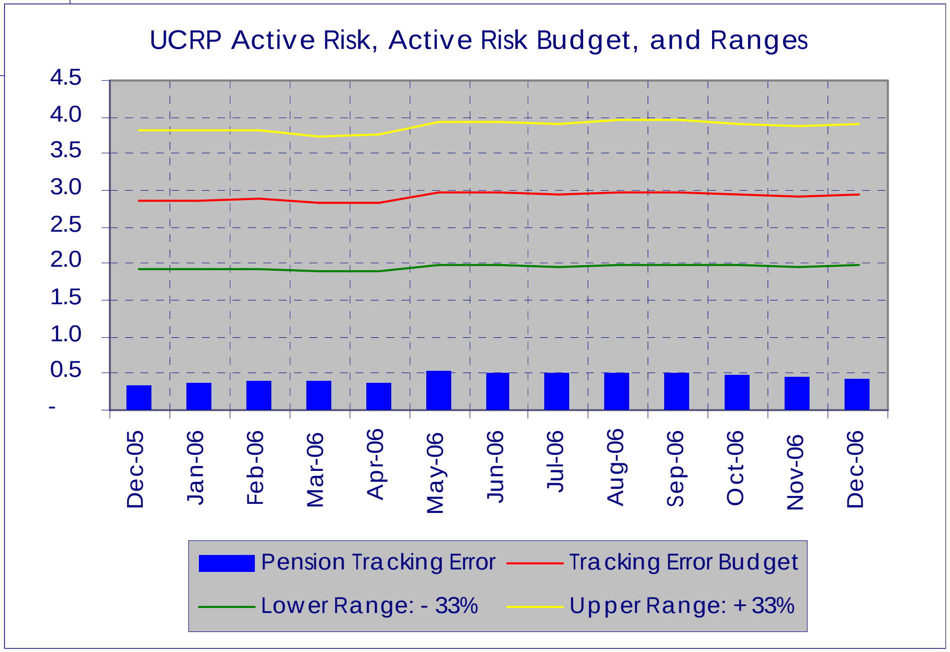
# RISK MEASURES - ACTIVE



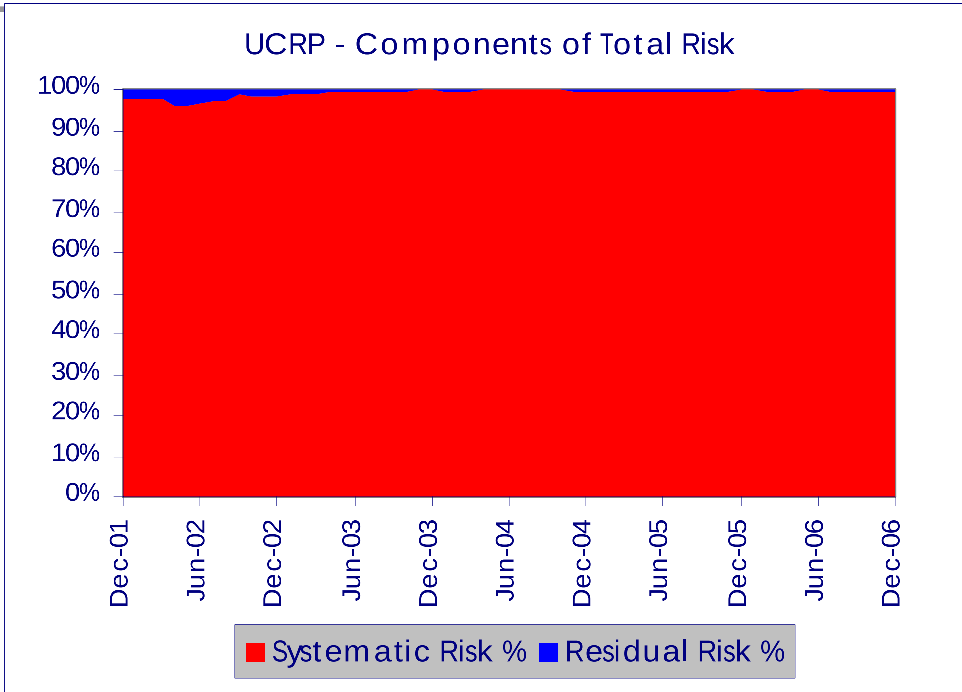

Active risk for the total fund has declined steadily over 2002-04, as the portfolio was re-structured. Active risk is currently well below long term expectations for active return and is expected to increase (to within the budgeted range) as the active management program is fully implemented, and as market volatility increases.

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

Risk is measured by standard deviation of monthly **active** returns; each point or bar shows a 12 month measurement period. All risk calculations done using exponentially declining weights.

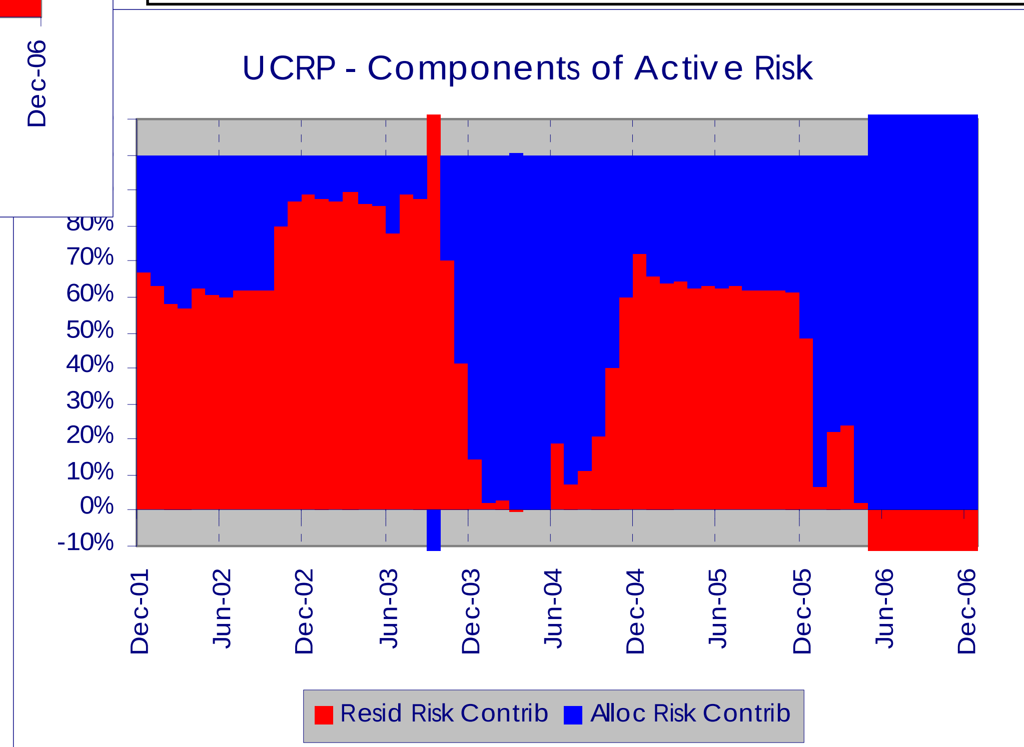


# RISK ATTRIBUTION



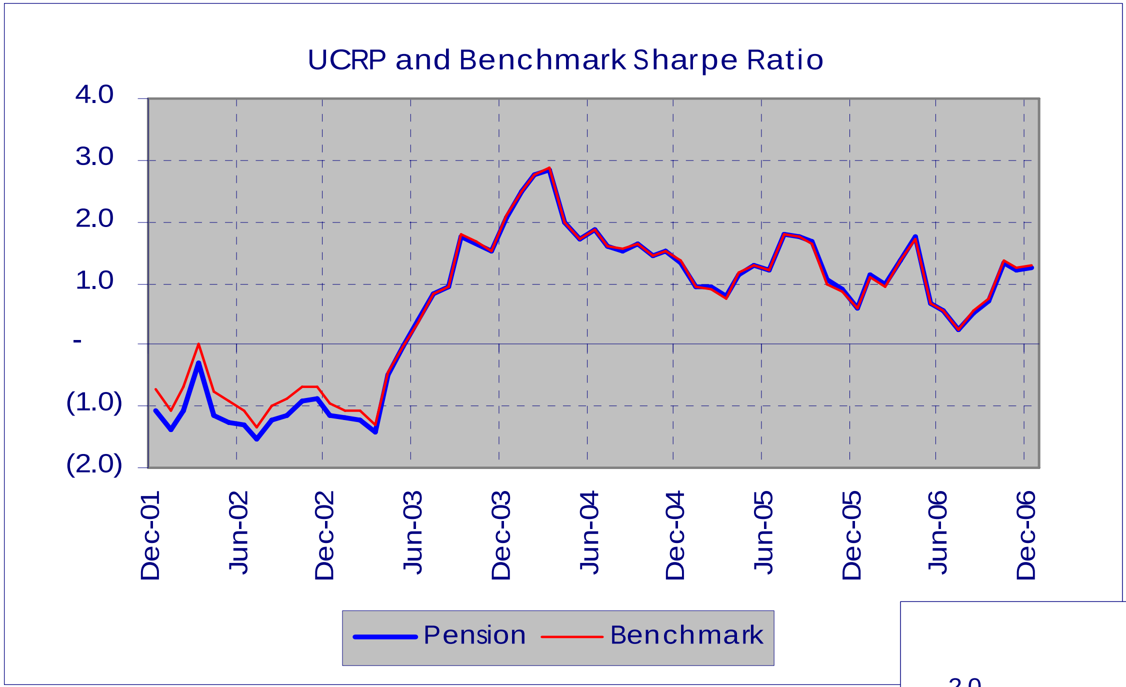

**[UPPER LEFT]** Almost all of **Total Risk** is attributed to systematic (market) factors.

**[LOWER RIGHT]** In the past, the majority of **Active Risk** was attributed to security selection. In FY 2003-04, as passive mgmt. increased, asset allocation decisions contributed most of the small amount of active risk. As the active program was implemented (last 24 months), residual risk has again become more important, except during recent UCRP transition (last 12 months).



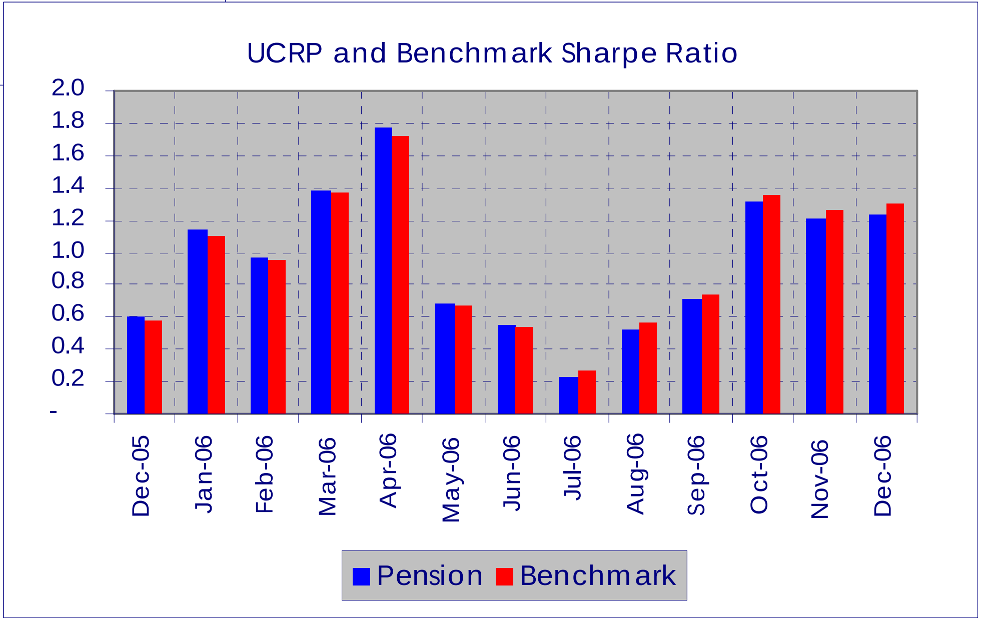

Risk is measured here by variance (standard deviation squared) of monthly returns; each bar shows a 12 month measurement period

# RISK ADJUSTED RETURN – TOTAL

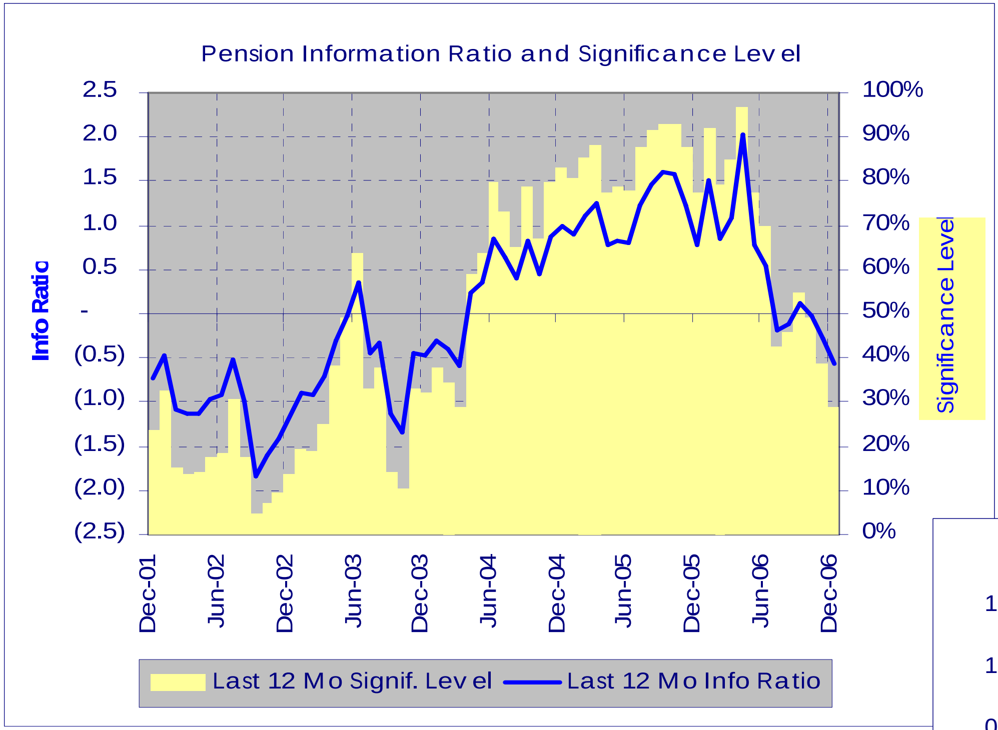



Sharpe Ratio (risk adjusted total return) trend has been quite similar to the benchmark since March 2003

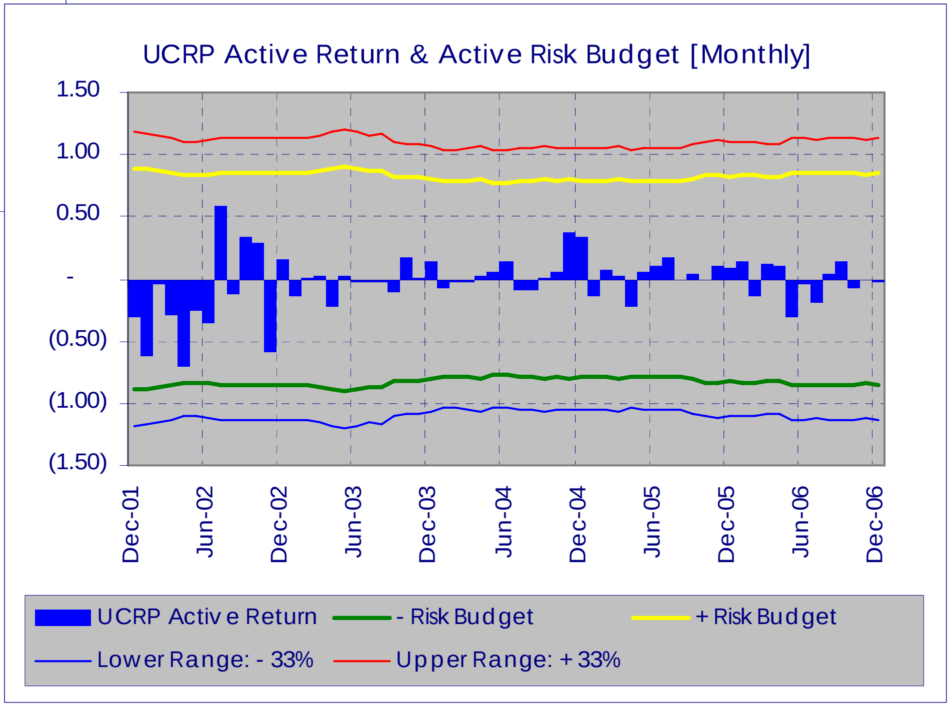
Sharpe ratio is "excess" return (total return less risk free rate) divided by total risk; each point or bar shows a 12 month measurement period. All risk calculations done using exponentially declining weights.



# RISK ADJUSTED RETURN – ACTIVE




Information ratio (risk adjusted active return) in the past was driven by active equity performance; currently driven by both asset weighting decisions and active equity and bond performance. Info ratio has declined as a result of the negative performance in Q2 2006.




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.

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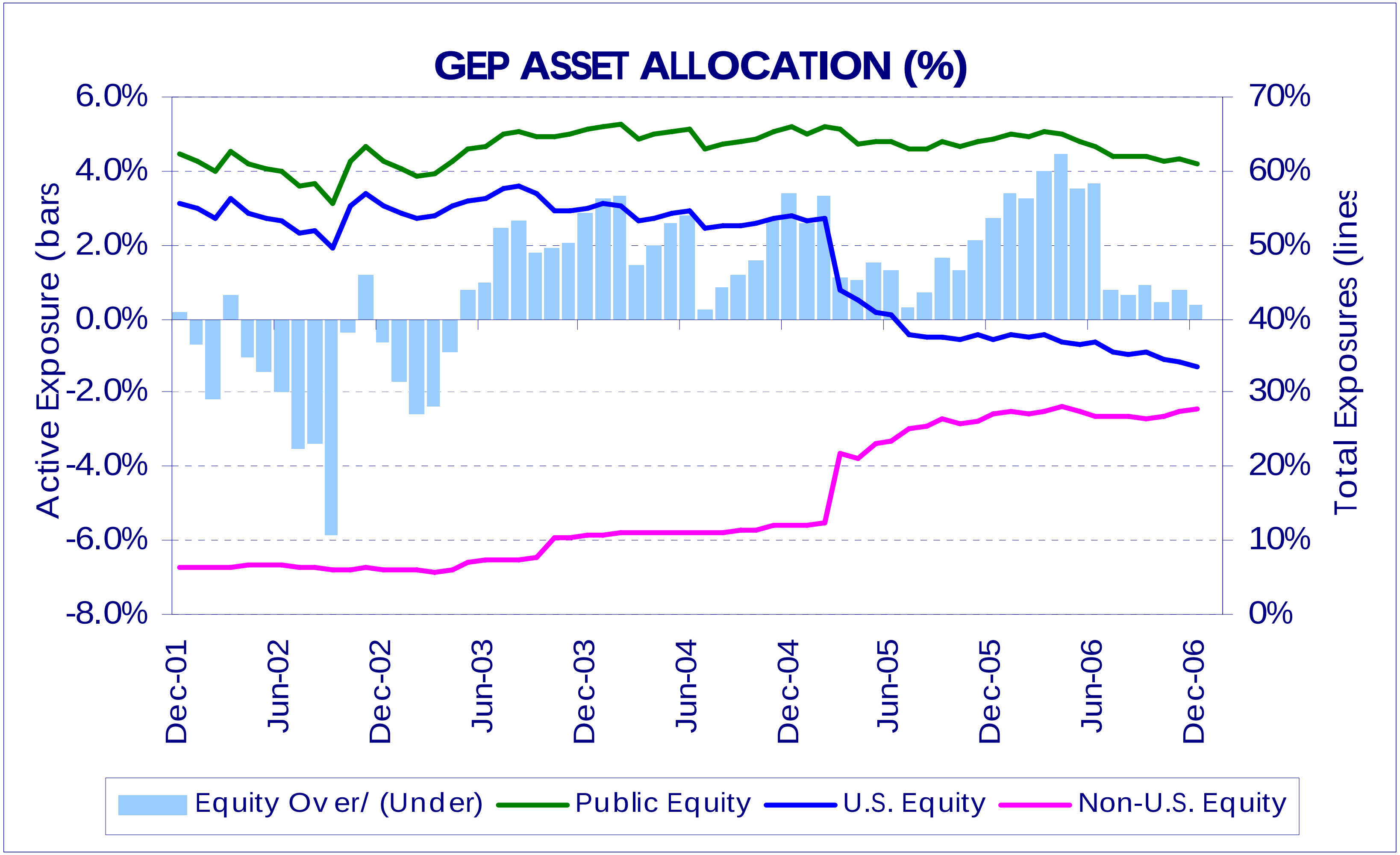
# RISK METRICS FOR GEP

# ASSET ALLOCATION

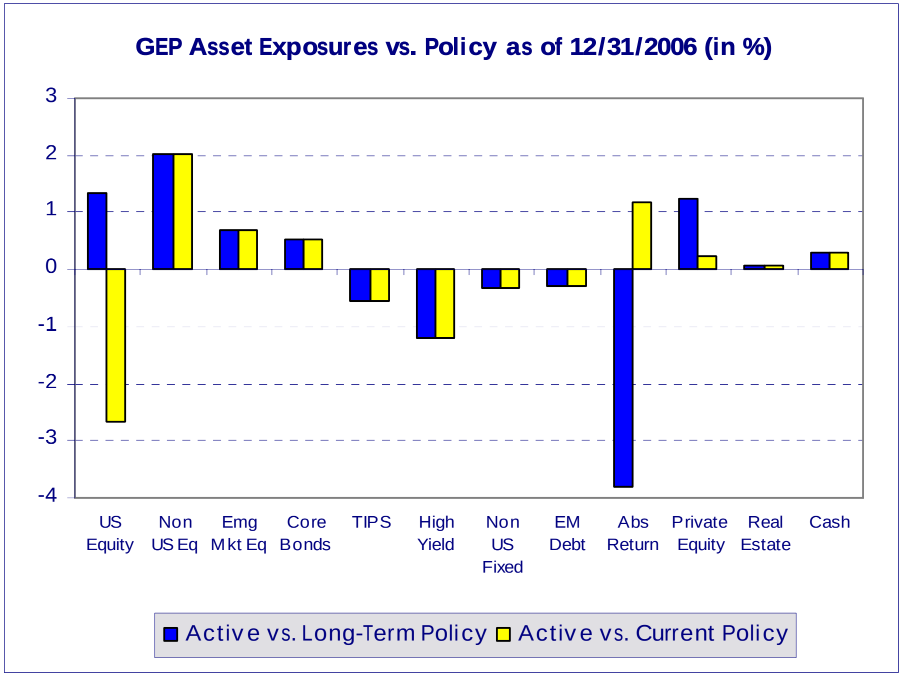
Total Risk is largely related to the allocation between equity and bonds - Total equity remained slightly overweight in Q4 2006.

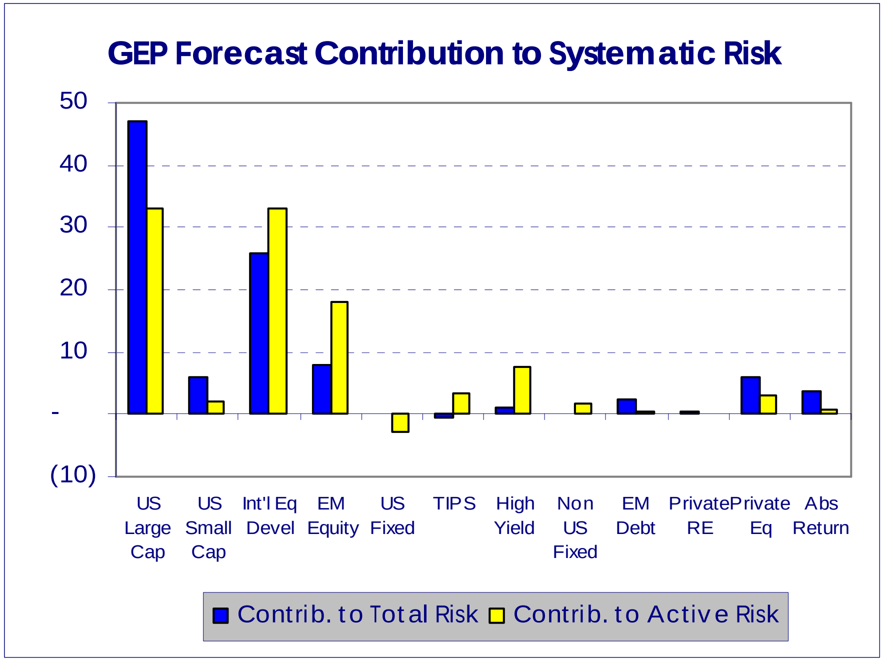


# ASSET ALLOCATION and RISK

**[LOWER LEFT]** Asset weights are measured relative to Long-Term Policy allocation (blue bars) and Current Policy (yellow bars); Current Policy recognizes the illiquidity of Priv. Eq., Real Estate & Absolute Return Strategies. Underweight in Abs. Return is temporarily invested in US equity. Compared to Current Policy, the fund has an overweight in Non-US equity and Core Bonds, and underweight in US Equity, HY Bonds and TIPS.

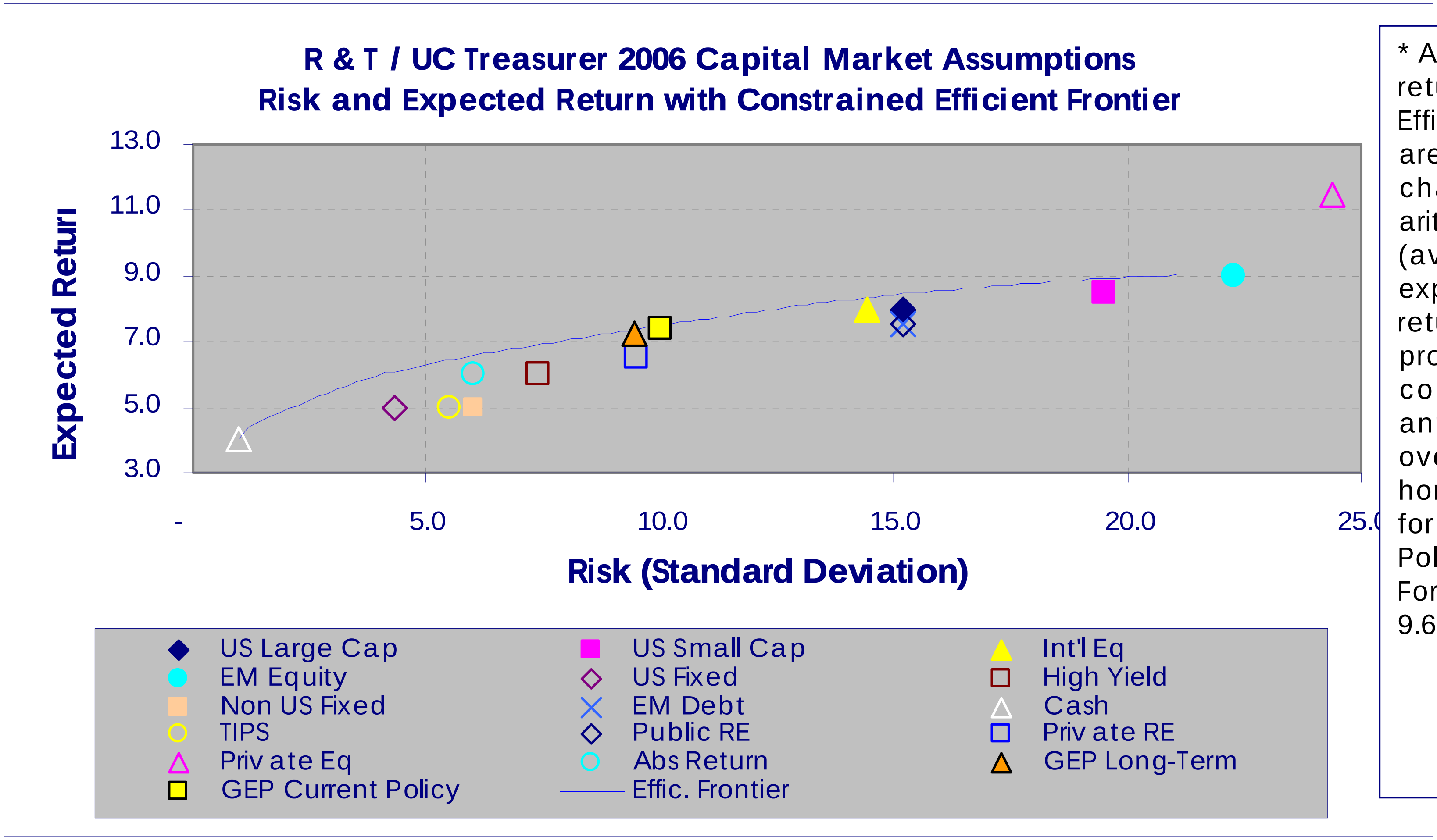
**[LOWER RIGHT]** Although US Equity is 36% of the Current Policy, it contributes about 53% of the forecast **total systematic risk** (blue bars). Forecast **active systematic risk** is 28 bp. Over 50% of this amount is contributed by the Non-US Equity overweight and 33% by the US Equity underweight (yellow bars).



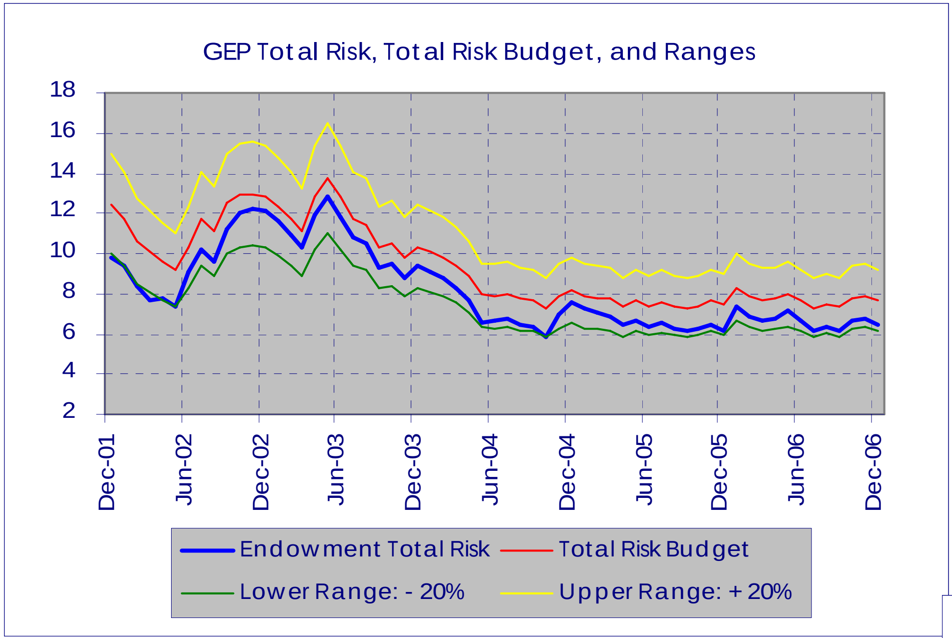
# EXPECTED RISK AND RETURN

Forecast risk and return (using R&T / Treasurer's 2006 capital markets assumptions) lies on the constrained efficient frontier; however forecast return of 6.8%* is less than the nominal return needed to maintain a constant real payout per student (estimated at 8.5%)




* Asset Class returns and Efficient frontiers are shown in the chart as arithmetic (average) expected returns. The projected compound annual return over multi year horizon is 6.8% for the Current Policy weights. Forecast risk is 9.6%.

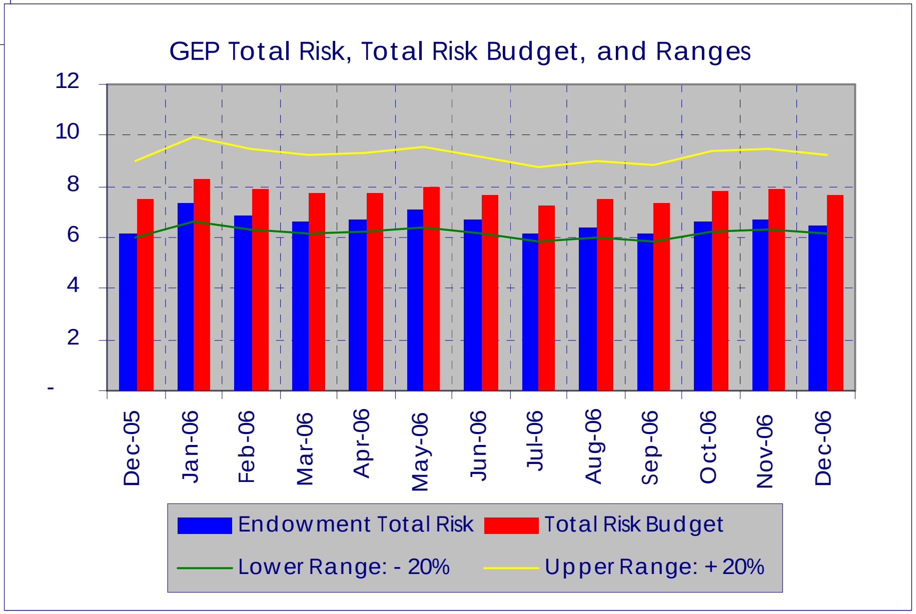
# RISK MEASURES - TOTAL




Total risk trend has been quite similar to benchmark; recently GEP risk has been less than the Budget, but within ranges.

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. [Charts show risk budgets as if they had been in place during entire historical period.]



# RISK MEASURES - ACTIVE

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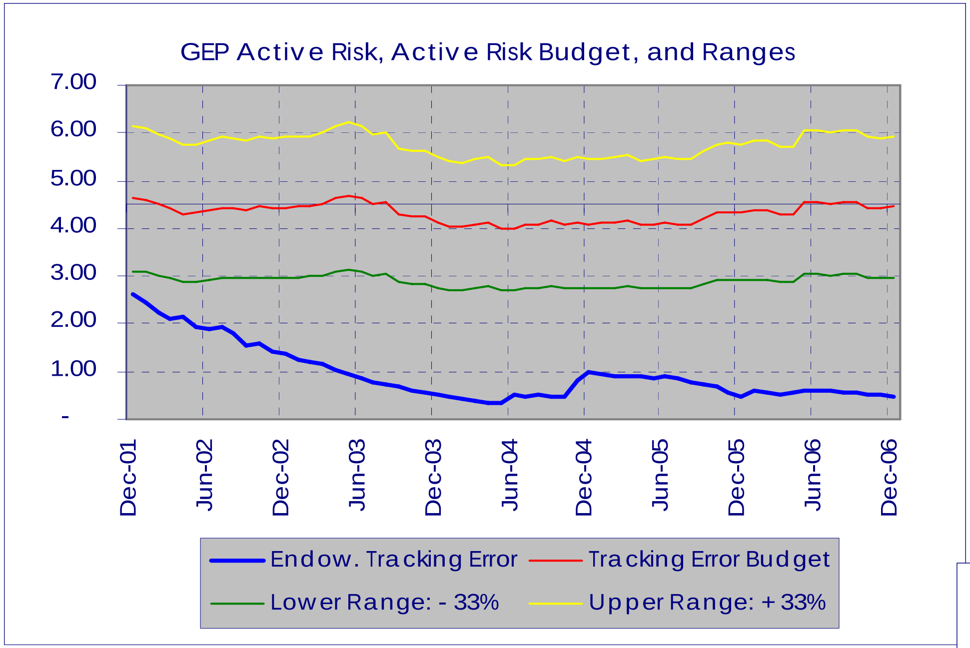
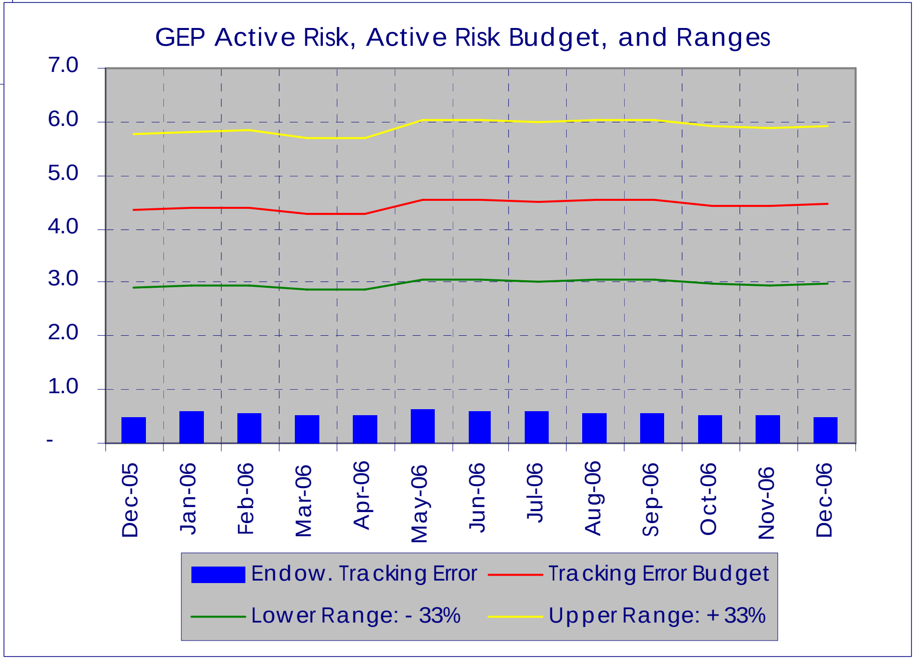


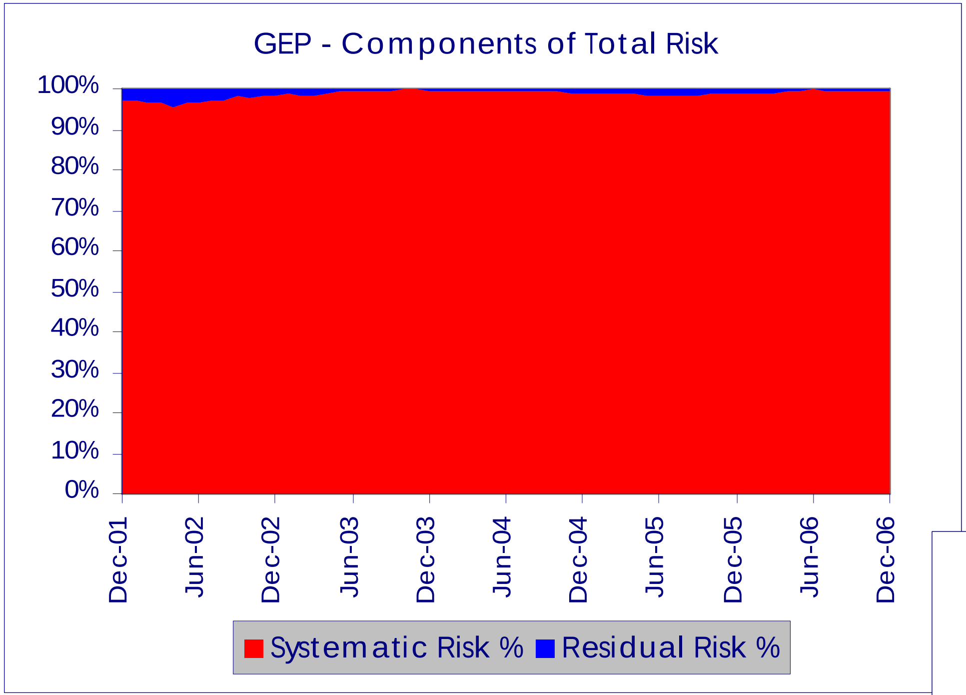

Active risk for the total fund has declined steadily over 2002-04, as the portfolio was re-structured. Active risk is currently well below long term expectations for active return and is expected to increase (to within the budgeted range) as the active management program is fully implemented, and as market volatility increases.

The Active risk budget is 4.5% annualized Tracking Error (adj. for market volatility), with ranges of +/- 1 pct. point around Budget

Risk is measured by standard deviation of monthly **active** returns; each point or bar shows a 12 month measurement period. All risk calculations done using exponentially declining weights.



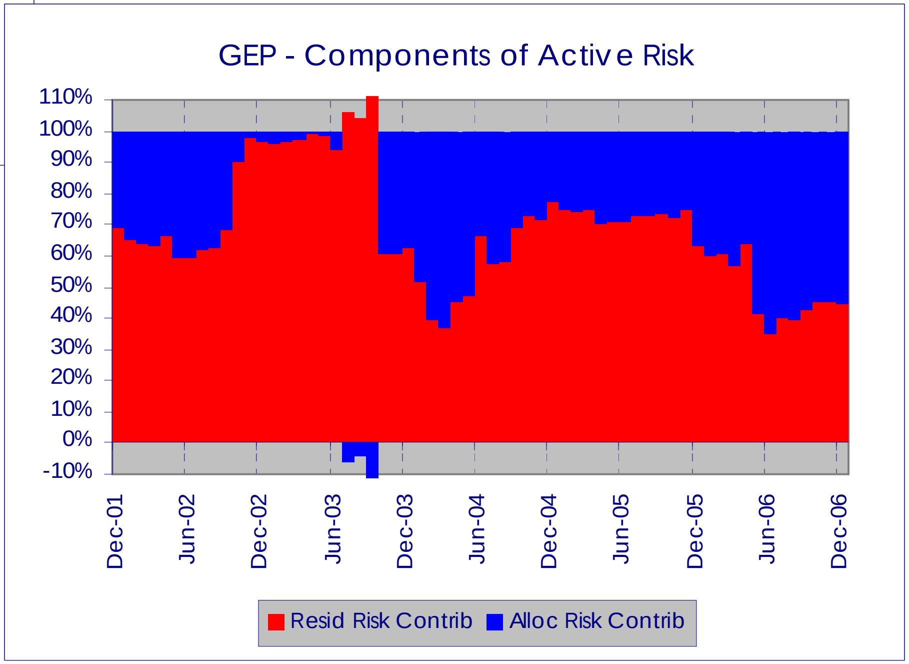
# RISK ATTRIBUTION



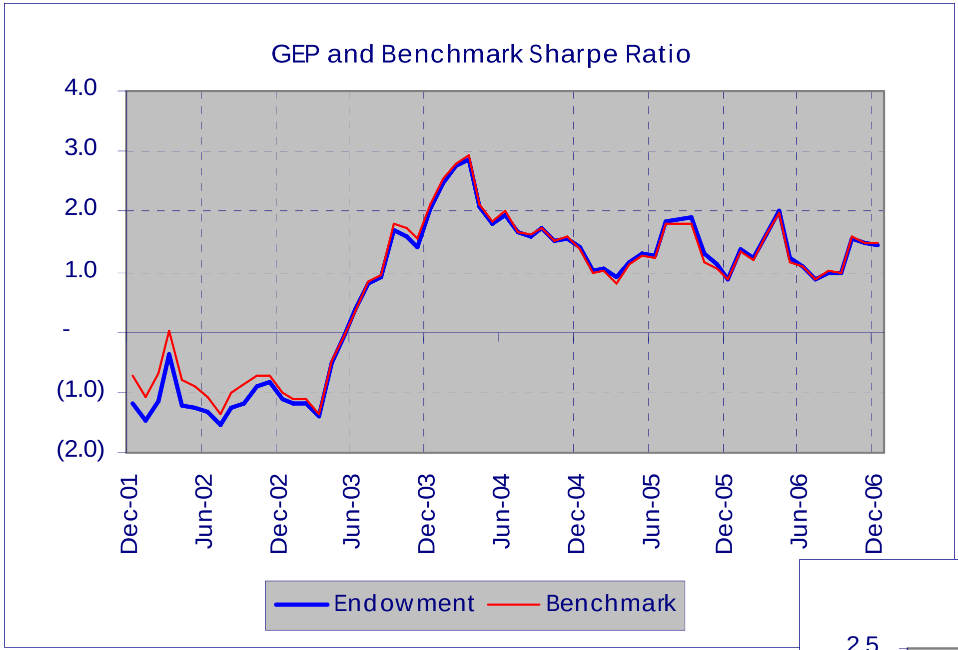

**[UPPER LEFT]** Almost all of **Total Risk** is attributed to systematic (market) factors.

**[LOWER RIGHT]** In the past, the majority of **Active Risk** was attributed to security selection. In FY 2004, as passive mgmt. increased, asset allocation decisions contributed about half of the small amount of active risk. As the active program was implemented (last 24 months), residual risk has again become more important (except during recent transition (last 6 months).

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



# RISK ADJUSTED RETURN – TOTAL

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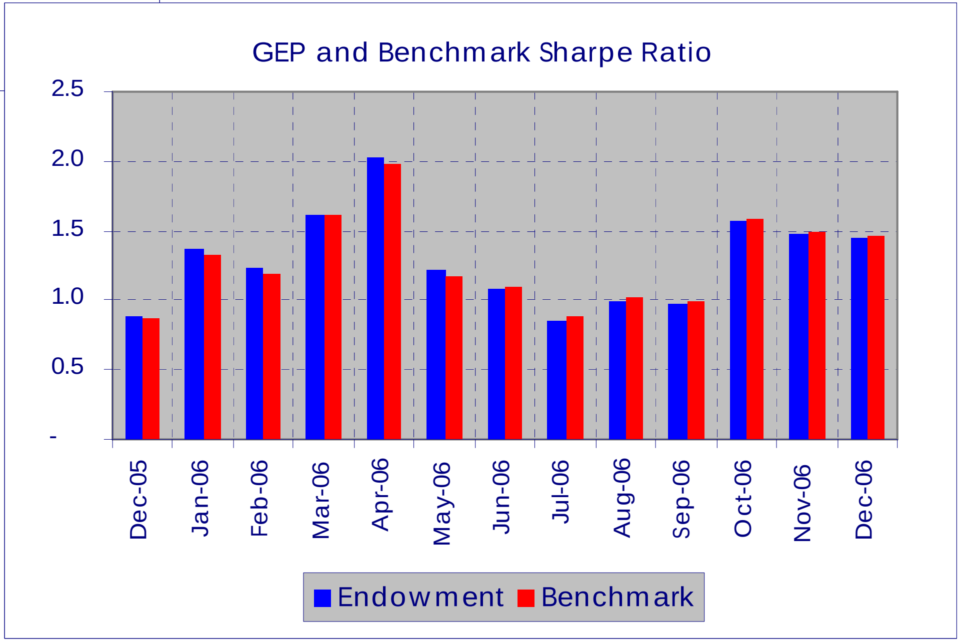
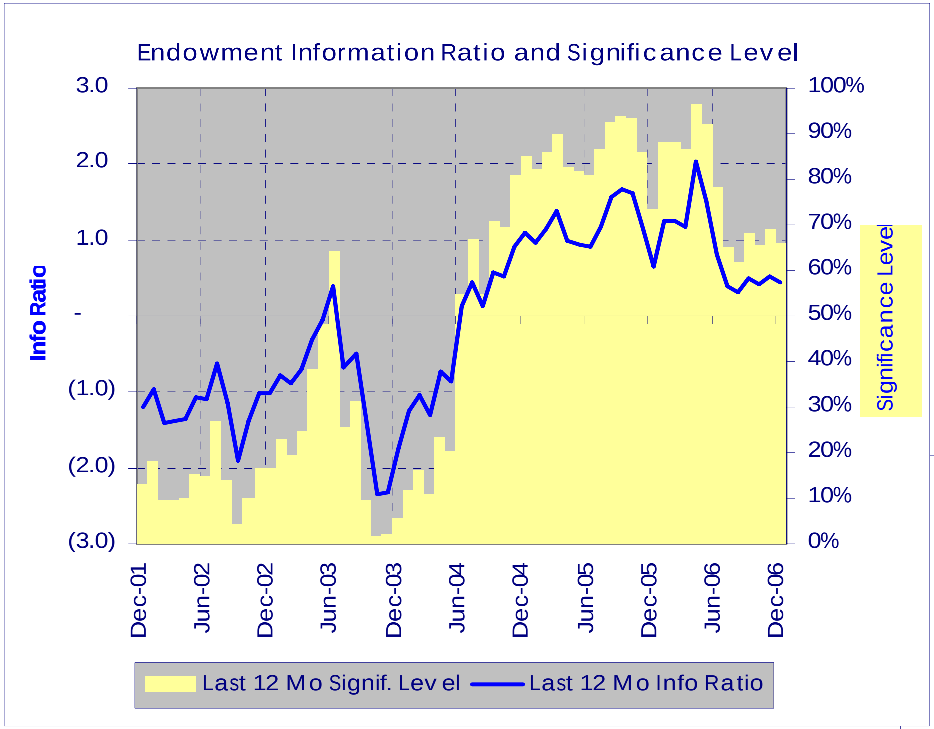
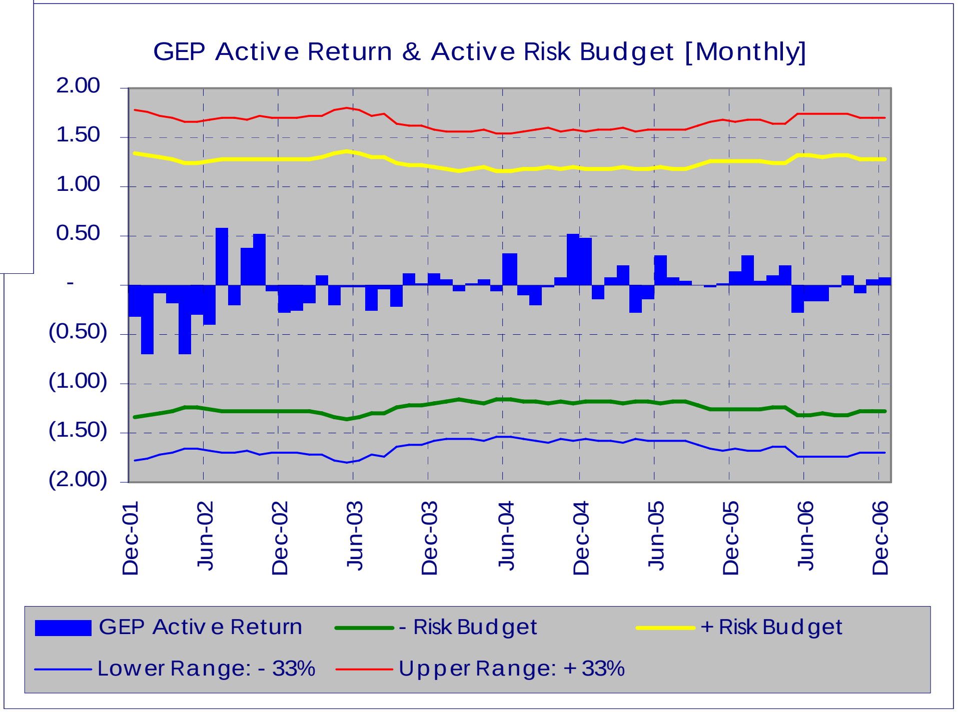



Sharpe ratio is “excess” return (total return less risk free rate) divided by total risk; each point or bar shows a 12 month measurement period. All risk calculations done using exponentially declining weights.

# RISK ADJUSTED RETURN – ACTIVE




Information ratio (risk adjusted active return) in the past was driven by active equity performance; currently driven by both asset weighting decisions and active equity and bond performance. **Info ratio has been positive for last 30 months.**




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.