



Public Equity Portfolio Review

Presentation to the Investment Advisory Committee

May 22, 2014



North Carolina Department of State Treasurer
Investment Management

Learn. Invest. Grow. Prosper.

What are we going to tell you...

- The NCDST equity portfolio has outperformed over time.
- The lessons we learned and what we plan to do to try to continue outperforming.
 - We have outperformed across time with varying contributions from equity “strategy” and external manager selection and allocation.
 - We are generally comfortable with our current lineup of managers and there’s no need to “churn” the portfolio.
 - The allocation to specific combinations of equity risk factors – “strategies” (e.g., U.S. passive large cap core or Emerging markets small cap growth) - is an important building block of our portfolio structure.
 - Although there are no indications of trouble ahead, we are investigating what strategies and structures offer us the best chance of future outperformance.
- Preview some FY 2015 projects
 - Hewitt EnnisKnupp equity strategy analysis
 - Hedged equity portfolio implementation
 - Corporate governance



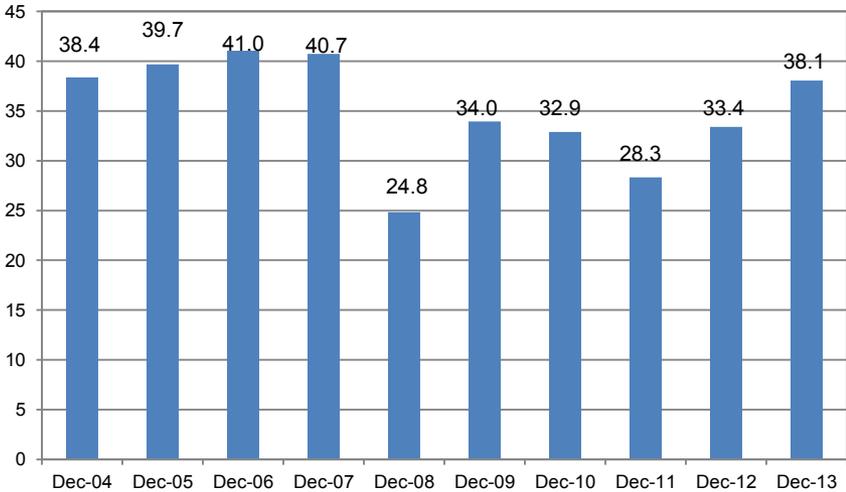
How we manage the portfolio: Investment Beliefs (Part 1)

- There are four dimensions of an investment, in descending order of ability to control: cost, liquidity, risk, and returns.
- We have met the enemy, and he is us.
- There are limits to our ability to predict the future.
 - The future is unknowable, so diversify.
 - Market timing is generally unrewarding.
 - Markets don't just mean revert; they overshoot.
- There are trade-offs in investing.
 - Market efficiency and excess returns are inversely related.
 - Too much capital is the enemy of good returns.
- Performance cannot be guaranteed, but we can make some predictions:
 - Risk must be assumed to gain higher expected returns.
 - Investment philosophy/strategy, processes, and resources drive excess returns. Organizational culture and alignment of interests can enhance or detract from these drivers.
 - Risk-adjusted excess returns are a function of skill, breadth, and freedom.

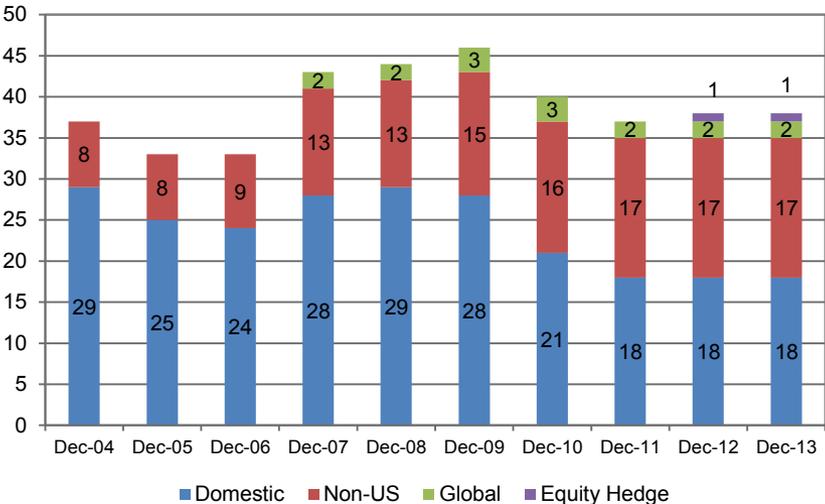


Snapshot of Total Equity - Historical Portfolio Structure

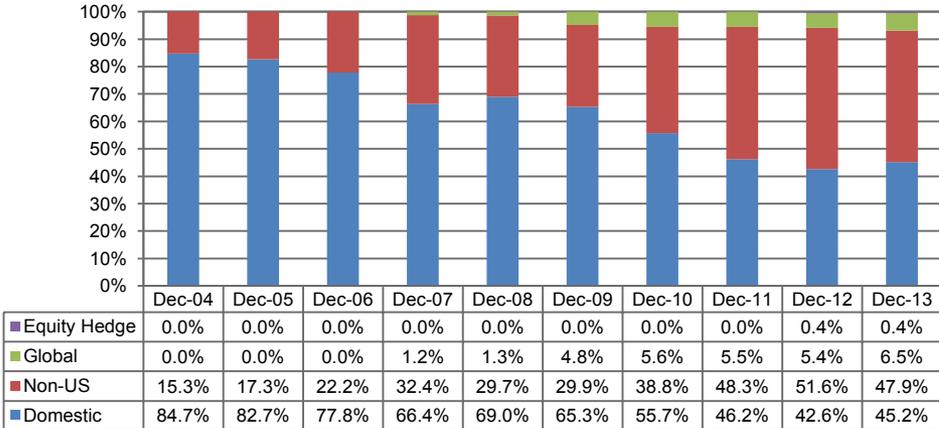
Equity Assets* (\$B)



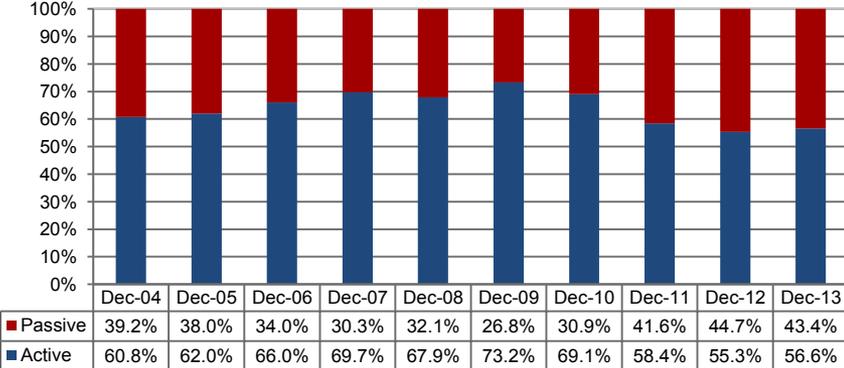
Number of Mandates



Asset Allocation



Active vs Passive

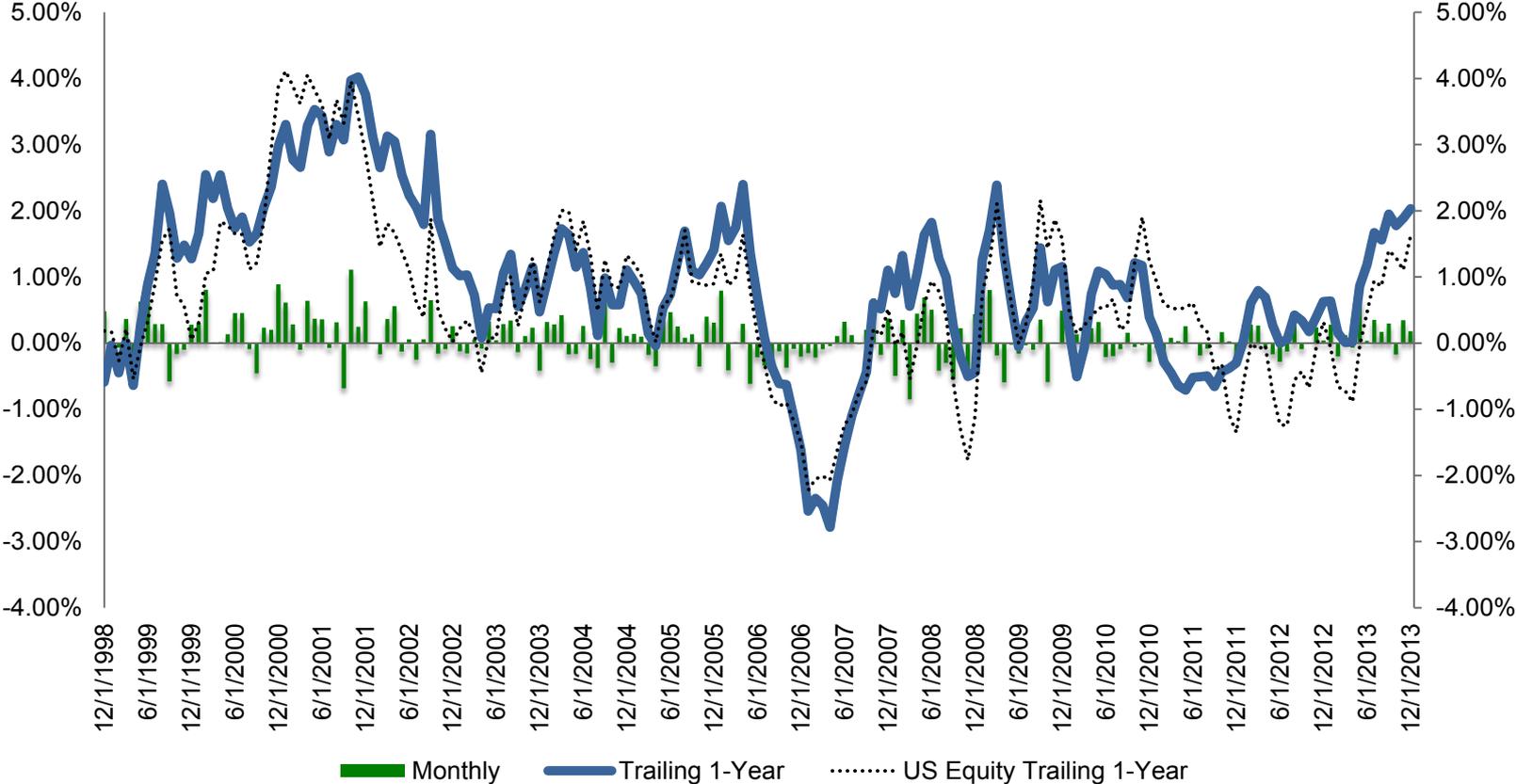


* Excludes equity rebalance, cash/Transition



Performance has been good across time

TOTAL EQUITY EXCESS RETURNS



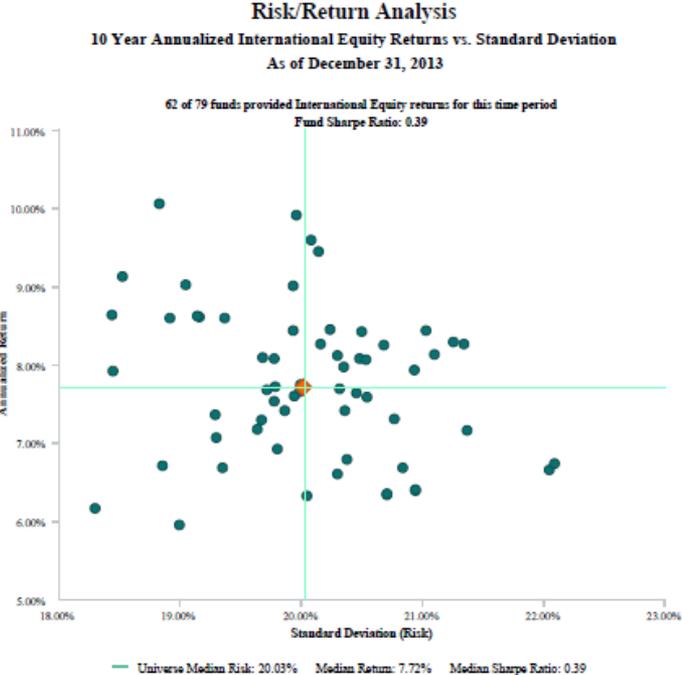
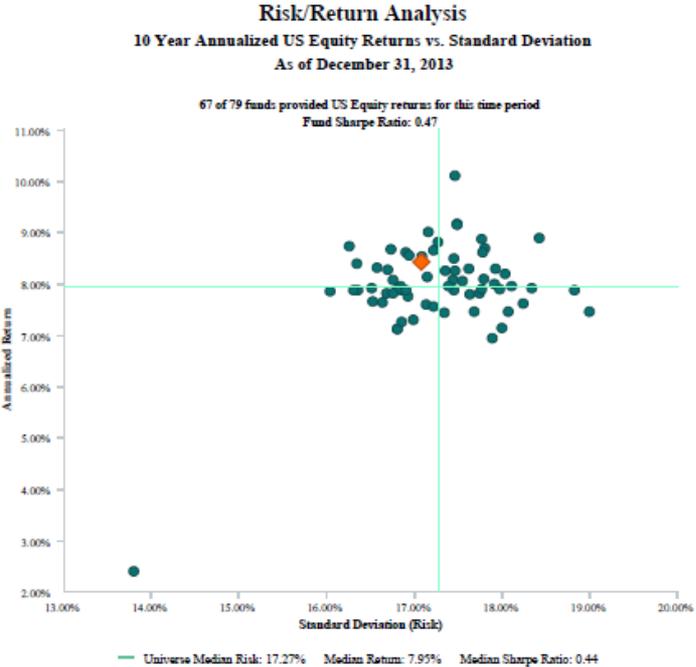
Performance has been good across the sub-portfolios

Periods Ending March 31, 2014	Market Value	3 Month	Fiscal YTD	Cal YTD	1 Yr	3 Yr	5 Yr	10 Yr	15 Yr
Global Equity	41,286,906,265	1.38	19.11	1.38	19.46	10.12	18.79	6.76	5.27
Custom Equity Benchmark¹		1.37	17.74	1.37	17.33	9.19	18.31	6.30	4.25
<u>Excess</u>		0.01	1.37	0.01	2.13	0.92	0.49	0.46	1.02
Domestic Portfolio	17,541,605,389	2.06	21.16	2.06	24.58	14.86	22.26	8.07	5.97
Russell 3000		1.97	19.40	1.97	22.61	14.61	21.93	7.86	5.22
<u>Excess</u>		0.08	1.75	0.08	1.97	0.24	0.33	0.22	0.74
Non-US Portfolio	18,391,507,753	0.79	17.68	0.79	14.28	5.20	15.26	7.00	6.30
Custom Non-US Benchmark ²		0.87	16.62	0.87	12.80	4.32	14.88	5.99	4.14
<u>Excess</u>		(0.09)	1.06	(0.09)	1.47	0.88	0.38	1.00	2.16
Global Portfolio	2,525,427,297	2.00	21.85	2.00	26.75	14.73	19.37	-	-
MSCI ACWI		1.08	17.05	1.08	16.55	8.55	17.80	-	-
<u>Excess</u>		0.92	4.80	0.92	10.20	6.18	1.56	-	-

1. As of 5/1/12, the Global Equity Benchmark is the dynamically weighted return of the Domestic Benchmark, the Non-US Benchmark, the Global Benchmark, the Rebalance Benchmark, and the Equity Hedge Benchmark.
2. As of 10/1/10, the Custom Non-US Benchmark is the MSCI ACWI ex US IMI Index.



Performance has been average/good relative to peers



Percentile Rank	1-Year	5-Year	10-Year
U.S. Equity	26	31	25
International Equity	54	70	50

Source: RV Kuhns and Associates, "Public Fund Universe Analysis: Period Ending December 31, 2013."



Portfolio performance has been generally better after the 2008 crisis

Before Financial Crisis (Period: Jan 2004 – Dec 2007)									
Description	Alpha	Tracking Error	Information Ratio	Upside Market Capture	Down Market Capture	Batting Average	Skewness	Kurtosis	Gain/Loss
Total Equity Composite	-0.07	1.12	0.45	104.28	102.61	0.52	-0.42	-0.61	1.36
Domestic Equity Composite	-0.13	1.03	0.29	104.01	103.68	0.5	-0.42	-0.65	1.31
Non-US Equity Composite	0.39	2.08	0.89	111.66	108.85	0.56	-0.3	-0.56	1.27
After Financial Crisis (Period: Jan 2009 - Dec 2013)									
Description	Alpha	Tracking Error	Information Ratio	Upside Market Capture	Down Market Capture	Batting Average	Skewness	Kurtosis	Gain/Loss
Total Equity Composite	1.02	1.03	0.91	101.49	98.02	0.52	-0.39	-0.06	1.16
Domestic Equity Composite	0.59	1.13	0.69	102.95	100.54	0.58	-0.41	-0.02	0.97
Non-US Equity Composite	0.86	1.44	0.5	100	97.62	0.58	-0.24	0.03	1.29
Global Composite	6.76	7.64	0.41	86.02	70.24	0.6	-0.49	-0.13	1.27



The CFA Standards of Professional Conduct offer us guidance on answering the question “how did we outperform?”

- CFA Standards of Professional Conduct’s Standard V: Investment Analysis, Recommendations, and Actions
 - Diligence and Reasonable Basis
 - Exercise diligence, independence, and thoroughness
 - Have a reasonable and adequate basis, supported by appropriate research and investigation
 - Communication
 - Disclose the basic format and general principles
 - Use reasonable judgment in identifying which factors are important
 - Distinguish between fact and opinion
- We conducted a great deal of analysis, of which we are sharing only a small fraction, but which we think best illustrates what we found.
- We’ll start with our beliefs because they shape our perceptions and actions.



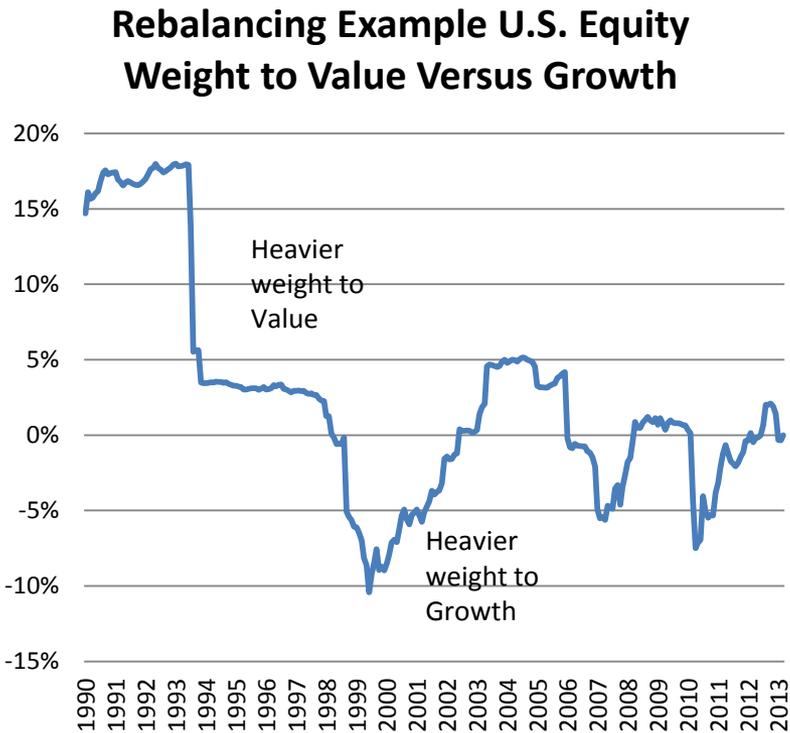
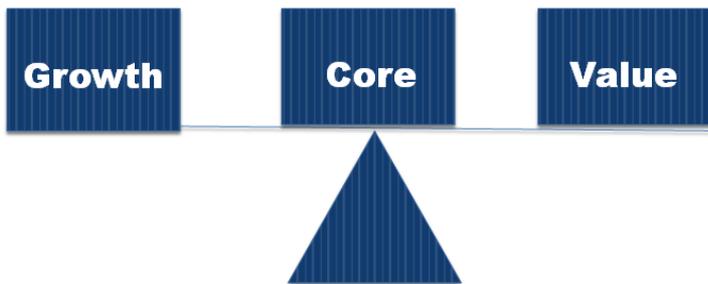
How we manage the portfolio:

Investment Beliefs (Part 2) – Dimensions of Risk

- The major dimensions of risk we attempt to manage include:
 - Geographic (U.S., other developed markets, emerging markets)
 - Beta
 - Market capitalization (Large Cap/Small Cap)
 - Style (Value/Growth)
 - Stability (Defensive/Dynamic)
 - Active management skill
 - Foreign exchange
- We manage the portfolio by selecting, sizing, and balancing these dimensions of risk.



Rebalancing to manage one dimension of risk: style

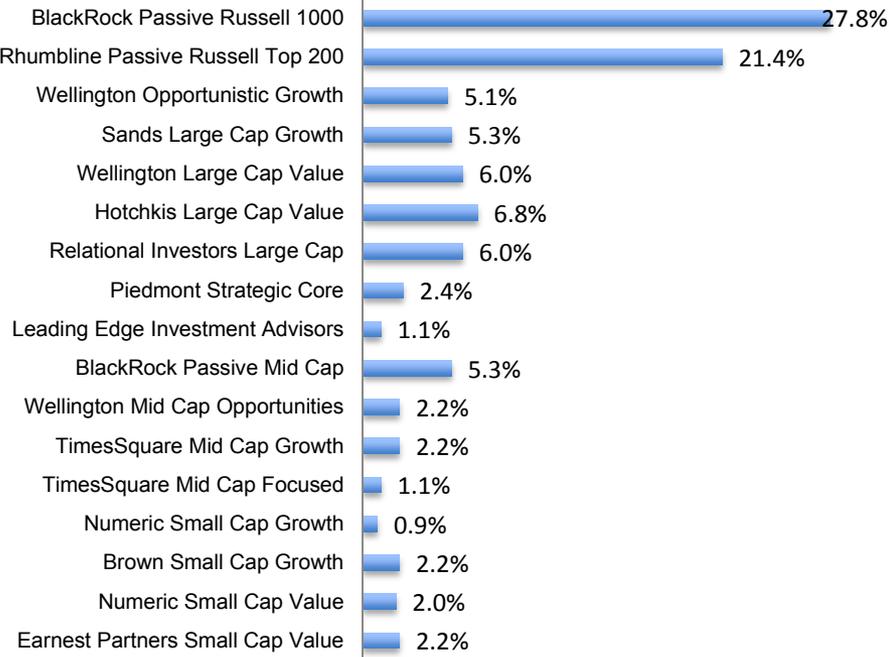


- From January 2004 through December 2013, the equity team conducted more than 20 portfolio rebalancings for a total greater than \$52 billion.

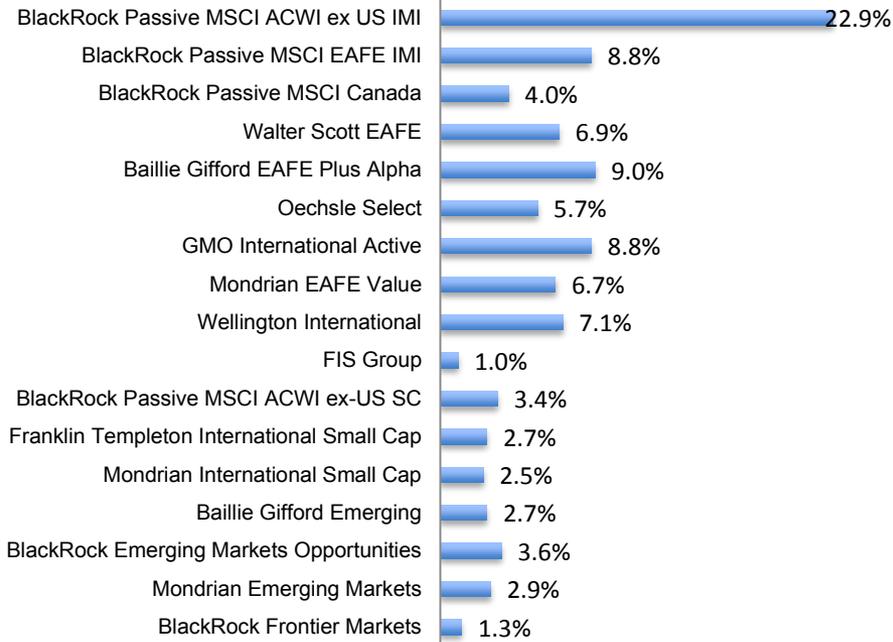


Manager/strategy allocations in US and Non-US portfolios

ALLOCATION IN US EQUITY PORTFOLIO



ALLOCATION IN NON-US EQUITY PORTFOLIO

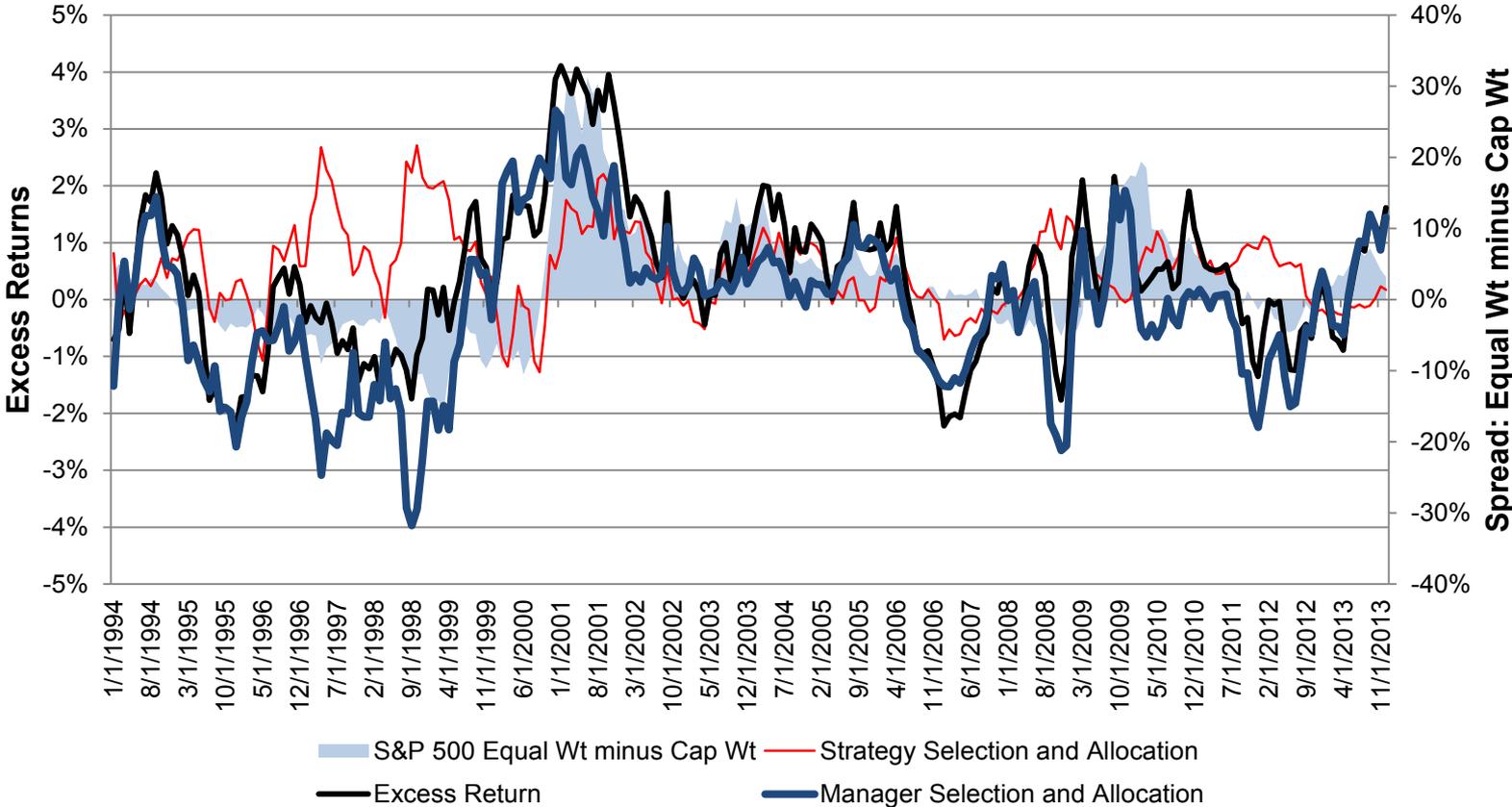


For this discussion, we call a bundle of risk dimensions a “strategy” (e.g., U.S. passive large cap core). The aggregation of strategies into a total portfolio we call the “structure.” We will differentiate between strategy selection and allocation and manager selection and allocation in the charts that follow.



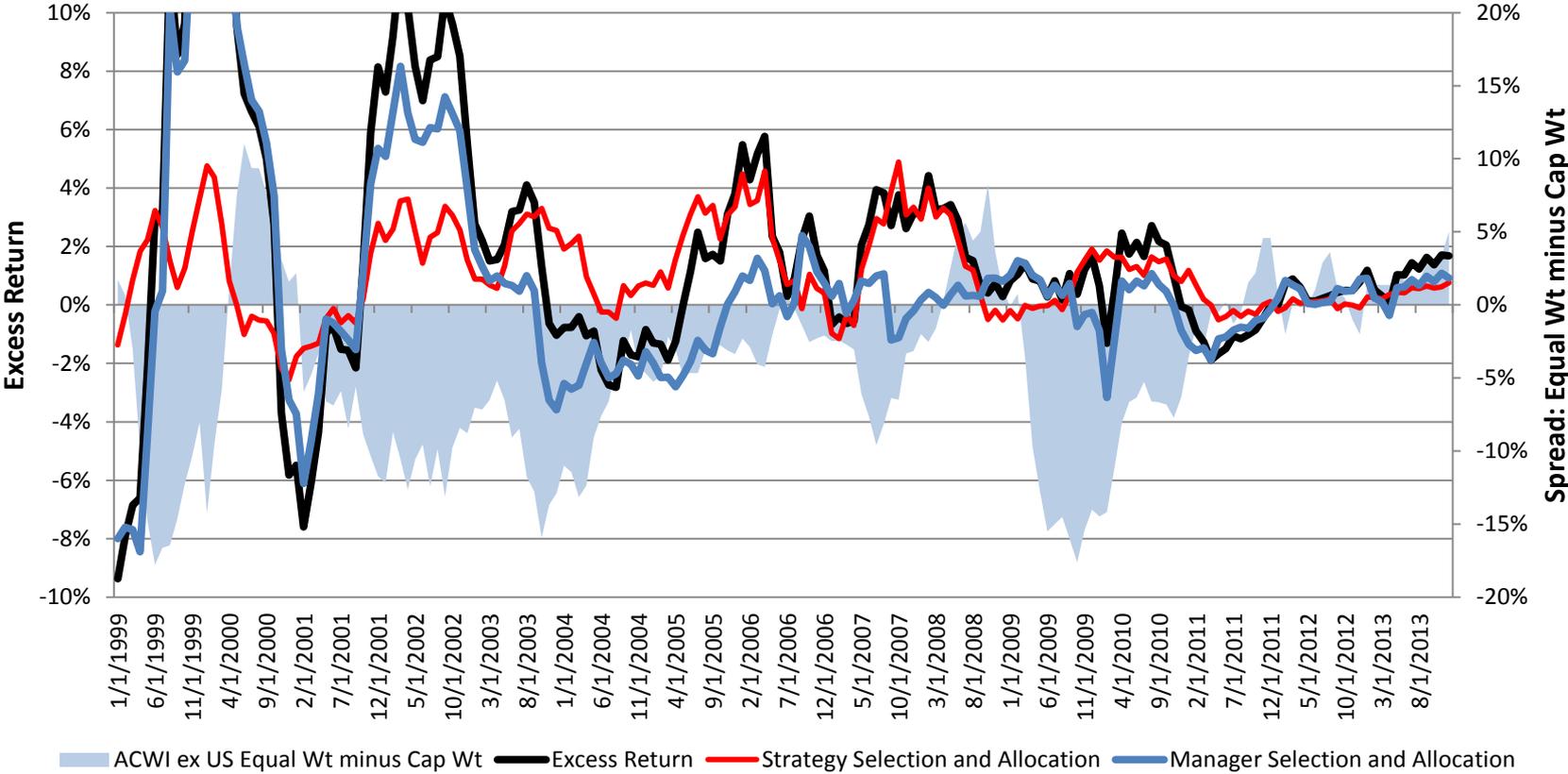
Strategy selection has been important and manager selection has cycled

U.S. EQUITY PORTFOLIO ATTRIBUTION ANALYSIS



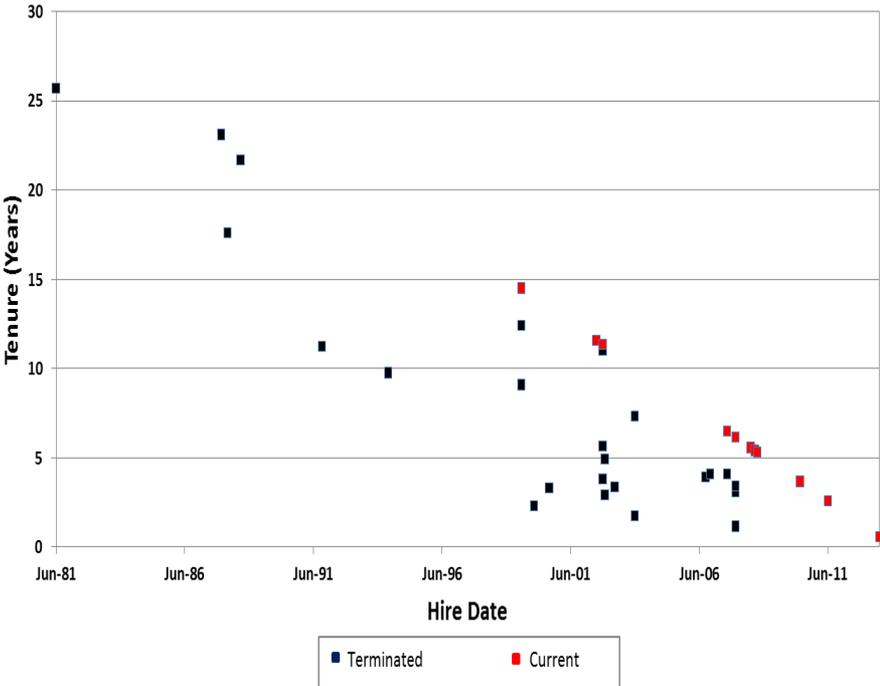
Risk controls have muted strategy selection's contribution for Non-US

INTERNATIONAL EQUITY PORTFOLIO ATTRIBUTION ANALYSIS

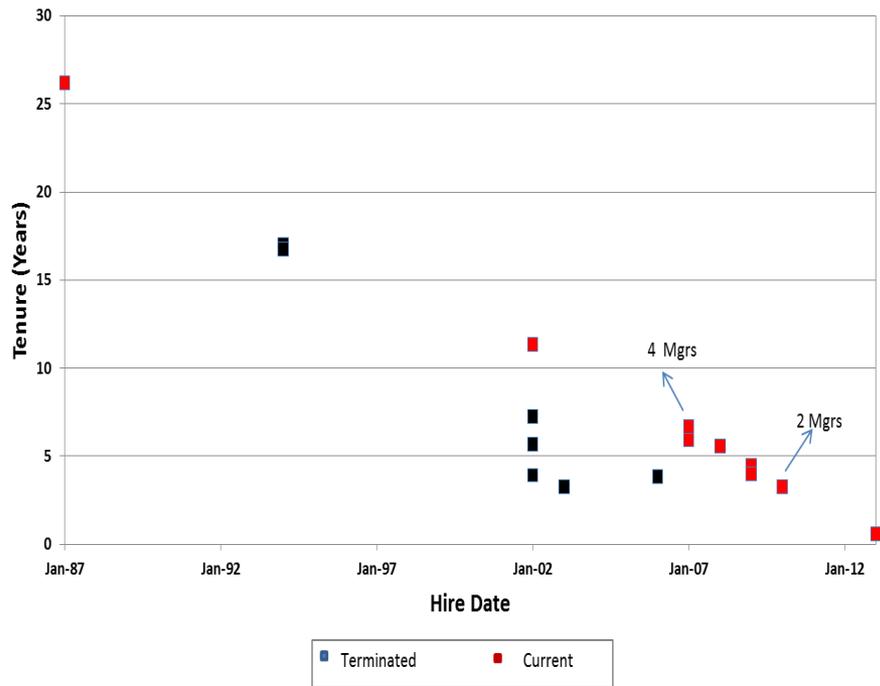


Terminated and Current Active Manager Tenures

Tenure of Domestic Equity External Active Managers



Tenure of Non-US Equity External Active Managers



Lessons Learned

- Fact: we have outperformed over time.
- Opinions:
 - In the past, we have outperformed through strategy selection.
 - Stock selection has been positive and manager selection has improved.
 - We believe that in general equity active manager excess returns are cyclical.
- Recommendations:
 - Research which strategies offer the best chance of outperformance.
 - Evaluate which combination of strategies produces the best portfolio structure.
 - Revisit the active/passive allocation to potentially recognize the cyclical nature of active management and structure of strategies.
 - Hire a consultant to assist the equity team with analytical support, independent opinions, and quality breadth and depth in investment manager research.



FY 2015 Objectives

- **Implement the new strategic asset allocation**
 - Build the hedged equity portfolio (manager searches).
 - Hire a specialized consultant to assist with the evaluation of NCDST resource needs to implement a managed account platform for the hedged equity portfolio and (if feasible) conduct a search for a managed account provider.
- **Ensure compliance, good corporate governance, and up-to-date contracts**
 - Iran-Sudan divestment.
 - Help systematize a corporate governance process that balances our ambitions with resources.
 - Renegotiate all investment management agreements.
- **Determine whether or not we can improve the current portfolio structure**
 - Systematically identify and evaluate equity strategies that have the best expected payoff and highest probability of success.
 - Evaluate which combination of strategies produces the best portfolio structure.
 - Review the active/passive allocation.
- **Enhance internal team capabilities**
 - Hire a replacement Portfolio Manager, and potentially add more resources.
 - Search for a consultant to assist long-only equity research.
 - Conduct onsite due diligence and issue systematic and comprehensive report cards on each external manager.
 - Promote a high-performing investment culture.
 - Continue to develop the SAS risk measurement system.



Hewitt EnnisKnupp Equity Strategy Analysis

- Objective: To identify long only equity strategies that have consistently produced long-term alpha (5, 10, 15 & 20 years).
- Data Source: eVestment Alliance - Monthly returns from Jan-1990 to Dec 2013 (net of fees).
- Methodology: Calculate t-statistics to determine statistical significance of excess returns, proportion of managers outperforming and proportion of time the strategies outperformed.
- Number of strategies analyzed: 58
- Total number of Products: >6,000



Hewitt Ennis Knupp – Statistically Significant Annualized Excess Returns

eVestment Universe	Benchmark	5-Year	10-Year	15-Year	20-Year
ACWI ex-US Growth Equity	MSCI ACW ex-U.S. Growth	2.43%	1.60%		
ACWI ex-US All Cap Core Equity	MSCI ACW ex-U.S.		1.25%	2.53%	2.14%
ACWI ex-US All Cap Growth Equity	MSCI ACW ex-U.S. Growth	2.25%	1.61%		
ACWI ex-US Large Cap Core Equity	MSCI ACW ex-U.S. Large			1.33%	
ACWI ex-US Large Cap Growth Equity	MSCI ACW ex-U.S. Large Growth			2.62%	
ACWI ex-US Small Cap Equity	MSCI ACW ex-U.S. Small			4.68%	
EAFE Core Equity	MSCI EAFE	2.06%	1.31%	2.38%	1.93%
EAFE Growth Equity	MSCI EAFE Growth		1.42%	3.95%	3.57%
EAFE Value Equity	MSCI EAFE Value			1.91%	
EAFE All Cap Core Equity	MSCI EAFE		1.13%	2.10%	1.76%
EAFE All Cap Growth Equity	MSCI EAFE Growth			3.58%	3.28%
EAFE Large Cap Core Equity	MSCI EAFE Large			1.73%	
EAFE Large Cap Growth Equity	MSCI EAFE Large Growth			2.85%	
EAFE Large Cap Value Equity	MSCI EAFE Large Value			1.78%	
EAFE Small Cap Growth Equity	MSCI EAFE Small Growth		2.46%	6.26%	
Emerging Markets All Cap Equity	MSCI Emerging Markets			1.60%	2.23%
Emerging Markets Large Cap Equity	MSCI Emerging Markets Large			2.54%	
Emerging Markets Small Cap Equity	MSCI Emerging Markets Small Cap			4.24%	
Global Core Equity	MSCI ACW			2.43%	1.98%
Global Growth Equity	MSCI ACW Growth		1.38%		
Global All Cap Core Equity	MSCI ACW			3.16%	2.63%
Global All Cap Growth Equity	MSCI ACW Growth		1.37%		
Global Large Cap Core Equity	MSCI ACW Large		1.15%	1.96%	
Global Large Cap Growth Equity	MSCI ACW Large Growth			3.08%	
Global Large Cap Value Equity	MSCI ACW Large Value	2.52%	1.52%	2.80%	
Global Sector Focus Equity	MSCI ACW			7.95%	
Global Small Cap Equity	MSCI ACW Small	2.95%		2.61%	
US All Cap Core Equity	Russell 3000			2.45%	1.45%
US All Cap Growth Equity	Russell 3000 Growth			4.70%	3.08%
US Large Cap Core Equity	S&P 500			1.03%	
US Large Cap Growth Equity	Russell 1000 Growth	-1.41%			
US Micro Cap Core Equity	Russell Microcap	4.28%	3.44%		
US Micro Cap Growth Equity	Russell Microcap Growth		3.12%		
US Mid Cap Core Equity	Russell Midcap	-2.26%			
US Mid Cap Growth Equity	Russell Midcap Growth	-1.83%			
US Sector Focus Equity	S&P 500		5.03%	8.58%	6.49%
US Small Cap Core Equity	Russell 2000				1.89%
US Small Cap Growth Equity	Russell 2000 Growth			2.53%	3.23%
US Small Cap Value Equity	Russell 2000 Value				1.66%
US Small-Mid Cap Growth Equity	Russell 2500 Growth				1.77%
Low Volatility Equity	MSCI World			4.93%	



Equity Strategy Analysis – Next Steps

- Review the Hewitt EnnisKnupp data to identify those strategies that appear to offer the greatest chance of the highest rewards.
- Investigate these strategies to determine why they might be expected to outperform.
- Determine whether there are high quality managers within these strategies.
- Construct hypothetical portfolio structures employing these strategies and conduct a “horse race” of backtests to determine whether these new structures might be superior to our existing strategies.
- Develop “risk standards” for managing these structures (e.g., portfolio policy allocations and rebalancing ranges).
- If necessary, conduct manager searches for these new strategies.



Hedged Equity Update and FY 2015 PREVIEW

- Evaluated Albourne hedged equity strategy indices
 - Constructed and evaluated guidepost portfolio of most attractive strategies
- Managed account evaluation
 - Surveyed institutional quality hedged equity funds to determine willingness
 - Issued questionnaire for dedicated managed account platform providers
 - Recommended hiring specialist consultant to advise DST on platform construction
 - Conducted educational seminar for DST stakeholders with specialist consultant
- Quantitative and qualitative screen of universe of institutional quality hedged equity funds
- Confirmed conviction in activist strategy
 - Managers: screened 39, met or called 22, on site due diligence with 8
 - Confirmed existing exposure and identified additional targets
- Quantitative Equity Market Neutral evaluation and on site due diligence
- Paused strategic partner evaluation pending managed account evaluation



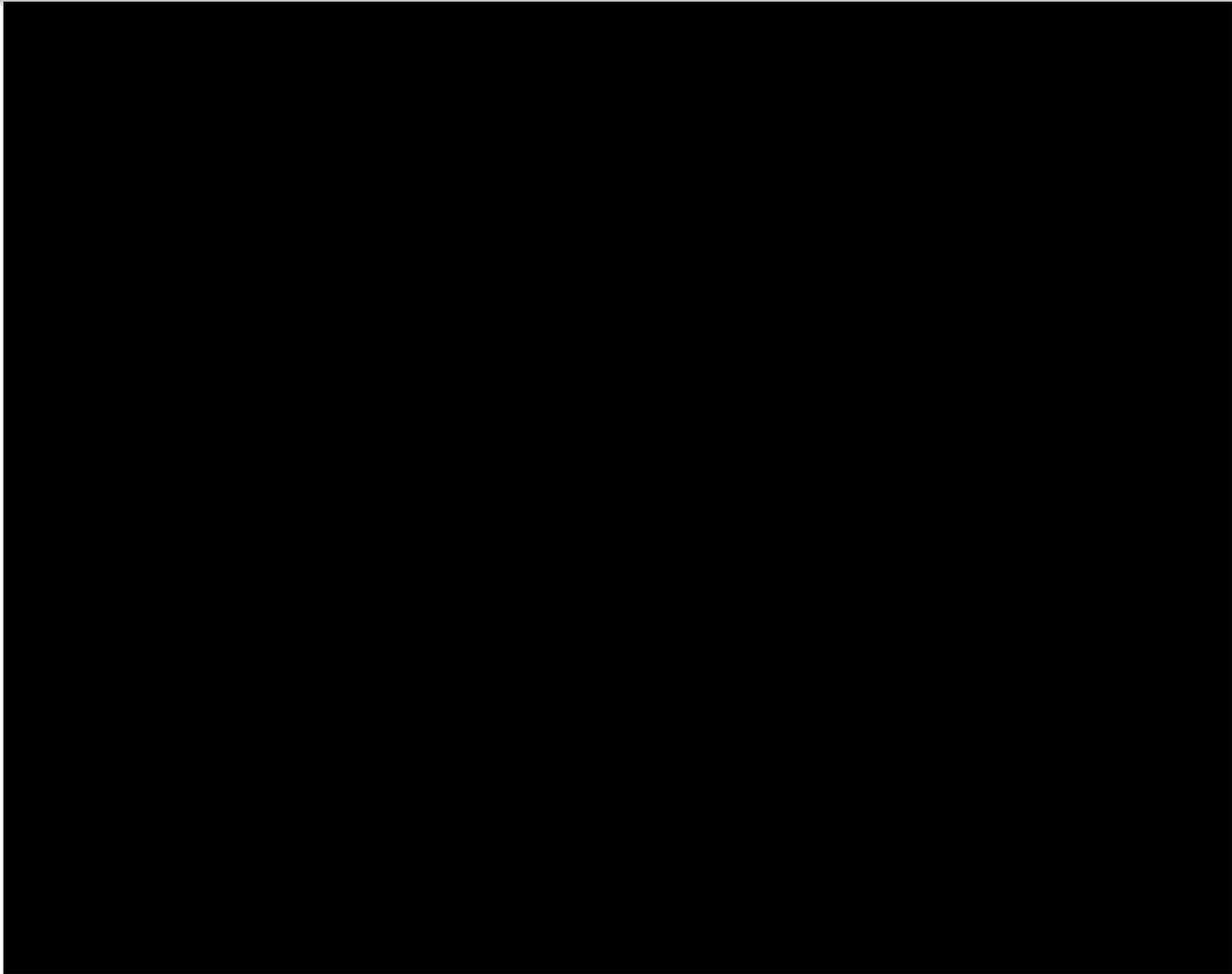
Hedged Equity Guidepost Strategy Weightings

Scores Relative to HE Peers	Global Japan Multi-Strat						Sector					Stat Arb	US L/S	Total
	Activist	FEMN	L/S	L/S	Eq L/S	QEMN	Consumer	Energy	Financial	HC	Tech			
Weight	10%	10%	10%	5%	10%	10%	5%	5%	5%	10%	5%	5%	10%	100%
Returns	++	0	0	0	+	-	0	++	+	++	+	0	+	9.30%
Batting average	++	-	++	0	+	0	+	+	0	++	0	0	++	
Win/loss ratio	++	+	-	0	+	-	0	0	++	+	++	+	0	
Upside capture	++	-	+	-	0	-	0	+	0	+	0	-	0	
Downside capture	-	++	-	+	+	++	+	-	0	+	0	++	0	
Beta to ACWI	-	++	0	+	+	++	0	-	0	0	0	++	0	0.31
Annualized std. dev.	-	++	0	+	++	++	+	-	+	0	+	++	0	5.70%
Max. drawdown	-	++	0	+	++	++	++	-	+	0	+	++	0	
Skewness	0	0	0	++	0	-	0	0	0	0	0	0	0	
Kurtosis	+	-	0	0	0	0	++	0	0	+	++	0	0	
Sharpe ratio	0	++	0	0	++	++	+	0	+	++	+	++	0	
Sortino ratio	0	++	0	0	+	+	+	-	+	++	+	++	0	
Avg. corr. returns	-	0	--	+	-	+	0	-	0	0	0	0	-	
Avg. corr. ex. returns	++	-	--	0	--	+	-	-	--	+	-	0	-	
Funds per strategy	-	-	++	+	-	0	--	0	0	0	0	-	++	93/1068

Bias towards more risk efficient strategies
 Don't see advantages in geographic funds over global funds
 Sector funds focused on higher dispersion sectors offer attractive risk return profiles
 Japan may be improving opportunity set after shakeout in valuation and competition



Strategy Weightings Analysis – Efficient Frontier



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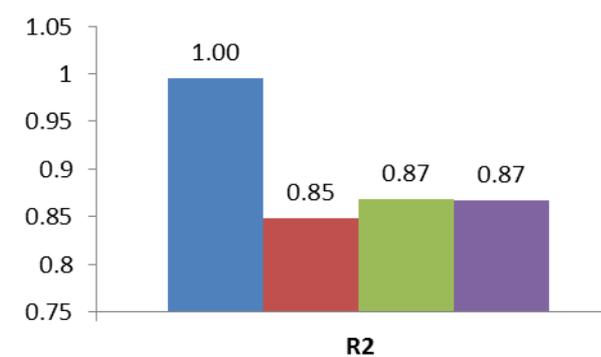
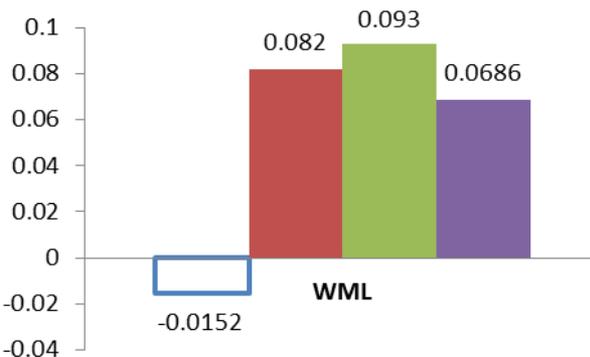
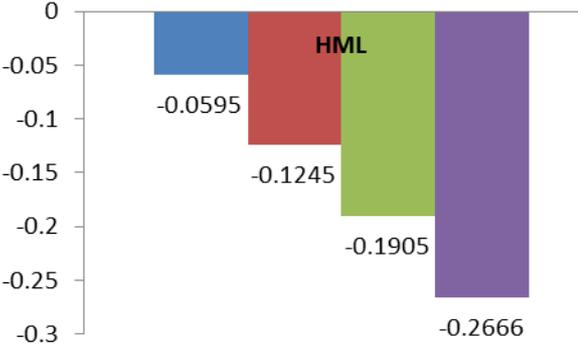
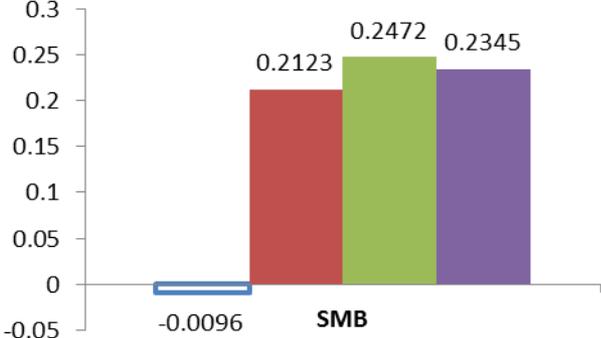
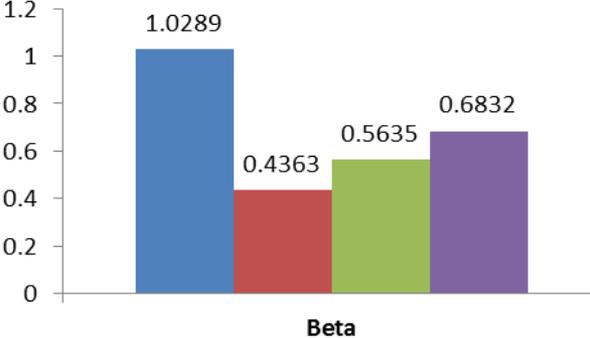
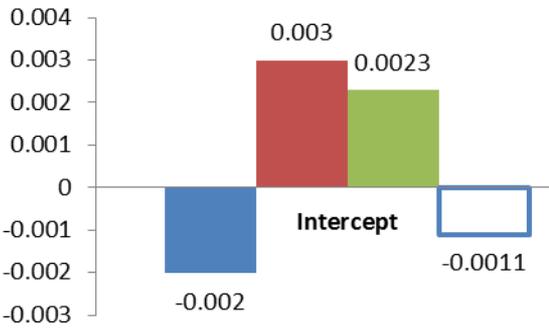
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Note: Shrinkage estimator used for covariance matrix. Returns are unsmoothed.



Strategy Weightings Analysis – Factor Exposure

■ ACWI IMI ■ Guidepost ■ Albourne ■ HFRI EH



Note: Hollow bars are p value >0.05.



Strategy Weightings Analysis – Risk Contribution

	Portfolio Weight	Risk Weight
Activist	10.0%	21.4%
Fundamental Equity Market Neutral	10.0%	4.3%
Global Long / Short	10.0%	13.2%
Japan Long / Short	5.0%	4.0%
Multi-Strategy - Equity L/S	10.0%	8.5%
Quantitative Equity Market Neutral	10.0%	2.9%
Sector Consumer	5.0%	3.4%
Sector Energy	5.0%	8.8%
Sector Financial	5.0%	3.1%
Sector Healthcare	10.0%	11.3%
Sector Technology	5.0%	5.1%
Statistical Arbitrage	5.0%	1.2%
US Long / Short	10.0%	12.8%

Note: Based on standard deviation.

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Hedged Equity Next Steps

- Hire specialist consultant for dedicated managed account platform evaluation
 - Finalize feasibility with all stakeholders
 - Determine division of responsibilities and scope of services
 - Evaluation of and due diligence on managed account platform providers
 - Construct dedicated managed account platform
- Staged hedged equity portfolio implementation
 - Activist
 - Quantitative Equity Market Neutral
 - Fundamental Equity Market Neutral
 - Global Long/Short
 - US Long/Short



Accomplishments

- **Proxy Voting**
 - Domestic Proxy Voting Guidelines (Adopted March 2012)
- **Diversity on Boards**
 - Partnership with Director Diversity Initiative at UNC School of Law
- **Company Engagement**
 - Board Declassification (with Harvard Shareholder Rights Project): Declassified 18 Companies on S&P 500
 - Executive Compensation & Board Structure: Massey Energy
 - Proxy Access: Nabors Industry
 - Political Spending Disclosure: Nike
- **Divestment**
 - Iran Divestment Policy (July 2012)



Governance Areas of Focus for NCRS

- **Governance**
 - Establish a Corporate Governance Subcommittee Charter
- **Proxy Voting**
 - Update Domestic Proxy Voting Guidelines
 - Develop International Proxy Voting Guidelines
- **Diversity on Boards**
 - Engage Select Companies on Diversity on Boards
- **Company Engagement**
 - Identify Potential Companies for Engagement Based on Select Screens
 - Partner with Harvard Shareholder Rights on Board Declassification
- **Divestment**
 - Review Divestment Policies



Corporate Governance Sub-Committee

Draft Roles/Responsibilities

- **Provide Input** – Serve as a sounding board and provide recommendations based on:
 - Corporate governance principles
 - Policies, procedures and implementation
 - Transparency (proxy voting record, engagement activities, divestment notifications)
- **Decide** – Plan involvement as supported by appropriate research, diligence and investigation as it relates to:
 - Procedures for divestment
 - Process for engagement
 - Method(s) for proxy voting, guidelines and/or proxy contests
 - Securities litigation
 - Hold policy
- **Oversee** – Evaluate, scrutinize and convey:
 - Compliance with investment policies and divestment (e.g., Sudan Policy, Iran Policy, Payday Lending Policy)
 - Major corporate governance initiatives (e.g., board diversity, engagement efforts, environmental/social issues, etc...)
 - Proxy voting and other corporate governance guidelines (upon request of the General Counsel)
 - Investment Protection Principles



Consider Investment Impacts

Active Portfolio Management:

Does the issue constrain a manager’s ability to generate alpha?

Passive Portfolio Management:

Is the security part of the broad market index? Are derivatives permissible as a suitable replacement?

Misfit Risk:

To avoid misalignment with the benchmark, is there a comparable option? How different would NCRS’ portfolio look and perform relative to peers?

Negotiation Leverage:

Does the issue limit NCRS’ ability to utilize size/scale to our advantage?

Fiduciary Obligation:

Does the issue have the potential for a meaningful impact on portfolio risk or return? Is there a likelihood of success in that NCRS’ action will influence an outcome which can be measured?



Governance Evaluation Checklist

Materiality:

Does the issue have the potential for a meaningful impact on portfolio risk or return?

Principles:

To what extent is the issue supported by NCRS' Corporate Governance Principles?

Capacity:

Do we have the expertise and resources to influence a meaningful outcome?

Timeliness:

Is the issue time sensitive with a clearly defined deadline?

Definition and Likelihood of Success:

Is there a likelihood of success in that NCRS' action will influence an outcome which can be measured? Can we partner with others to achieve success?

Source: CalPERS





Thank You!

Together we can build and maintain a fiscally strong and prosperous North Carolina.

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Investment Management

Learn. Invest. Grow. Prosper.